

Terms of Reference

Consultancy for development and implementation of a National Climate Change Data Sharing Network

Procurement Entity: CLIMATE MITIGATION ACTION SUPPORT PROJECT (CMASP)

1. BACKGROUND

The Partnership for Market Readiness (PMR)

PMR is a grant-based, capacity building trust fund that provides funding and technical assistance for the collective innovation and piloting of Carbon Pricing Instruments (CPIs) that reduce greenhouse gas (GHG) emissions. The Partnership brings together experts and stakeholders from developed and developing countries to discuss CPIs, South-South exchange, collective innovation for pilot efforts, and the implementation and scale-up of financial flows.

The Government of Sri Lanka (GoSL) became an Implementing Country Participant of PMR, following the presentation of its Organizational Framework for Scoping of PMR Activities at the PA meeting in Lima, Peru on April 26 – 29, 2016. Upon GoSL's request, the World Bank is currently executing the preparation grant in close consultations with Sri Lanka's PMR focal point, the Climate Change Secretariat (CCS) under the Ministry of Environment and Wildlife Resources (MEWR). GoSL submitted its Market Readiness Proposal (MRP)¹ to the Partnership Assembly (PA) in December 2017, which lays out in detail why, what and how PMR resources would be used to support the country's planned activities to develop the proposed CPI and market readiness components. The MRP has now been approved by the PA, and a grant agreement is currently being drawn up to allocate the US\$ 3 million funding for the MRP implementation phase.

The MRP implementation is being carried out by the World Bank and MEWR in Sri Lanka. Most of the components which were executed by the World Bank have been almost completed and CMASP of MEWR is being implemented the components assigned and this consultancy, the Development and Implementation of a National Climate Change Data Sharing Network is one of components. National Climate Change Data Sharing Network is identified as a timely need for the country since the country committed to mitigate greenhouse gas emissions and increase the coping capacity against the adverse effects of climate change. The consultancy will cover all the climate change related data generation points and data users in the entire country.

Sri Lanka's climate change context

Sri Lanka is a rapidly growing lower middle-income country with a total population of 21.8 million people and per capita income of USD 3,741 in 2019². Sri Lanka is considered to be, in many respects, a development success story. For example, growth has averaged over 5 % per year in the past decade and poverty rates have declined dramatically from 8.9% in 2009 to 4.1% in 2016³.

Sri Lanka, a country which is highly vulnerable to adverse effects of climate change and has lower greenhouse gas emission levels. Sri Lanka was ranked in 4th, 2nd and 6th positions as one of the most vulnerable countries in

¹The MRP may be found here: <https://www.thepmr.org/country/sri-lanka>

^{2,3} Annual Report, Central Bank of Sri Lanka, 2019

2016, 2017 and 2018 respectively⁴. About 74 percent of disasters took place between 1990 - 2018 due to adverse impacts of climate change, such as floods, landslides, storms, and drought⁵. Damage due to flooding between 1990 - 2018 was estimated over USD 2 billion and half of which occurred in 2016⁶. Sri Lanka's GHG emission in 2012 was approximately 0.78 tCO₂ per capita, far below the world average value of 4.44 tCO₂⁷. According to Sri Lanka's Second National Communication (SNC) on Climate Change Submissions to UNFCCC, the energy sector, which accounted for 61.4% of total GHG emissions in 2000, represented the largest share of total national GHG emissions.

Sri Lanka has set adaptation in Nationally Determined Contributions (NDCs) for most vulnerable sectors, namely, health, food security (agriculture, livestock and fisheries), water, irrigation, coastal and marine, biodiversity, urban infrastructure and human settlement, and tourism and recreation which have adverse effects of climate change. GHG emission reduction targets under its mitigation NDCs were set as: (a) By 2030, reduce GHG emissions in the energy sector against BAU scenario by 4% unconditionally and an additional 16% conditionally; and (b) by 2030, reduce GHG emissions against BAU scenario by 10% in other sectors by 3% unconditionally and additional 7% conditionally.

2. RATIONALE FOR A NATIONAL CLIMATE CHANGE DATA SHARING NETWORK

Sri Lanka, as a country needs to take robust adaptation measures against frequently occurring adverse impacts of climate change and response to national and international commitments on climate change mitigation even though the country's GHG emissions levels are comparatively low. As mentioned above, Sri Lanka has identified ten (10) most vulnerable sectors for adverse impacts of climate change and taken some adaptation measures to reduce the susceptibility and increase the coping capacity. Further, country will estimate national GHG emissions and emission reductions periodically for Biannual Update Reports (BUR) and Biannual Transparency Reports (BTR) in addition to ongoing reporting through National Communications (NCs) and assessing the progress of achieving NDCs targets. In such a situation, country needs to assess its vulnerability and GHG emissions levels more precisely and frequently to respond negative impacts of climate change.

Since the climate change and its adverse impacts are very complex, it needs various types of solutions which are specific to the nature of impacts, affected sector, affected area, etc. In such a nature, availability of regularly updated data and information is an essential requirement for wide range of stakeholders to assess the severity of impacts and find appropriate solutions.

Considering the climate change and associated requirements mentioned above, CCS of the MEWR has already identified the timely need of establishing a frequently updated national climate change data sharing network to facilitate to assess the rapid changes of climate impacts in the country; identify risk and vulnerability due to adverse impacts of climate change in various sectors; assess national, provincial and local level adaptation measures implemented; estimate levels of GHG emissions and removals in the country; assess the progress of mitigation actions and NDCs achievements; monitor the progress of projects and to fulfill the periodic international reporting requirements. Further, data sharing network will be useful to analyze the most recent

⁴ Climate Risk Index 2020 (<https://germanwatch.org/en/17307>)

⁵ CRED, 2019. EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED,. Brussels: Université catholique de Louvain

⁶ Sri Lanka Post disaster needs assessment 2019 (https://www.unisdr.org/files/68230_10srilankadmstatusreport.pdf)

⁷For more information, please refer to Sri Lanka's Organizing Framework for Scoping of PMR activities: https://www.thepmr.org/system/files/documents/Sri%20Lanka_Organizational%20Framework.pdf

developments and apply for necessary international climate finance facilities to implement national and regional level climate change adaptation and mitigation actions.

3. OBJECTIVES

The objective of the climate change data sharing network is to establish a comprehensive data sharing system in Sri Lanka to fulfill various type of data needs in relation to climate change (Fig. 1). The network will gather and share data and information which will be useful for wide range of stakeholders such as policy makers, actuarial analysts, government agencies, private sector, international donors, researchers, etc., The system will cover both climate change adaptation and mitigation aspects and link to the already existing climate change related databases and MRV systems.

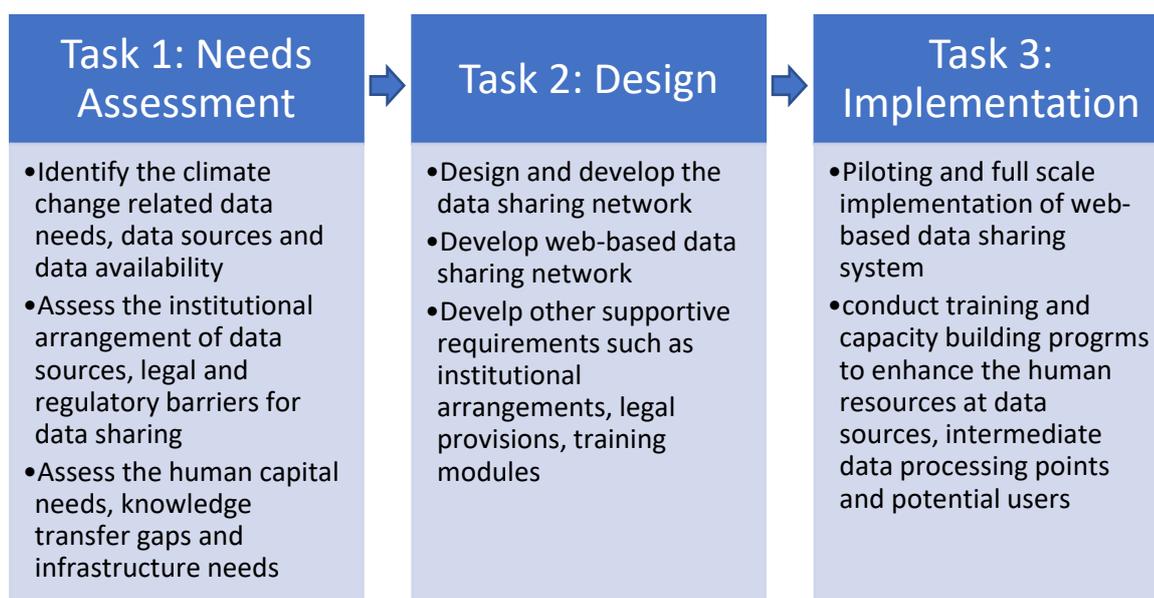


Figure 1: Overview of outputs and activities to develop the national data sharing network

The scope of the consultancy mainly has three tasks, namely, needs assessment, design and implementation of National Climate Change Data Sharing Network. The task 1, needs assessment will be focused to identify the climate change related various types of data needs, data sources, data availability, institutional arrangement of data sources, legal and regulatory barriers for data sharing, human capital needs, knowledge transfer gaps and infrastructure needs. The design phase (task 2) will cover the components relevant to development of data sharing network, web-based data sharing system and development of other supportive requirements. The web-based system piloting, full scale implementation and knowledge transfer will be carried out under the task 3.

4. SCOPE OF THE CONSULTANCY

Task 1: Needs Assessment

1. Identify the climate change related various types of data needs for wide range of stakeholders as mentioned in the objective (section 3) for different purposes. Those needs in descriptively shall include but not limited to data and information related to climate change such as vulnerability, hazards, exposure, susceptibility, coping capacity, GHG emissions, mitigation potential at various levels such as national, provincial, district, divisional secretariat, sectoral, etc. The assessment should be carried out in broader

perspective considering all the possible climate change related data requirement for national planning; preparation and implementation of national policies and regulations; preparation of climate risk insurance schemes; international reporting; assessing the progress of national targets related to climate change (i.e. NDCs); and research and development. The consultancy firm should coordinate with on-going NDCs review process conducted by CCS in collaboration with UNDP.

- II. Identify the data and information generation points (sources) and present availability of above-mentioned (in task 1-I) needs with respect to unit of measurement, and frequency of gathering and reporting. It shall include but not limited to
 - Activity data for assessing the risk based on hazard, exposure, susceptibility, coping capacity and adaptive capacity
 - Information on vulnerable sectors and level of vulnerability at national, provincial, district and divisional secretariat level
 - Information on adaptation measures implemented and risk reduction
 - Data and information related to damages and losses due to adverse effects of climate change
 - Weather and climatic data and information
 - Activity data for estimating GHG emissions and GHG emissions reduction
 - Information on GHG mitigation actions/projects at national, provincial and sector level
 - Regulations, policies, strategies and actions at national, provincial and sectoral level (eg: policies and regulations which address climate change issues)
 - Standards, protocols and compliance requirements in specific sectors (ISO 14001, ISO 50001, ISO 14064 standard requirements in industry and service sectors, GHG protocols, carbon neutral products, etc.,)
- III. Assess the existing institutional set up for a data and information sharing system (including MRV systems) and identify required institutional setup at ministry, department, provincial, district, sector and sub sector level to establish climate change data sharing mechanism
- IV. Identify legal/regulatory barriers/constraints, optimum requirements to establish a national climate change data sharing network at ministry, department, provincial, district, sector and sub sector level. The consultancy firm should thoroughly analyze the existing system to identify gaps and appropriate legal measures
- V. Conduct a training needs analysis to cover all the climate change related data sources excluding the data source which would be covered under MRV training which is going on simultaneously under this project. The firm should coordinate with the consultancy firm who would conduct the MRV training component of the Climate Mitigation Action Support Project (CMASP). The training needs analysis should assess the existing knowledge and required capacity building needs of officials on climate change, causes and adverse impacts, climate change related data, data measuring, reporting and verification in addition to increasing the operational and functional skills of the data sharing system
- VI. Assess the infrastructure needs at data sources, intermediate data processing and validation points including provincial climate cells and potential end user points including CCS for reporting purposes;
 - IT infrastructure (computer hardware and software with required specifications)
 - Access to the internet with required bandwidth
 - Other infrastructure such as office space with required furniture and power supply

- possibility of using a mobile App for data reporting
- deployment of information technology (IT) expert for data sharing system maintenance

Task 2: Design

- Design a comprehensive data sharing network to facilitate all the requirements identified in the needs assessment (task 1). The consultancy firm should thoroughly analyze each institutional arrangement and design most appropriate mechanism to gather and report data (generic institutional setup will not fit for all the institutions). The mechanism should include provisions for long term sustainability of the data sharing network.
- Design IT infrastructure for web-based data sharing system based on the above design. The design should include functional and technical specifications which fulfill the requirements of data sources, data users and types of data to be shared. The data sharing system should have data access control, payment gateway provision (some data sources may charge a fee for data) and provisions for future expansions.
- Design institutional arrangements and legal/regulatory provisions to implement and sustain the data sharing network in collaboration with CCS. The task will also cover preparation of Memorandum of Understanding (MoU) between CCS/MEWR and other data sharing agencies.
- Design a comprehensive training module based on a training needs analysis to develop the capacity and knowledge of officials on human induced climate change, causes and adverse impacts, climate change related data, data measuring, reporting and verification.
- Develop a work plan (including WBS, time frame) for implementation of climate change data sharing network which will be implemented in task 3.

Task 3: Implementation

- Deployment of IT system
 - Develop, implement and maintain the web-based IT system (based on the design in task 2) including configuration of computer hardware and software for data feeding and retrieval and sharing. The system will be hosted in cloud servers in Information and Communication Technology Agency (ICTA) and server software will be provided by CMASP of MEWR.
 - System maintenance including program, system and app maintenance. The consultancy firm should provide system maintenance services for three (03) years from the date of completion of the consultancy.
- Develop institute specific mechanisms based on the proposed institutional setup, identify human resource requirements and provide recommendations for strengthening human resources to carryout system operational task smoothly in a long term sustainability.
- Transfer of knowledge (training and capacity building)
 - Develop training materials including, IT system user manuals, operational manuals, guidebooks, flow charts, how-to-do videos, data recording templates for data generating points
 - Conduct minimum 14 customized training sessions for the officers at data sources excluding the data sources which would be covered under MRV training consultancy (The firm should coordinate with the consultancy firm who would conduct the MRV training component of the CMASP simultaneously with this consultancy)
 - Conduct minimum 03 training sessions for potential data users including CCS on use of the data sharing system
- System implementation

- Launch the data sharing network
- Pilot data entry to the data sharing network, data retrieval and system debugging in two selected sectors in mitigation and two adaptation sectors
- Full scale implementation of the system in all the climate change mitigation and adaptation data sources and potential user points

5. DELIVERABLES

Deliverables will include:

- a. Comprehensive report on the needs assessment. It should cover data needs for wide range of stakeholders, existing status of climate change data generation, data gaps, institutional set up, legal needs, and capacity building needs
- b. Comprehensive data sharing network design covering all the data and information sources, potential data users and data retrieval needs
- c. Training needs analysis, training modules, user manuals, etc.,
- d. Establish an effective and efficient institutional setup for climate data sharing network (with required materials such as MoUs)
- e. Recommendations and facilitation to overcome legal constraints
- f. Established full scale functioning web-based climate change data sharing system

The project will be completed within 20 weeks from the date of contracting. The proposed project timeframe, milestones and payment schedule are given below.

Deliverables	Expected delivery date (weeks following signature of contract)	Payment
<u>Deliverable 1:</u> Inception report which includes not least proposed methodology, workplan, stakeholder engagement plan, team composition etc.,	2 nd Week	10%
<u>Deliverable 2:</u> 2.1. First stakeholder workshop (kickoff workshop) and draft report on needs assessment 2.2. Stakeholder consultation workshops for mitigation and adaptation to finalize the needs assessments 2.3. Final report on needs assessment with incorporated the inputs of stakeholder consultation workshops	6 th Week	20%
<u>Deliverable 3:</u> 3.1. Draft design of the data sharing network including proposed institutional setup and legal provisions 3.2. Stakeholder consultation workshops to finalize institutional setup and legal provisions 3.3. Final design of the data sharing network including proposed institutional setup and legal provisions with incorporated the inputs of stakeholder consultation workshop	10 th Week	

3.4. System analysis and design of the web-based IT system (SSADM) and infrastructure requirements based on the selected system model		
<u>Deliverable 4:</u> 4.1. Training modules and training materials (IT system user manuals, operational manuals, guidebooks, flow charts, how-to-do videos, data recording templates for data generating points) (12 th week) 4.2. Demonstration the web-based data sharing system to CCS and stakeholders (14 th week) 4.3. Pilot the system in two identified mitigation and adaptation sectors and submit a report on functional and operational performance of the system (16 th week) 4.4. Plan for first 07 training and system piloting programs	16 th Week	30%
<u>Deliverable 5:</u> 5.1. Completion of first 07 training and system piloting programs (Summary Report should be submitted) 5.2. Completion of 03 training and system piloting programs for potential data users including CCS on use of the data sharing system 5.3. Plan for second 07 training and system piloting programs	18 th Week	
<u>Deliverable 6:</u> 6.1. Completion of second 07 training and system piloting programs (Summary Report should be submitted) 6.2. Project completion Report with suggestions for further improvement 6.3. Summary report on training and system piloting programs conducted	20 th Week	40%

6. ORGANIZATION AND LOGISTICS

- The assignment shall start immediately following signing of the contract.
- The composition of the consultancy firm will include team leader, IT experts and climate change mitigation and adaptation sector experts. The team should ensure smooth communication and facilitation of the work with MEWR, relevant government ministries and agencies, stakeholders, and the World Bank.
- CMASP of MEWR (procuring entity) will facilitate to coordinate with stakeholders in government sector and provide necessary reports of other consultancies which have been already completed under CMASP and other projects. CMASP of MEWR will not provide any human resources, office space, office furniture, computer equipment, the internet and other telecommunication facilities, vehicles or transport services and any other equipment or service which would be required to provide this consultancy service.
- Consultancy firm and its consultants shall cover their travel, accommodation and per diem expenses which will be occurred for performing the consultancy themselves. Dates and venue(s) of the meetings are to be determined in consultation with the CMASP of MEWR.
- The consultancy firm should pay an expert input allowance for the professionals who participate and provide their technical inputs and comments for the improvement of the task carried out by the consultancy firm.
- The consultancy firm should bear the travelling cost of stakeholders/experts and Technical Advisory Committee members. All the training sessions and stakeholder meetings should be held in a convenient place with all the logistics arrangements.
- Deliverables must be mutually satisfactory to MEWR and the World Bank. It is advisable to submit some of sub deliverables before the given deadline to avoid unnecessary delays.

- The consultancy firm will provide biweekly updates of tasks carried out and participate in regular meetings or teleconference discussions upon request from either CCS of MEWR or the World Bank.
- The consultancy firm is required to make a request for MEWR's participation in meetings or workshops at least 14 days in advance. Schedules for conducting workshops and meetings will need to be agreed with the CCS of MEWR.

7. TIMEFRAME

The duration of the assignment will be 20 weeks upon the signature of the contract.

Estimated contract start date: (this will be added later)

Estimated contract end date: (this will be added later)

8. QUALIFICATIONS FOR THE CONSULTANCY FIRM

The consultancy firm shall at minimum demonstrate the following qualifications of the firm and team of experts to perform the required services.

Consultancy Firm

- Scope of the consultancy firm as mentioned in the business registration/certificate of incorporation
- Legal status and administrative setup
- Experience in climate change related activities/projects. Experience of undertaking similar type of consultancies will be an advantage
- Experience in handling climate change or environment related projects.
- Experience relevant to software system development and implementation
- Experience in involvement of international projects or foreign funded projects in government sector
- Financial capacity and recent audited accounting reports of last consecutive three (03) years

Team Leader

- Master's degree or higher academic qualification in environmental sciences/management, engineering, agriculture or other relevant discipline obtained from a recognized university
- Minimum fifteen (15) years of working experience in project management/coordination or equivalent caliber
- Minimum ten (10) years of working experience in climate change related activities or projects, out of which five (05) years should be directly related to climate change mitigation, vulnerability and adaptation in Sri Lanka
- Minimum four (04) years of experience in conducting training and capacity building programs, out of which two (02) years should be in climate change mitigation and/or adaptation
- Minimum five (05) years of experience in working with diverse range of stakeholders including government and private sector agencies
- Experience on climate change (mitigation or adaptation) related data management systems (computerized or manual), data gathering, data analysis and reporting in Sri Lanka will be an added qualification
- Excellent capacity to conduct trainings for vast range of stakeholders in various sectors

- Excellent capacity to communicate and carry out sectoral and plenary consultations with key decision-makers such as relevant ministries, and national and local government agencies, and key stakeholder in the private sector, NGOs, and the academia.
- Flexibility to address multiple tasks as required during the course of the assignments in the ToR
- Fluency in English and preference will be given for proficiency in local languages.

Five (05) Sectoral Experts for Climate Change Adaptation

Sectors: (i) Health; (ii) Food security (agriculture, livestock and fisheries); (iii) water and irrigation; (iv) biodiversity, coastal, and marine; and (v) urban infrastructure, human settlement, tourism and recreation

- Master's degree or equivalent qualification in environmental sciences/management, engineering, agriculture, science or other relevant discipline obtained from a recognized university
- Minimum eight (08) years of working experience in climate change related activities or projects, out of which four (04) years should be specialized in one of above mention five categories.
- Minimum four (04) years of experience in conducting training and capacity building programs, out of which two (02) years should be in climate change adaptation
- Minimum three (03) years of experience in working with diverse range of stakeholders including government and private sector agencies
- Experience in field level activity data collection, processing and analysis in climate change adaptation will be an added qualification
- Experience on climate change adaptation related data management systems (computerized or manual), data gathering, data analysis and reporting in Sri Lanka will be an added qualification
- Excellent capacity to identify training needs, knowledge gaps on activity data needs for vulnerability and adaptation
- Excellent capacity conduct trainings for vast range of stakeholders in various sectors
- Fluency in English and preference will be given for proficiency in local languages.

Four (04) Sectoral Experts for Climate Change Mitigation

Sectors: Energy and Transport, AFOLU⁸, Waste and IPPU⁹

- Master's degree or equivalent qualification in environmental sciences/management, engineering, agriculture, forestry, science or other relevant discipline obtained from a recognized university
- Minimum eight (08) years of working experience in climate change related activities or projects, out of which four (04) years should be specialized to one out of four above mentioned sectors
- Minimum four (04) years of experience in conducting training and capacity building programs, out of which two (02) years should be in climate change mitigation
- Minimum three (03) years of experience in working with diverse range of stakeholders including government and private sector agencies
- Minimum three (03) years of experience in field level activity data collection, processing and analysis in climate change mitigation

⁸ AFOLU: Agriculture, Forestry and Other Land Use

⁹ IPPU: Industrial Processes and Product Use

- Experience on climate change mitigation related data management systems (computerized or manual), data gathering, data analysis and reporting in Sri Lanka will be an added qualification
- Excellent capacity to identify training needs, knowledge gaps on activity data needs for GHG emissions and mitigation
- Excellent capacity to conduct trainings for vast range of stakeholders in various sectors
- Fluency in English and local languages. Capacity on conducting training programs in local languages will be an added qualification

IT Project Manager / Systems Analyst

- Master's degree or equal qualifications in computer science/engineering obtained from a recognized university
- Minimum (10) years of experience in IT Project management including system analysis and design
- Minimum seven (07) years of experience in gap analysis and identification of functional and technical specifications
- Minimum five (05) years of experience in working with diverse range of stakeholders including government agencies or international agencies
- Good interpersonal skills
- Fluency in English and local languages

Two (02) Software Engineers

- Bachelor's degree or equal qualifications in Computer science/engineering from a recognized university
- Minimum eight (08) years of experience in web-based software development
- Good interpersonal skills
- Fluency in English and local languages

Tester/Quality Assurance Engineer

- Bachelor's degree or equal qualifications in Computer science/engineering from a recognized university
- Minimum eight (08) years of experience in testing/quality assurance of web-based software development
- Good interpersonal skills
- Fluency in English and local languages

Database specialist/Engineer

- Bachelor's degree or equal qualifications in Computer science/engineering from a recognized university
- Minimum eight (08) years of experience in database engineering
- Good interpersonal skills
- Fluency in English and local languages

Four (04) Project Support team members

- Bachelor's degree or equal qualifications in Computer science/engineering from a recognized university with relevant subject domain qualifications
- Good interpersonal skills
- Fluency in English and local languages

9. REPORTING LANGUAGE

The reporting language is English. All the reports shall be submitted electronically on or before the given deadline. Reports will be reviewed by a Technical Evaluation Committee (TEC) comprised with a team of experts and payment for each deliverable will be made upon recommendations of the TEC. Hardcopies of the finalized reports shall be submitted once CCS accepts the report after reviewing and corrections.

10. CONFIDENTIALITY MATTERS

The consultancy firm along with its employees, consultants and experts will be subject to a confidentiality arrangement that will outline restriction of information and data gained throughout the assignment with other or third parties. All the data and information collected for this purpose should be handed over to the CCS

11. COORDINATION WITH THE MINISTRY OF ENVIRONMENT AND WILDLIFE RESOURCE (MEWR)

- The consultancy firm will require to ensure that the firm is fully guided by the MEWR's PMR Core Team and this core team is informed of the consultancy firm day-to-day operations, specifically at all meetings being held with relevant line ministries;
- The consultancy firm requires to make a request for the MEWR's participation in meetings or interviews, at least 14 days in advance.

12. PRIMARY CONTACTS AND CONTACT POINT

An officer of the CCS/MEWR has been appointed as the contact point of CMASP to maintain the sustainability of consultancy services after completion of the project period. The Project Director of the Climate Mitigation Action Support Project and Director of the Climate Change Secretariat can be contacted by email, cmasprojects1@gmail.com and climatesec@gmail.com respectively.

13. RESPONSIBILITY OF THE CONSULTANCY FIRM

Consultancy firm should strictly adhere to the given deadlines of the deliverables. Failure to submit deliverables or delaying of submitting deliverables one to five on the given deadline, a penalty of 0.5% will be charged per day from the particular payment of the deliverable and failure to submit final deliverable on or before the deadline consultancy will be terminated and payment shall not be made.

All information, data and reports obtained from the CCS and respective parties in the execution of the services of the consultancy shall be properly reviewed and analyzed by the consultancy firm. All such information, data and reports shall be treated as confidential.

The consultancy firm should have a service agreement with CCS/MEWR with necessary arrangements (i.e. a bank guarantee etc.,).

MEWR will have the intellectual property rights of all the deliverables of this consultancy service, including web-based data sharing system, training modules and training materials.