

TOR for the Formulation of Guidelines for Climate Risk Resilient Coastal Protection in the Maldives

The Ministry of Housing and Environment is seeking a consulting team with international and local knowledge and experience to formulate guidelines for climate risk resilient coastal protection in the Maldives under the project *Integrating Climate Change Risks into Resilient Island Planning in the Maldives (ICCRRIP)*. Technical and financial proposals to provide the consultancy services as per the terms of reference below are to be submitted with a results-oriented curriculum vitae and contact details of three referees and relevant qualifications in sealed envelopes to the following address before 1400 hrs Tuesday, 24 May 2011. Documents submitted electronically to the email addresses below prior to the deadline will be accepted.

Tender Evaluation Section
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TERMS OF REFERENCE: Consultancy for formulation of Guidelines for Climate Risk Resilient Coastal Protection in the Maldives

I. INTRODUCTION AND BACKGROUND

The Ministry of Housing and Environment in collaboration with UNDP is implementing the first climate adaptation project, Integrating Climate Change Risks into Resilient Island Planning in the Maldives (ICCRRIP) under the National Adaptation Programme of Action. The project is funded by the Least Development Country Fund and UNDP, and is co-financed by the Government of Maldives. The overall goal of the project is to increase the resilience of the Maldives in the face of climate change and improve the country's capacity to respond effectively to climate related hazards. In addition, the project aims to ensure that climate change risks are integrated into resilient island planning and that national, provincial, atoll and island authorities, and communities are able to prioritize and implement climate change adaptation measures.

Currently there are no written guidelines on how to build climate change resilience into erosion control, land reclamation or harbour development. Environmental Impact Assessment (EIA) requirements are generic. Various studies such as Detail Island Risk Assessment in the Maldives (DIRAM) make recommendations on good and bad practices. The consultant will work closely with the Environment Protection Agency (EPA) and other relevant agencies to address gaps in technical knowledge and know-how on how best to plan and develop harbours, conduct land reclamation, other major developments and manage coastal erosion in a changing climate without increasing vulnerability. Current coastal zone management practices will be reviewed to assess their implications for strengthening or reducing climate resilience. Comprehensive technical guidelines on climate change resilient coastal protection, with separate chapters on climate change resilient harbour development, land reclamation and coastal erosion control will be produced and finalized through stakeholder consultations with relevant national, atoll and island authorities and sector specialists. The Project will build on studies undertaken on erosion by EPA, the ICCRRIP project and the Maldives Environment Management Project (MEMP).

II. OBJECTIVE

The objective of this consultancy is to formulate a guidelines document for climate risk resilient coastal protection planning in the Maldives. These guidelines should be formulated through participatory approach and recommend amendments to the Land Use Planning and Environmental Impact Assessment (EIA) regulations and Environment Protection and Preservation Act (EPPA) of Maldives, National Building Code and Maldives National Building Act and Maldives Land Act as necessary to better address climate change adaptation and provide pragmatic evidence based advocacy for high level political endorsement for the coastal protection guidelines document.

III. SCOPE OF WORK

- Source, define and obtain agreement for the development targets to be achieved with respect to climate change resilience and risk mitigation and the climate change risk scenarios to be considered in the guidelines document.
- Assess past and current development practices and coastal protection measures that have had negative impacts such as the reduced natural resilience of the islands and increased vulnerability of the islands to climate change risks
- Review the existing coastal development planning process, engineering designs and, construction implementation and monitoring processes and practices for high, medium and low impact coastal developments from a climate risk planning perspective. These include land reclamation, harbour development, erosion prevention and other coastal protection measures.
- Review the existing EIA process and other policy and legal frameworks for coastal development planning and implementation.
- Formulate objectively verifiable, quantitative standards for coastal land use with respect to coastal development including safe setbacks, land reclamation, infrastructure etc. For example setting a minimum elevation with respect to the high wave energy zone.
- Provide an objective quantitative performance monitoring and evaluation framework for monitoring delivery of the proposed standards.
- Carry out stakeholder consultations to gather information and views.
- Prepare guidelines for climate risk resilient coastal protection and adaptation
- Conduct stakeholder seminar to discuss and endorse recommendations from the review and assessments of existing land use planning regulation, EIA regulation and EPPA and other relevant laws and regulations
- Conduct high level stakeholder meeting to present and endorse the Guidelines for Climate Risk Resilient Coastal Protection in the Maldives

IV. INDICATIVE TASKS

The consultant's work will include but not be limited to the following:

- Identify stakeholders and island communities most relevant for understanding, discussing and evaluating the situation with respect to integrating climate change risks into resilient island planning
- Conduct field visits to discuss and analyse situation with respect to coastal protection, harbour development, land reclamation, flood and drainage control from the perspective of integrating climate change risks. Field visits will include 2 islands in each of the following 4 atolls; Haa Dhaalu, Kaafu, Dhaalu and Gaafu Dhaalu. Domestic travel cost only will be borne by the ICCRRIP Project.
- Specify climate change resilience and risk assumptions requiring guidance support and seek agreement.
- Review of coastal protection issues
 - Review existing land use planning regulation, EIA regulation, EIA process, Environmental Protection and Preservation Act, Land Act and regulations, and the guidelines on land reclamation, harbor development and coastal protection measures from a climate change risks and adaptation planning perspective
 - Review of reports from Detailed Island Risk Assessments in the Maldives (DIRAM), cost benefit analysis of 3 islands, coastal monitoring reef island shoreline dynamics and management implications, survey on adaptation measures and other studies to feed into land use planning regulation amendments
 - Identify land use practices that reduce natural resilience of the islands and increase vulnerabilities to climate change risks
 - Review, assess and analyze various coastal protection measures and practices in the Maldives and other small islands like Maldives including conventional adaptation, soft adaptation and traditional measures.
 - Review and assess the costs and benefits of different options for reducing vulnerability of current and future climate change risks through land use planning measures such as maintaining and restoring natural buffers (e.g. coastal ridges, beach rock, coastal vegetation) and critical infrastructure based on projected patterns of flooding and beach and coastal erosion
 - Prepare a summary of findings and recommendations on the issues, identifying weaknesses and malpractices and social and economic costs and benefits associated with old and new coastal

development and protection practices.

- Provide necessary amendments to the Land Use Planning Regulation by defining the environmental protection zone in the context of climate risk resilience in the Maldives
 - Provide guidance based on function, design and management of environmental protection zone to increase climate risks resilience of islands
- Provide necessary guidance and propose amendments to land use planning and EIA regulation, EIA process and EPA as necessary to better address climate change adaptation in the Maldives.
- Provide standards for best practices in coastal development activities undertaken by various sectors such as tourism, fisheries and others.
- Produce a document on guidelines for climate risk resilient coastal protection in the Maldives that can be endorsed at highest political level
 - Prepare a draft document and organize and conduct a half day seminar to present the findings to the stakeholders and policy makers for discussion and comment.
 - Produce final document on Guidelines for Climate Risk Resilient Coastal Protection in the Maldives

V. TARGETED STUDIES, ASSESSMENTS, LAWS AND REGULATIONS

- List of reports for review should include but not be limited to:
 - a. Survey of Climate Change Adaptation Measures in the Maldives by Dr. Ahmed Shaig
 - b. The Detailed Risk Assessment in the Maldives (DIRAM) reports
 - c. Coastal Monitoring, Reef Island Shoreline Dynamics and Management Implications by Dr. Paul Kench in view of adopting ‘soft’ coastal protection and development measures.
 - d. Cost Benefit Study of Disaster Risk Mitigation Measures *in Three Islands in the Maldives*
 - e. Environmental Impact Assessment Regulation
 - f. Environmental Protection and Preservation Act of Maldives
 - g. Maldives National Building Code (Bill)
 - h. Land Use Planning and Building Act (Bill)
 - i. Maldives Land Law
 - j. Utilize the projections generated from the statistical and dynamic downscaling of regional and global climate change models

VI. RECOMMENDATIONS AND OUTPUTS

- A summary of findings and recommendations on the issues, identifying weaknesses and malpractices.
- An analysis of social and economic costs and benefits associated with old and new coastal development and protection practices.
- amendments to the Land Use Planning Regulation on the environmental protection zone
- Guidance and proposed amendments to land use planning and EIA regulation, EIA process and EPA.
- Standards for best practices in coastal development.
- Develop comprehensive guidelines on climate risk resilient coastal protection for high, medium and low impact coastal developments. This should include but not limited to the following:
 - i) Infrastructure developments
 - ii) Land reclamation
 - iii) Beach replenishment
 - iv) Harbour development (dredging, quay wall and breakwater development)
 - v) Coastal protection (erosion prevention measures)
 - vi) Access improvement (reef entrance channels, jetties and quay walls)
 - vii) Over-water structure development
 - viii) Any other significant coastal development or constructions
 - ix) A monitoring and evaluation framework for coastal protection standard
- A final comprehensive document on Guidelines for Climate Risk Resilient Coastal Protection in the Maldives for high level political endorsement

VII. **DUTY STATION:** **Ministry of Housing and Environment, Male', Maldives**

VIII. **EXPECTED DATE OF CONTRACT:** **1 June 2011**

IX. **QUALIFICATION:**

- A degree from a recognized university or tertiary level institute in coastal engineering, environmental science, oceanography or civil engineering. A Post Graduate qualification in relevant field of academic study is preferred. A post graduate qualification with a research focus on coral island coastal processes, coastal climate risk planning or coral island coastal engineering is highly desirable.
- A team of consultants (minimum 3) in respective areas of expertise.
- At least 5 years working experience in coastal impact assessment, coastal structure design or similar experience related to the assignment. Previous working experience in a similar geographical setting is desirable. Experience in the Maldives is highly desirable.
- Practical research experience in coral island geomorphology and coastal processes is also highly desired.
- A very good understanding of Climate Change issues, adaptation and coastal infrastructure planning.
- Have the capacity to work on the islands in demanding weather conditions.
- Have excellent interpersonal skills and demonstrated ability to work in a team environment.

X. **SHORTLISTING:**

- Only shortlisted Consultants will be invited to submit a proposal.
- Shortlisting criteria
 1. Company Profile and Experience- 30 Marks
 2. Firms Experience in Similar Projects – 30 Marks
 3. Proposed Key Staff – 40 Marks
- A company profile is recommended for inclusion in the expression of interest highlighting similar undertakings.

XI. **SERVICES AND FACILITIES PROVIDED BY THE CLIENT**

- All documentation listed in the targeted studies, assessments, laws and regulations and required technical input from staff will be provided.
- All costs associated with domestic logistics and travel within Maldives, to 2 islands each in the 4 atolls listed for the purposes of the assignment will be borne by the Project Management Unit of the Integrating Climate Change Risks into Resilient Island Planning in the Maldives Project. Additional inter/intra island transfers of consultant staff not directly related to the tasks covered under this assignment will be at the cost of the Consultant.
- The Client will also provide the consultant with a counterpart staff to facilitate local coordination and/or administrative arrangements as required. The counterpart staff will also endeavor to assist the Consultant in locating and accessing materials available within the Maldives for the purpose of the assignment.
- Printing of reports and documents required for meetings and workshops.
- Consultants will be accommodated during office hours (0800-1600hrs) at the Ministry of Housing and Environment's premises. Consultants are expected to bring their own laptop and equipment to work with.