

**TERMS OF REFERENCE**  
**Individual Contractor**

**I. Assignment Information**

<b>Assignment Title:</b>	Consultant to prepare GIS guidelines, training manuals and delivering GPS/GIS training
UNDP Practice Area:	Environment
Cluster/Project:	Program/Environmental Governance Reform
Post Level:	Specialist
Contract Type:	Individual Contractor (IC)
Duty Station:	Phnom Penh, Cambodia (not home based)
Expected Place of Travel:	N/A
<b>Contract Duration:</b>	62 days

**II. Project Description**

**Background: Towards inclusive and sustainable development**

Cambodia is rapidly transiting towards a lower middle-income country. The Gross National Income (GNI) per capita is USD 1,020 (World Bank 2014) with an annual Gross Domestic Product (GDP) growth of 7.4 percent (World Bank 2013). However, Cambodia is ranked 145 out of 178 countries for the Environmental Performance Index with the overall score of 35.44 out of 100 points (Yale Center for Environmental Law and Policy, 2014). The World Bank's Country Policy Institutional Assessment (CPIA) (2014) gives the country a score of 3 out of 6 in terms of its policy and institutional capacities in attaining environmental sustainability. Like other rapidly developing countries, Cambodia thus faces challenges in terms of attaining sustainable development. In September in 2015, Cambodia endorsed the adoption of Sustainable Development Goals (SDGs) to meet these challenges. Currently, Cambodia is in a process of specifying the SDG goals in the context of the challenges pertaining to Cambodian sustainable development.

At present, Cambodia has several governmental bodies and laws to govern its natural resources and the environment. The Ministry of Environment (MoE) is one of the governmental bodies with a central mandate to ensure conservation and management of natural resources and environment. In recent years, however, the MoE has faced significant constraints in addressing the emerging environmental issues and challenges due partly to its formerly outdated organizational structure, strategic priorities and implementation plans, and partly to insufficient human and technical resources.

Moreover, there was no effective inter-ministerial governmental body or legal principles that provide overarching guidance and direction for sustainable development. Additionally, the mandates and regulations of existing ministries do not adequately correspond to current and emerging challenges. Finally, overlapping jurisdictions and mandates among line ministries over the governance of natural resources and environment have created ambiguity and confusion concerning which ministry should be responsible and for what purposes. This has resulted in uneven and inadequate enforcement and application of environmental and natural resource requirements and standards, thus constraining and undermining efforts to protect the environment and facilitate sustainable development.

In response to these challenges, the Royal Government of Cambodia (RGC) embarked upon environmental governance reforms in November in 2013. These focus on three pillars of activities: 1) MoE modernization, 2) Establishment of the National Council of Sustainable Development (NCSD), and 3) Development of an Environmental Code.

Under the modernization component of the EGR, support has been provided to the DGIS to develop integrated ecosystem mapping. The overall objective of this initiative is to enhance inter-ministerial collaboration in designating and sustainably-managing land use that recognizes both development and environmental conservation needs. Tools for land use mapping and decision-making have been developed through facilitating the following activities:

- Create a nationwide integrated ecosystem map with overlays of land tenure and land uses, forest cover, key biodiversity areas, climate change vulnerability areas, agricultural areas, and development activities (e.g., ELCs, agriculture, mining, hydro power).
- Design and establish Decision Support Systems (DSSs) to guide land use decisions.
- Enhance the capacity of government institutions to collaborate in data sharing, management and decision-making.

A national consult will be required to further support work under item three above. This work will require the consultant to undertake the following activities.

### **III. Scope of Work**

The consultant will be required to deliver two main products as part of this assignment. These include the following:

1. Guideline on Workflow and Protocol for GIS
2. GPS/GIS training curriculum

In addition to product development, the consultant will be required to deliver training based on the GPS/GIS training curriculum.

#### **1. Guideline on Workflow and Protocol for GPS/GIS**

By desk review and in consultation with relevant stakeholders, the consultant will lead the development of a GPS/GIS guideline that will be MoEs official “how to” guide for geo-spatial data collection, management and sharing. The guide will be structured according a practical workflow from the initiation of a geo-spatial project (preparing for and collecting GPS data), all the way through to the sharing of high value datasets that have been prepared according to institutionally approved data standards across workflows.

The guideline would include, although not limited to:

#### **Title page**

Table of Contents

1.0 Introduction

1.1 Purpose of guideline

1.2 Target audience

- 1.3 What is a Geographic Position System
- 1.4 What is a Geographic Information System
- 1.5 Why it's important to standardize geo-spatial data
- 1.6 Usefulness of GPS/GIS information
- 1.7 Using workflows and rules to develop geographic information (x workflows)
- 3.0 Geographic Information Workflows**
- 3.1 Data Collection (workflow 1) (general short intro)**
- 3.1.1 Sky plot (max satellite visibility and min pdop)
- 3.1.2 Site selection (GPS control points and start/closing GT station selection)
- 3.1.3 Collecting accurate GPS data (translocation gps mode verse others, other factors)
- 3.1.4 GPS receiver data (raw binary data format) standard
- 3.2 GPS Data Downloading and Processing**
- 3.2.1 Software to process downloaded GPS data
- 3.2.2 GPS software processing data format/outputs standard
- 3.2.2 Spatial reference system (SRS) standard
- 3.3 Data formats** i.e. CSV, XLS, key words, descriptions, etc
- Metadata standard, elements and meta data discovery
- Catalog formats i.e. title, description, keywords, group name, sector/sub sector etc
- Resources formats i.e. category, title, access method, url, access type, date released, notes etc
- File Naming and Directory Structure
- 3.4 Mapping products and map protocol**
- Formats
- Elements
- Symbols
- Map template standards (MoE branding - logo)
- 3.5 Sharing**
- Information dissemination protocol (open list and restricted list data)
- High value datasets
- GIS portal
- Etc

The above guiding table of contents is only an example of the detail required for the workflow and protocol guideline. The consultant would need to further populate this table of contents to clearly show the overall contents.

## **2. GPS/GIS Training Curriculum and Manuals**

Once the guideline has been finalized and approved, the consultant will be required to transform the guideline into a training curriculum with corresponding training manuals that relate to the various GPS/GIS workflow areas.

The consultant could seek inspiration from existing GPS/GIS guidelines found online. However, the assignment will require the development of Cambodian contextualized manuals that follow the workflows described in the guideline. Please see the links below for examples of guides found online.

[http://extension.umd.edu/sites/extension.umd.edu/files/docs/programs/woodland-steward/GPS\\_beginner-manual\\_Nov-2011-newURL.pdf](http://extension.umd.edu/sites/extension.umd.edu/files/docs/programs/woodland-steward/GPS_beginner-manual_Nov-2011-newURL.pdf)

<http://mapkibera.org/download/manuals/GPS%20Manual%20Final.pdf>

<http://www.who.int/healthinfo/survey/whsgpsfieldguide.pdf>

### 3. GPS/GIS Training

#### (a) Data Collection (2 days)

Deliver a 2-day training course to develop the skills of technical staff at MoE/NCSD on the use of GPS device(s) to capture, download and complete the initial processing of GPS raw data into the institutionally approved GPS data standard.

#### (b) Using ArcGIS/ArcMap (3 days)

Deliver a 3-day training course to develop the skills of technical staff at MoE/NCSD on the use of geographic information, formats, elements and symbols to create maps with a series of mapping layers. GPS data collected and processed during (a) will be used for this exercise.

#### (c) GIS Standards, management and geo-spatial information sharing (5 days)

Deliver a 5-day training course to develop the skills of technical staff at MoE/NCSD on applying institutionally approved GIS data standards, file management and how geo-spatial information must be shared.

### IV. Expected Outputs and Deliverables

This consultancy will be under the direct supervision of the Project Manager of the EGR Project with support from DGIS focal points at the Ministry of Environment.

In addition to the key deliverables detailed in the table below, the firm will be required to:

- Coordinate, communicate and cooperate with the wider team that consists of UNDP staff, project staff, international and national consultants;
- Prepare progress reports as required by UNDP and donors in accordance to their respective reporting guidelines;
- Ensure close communication, collaboration and coordination with staff from MoE/NCSD.

No.	Deliverables/Outputs	Estimated Duration to Complete	Target Due Dates	Review and Approvals Required
1	<b>Inception Report</b> to provide a detailed workplan and timeline on how the assignment will be delivered and concluded.	<b>2 days</b>	<b>August 2018</b>	EGP Project Manager and MoE DGIS
2	<b>Develop a table of contents</b> for the "GPS/GIS workflow and protocol guideline".	<b>5 days</b>	<b>September 2018</b>	
3	<b>Develop an institutional guideline</b> on geo-spatial data collection, management and sharing (Protocol and Workflow) in accordance to the agreed Table of Contents in No. (2)	<b>25 days</b>	<b>October 2018</b>	

<b>4</b>	<b>Develop training curriculum and training manuals:</b> This will be based on the finalized guideline from No. (3)	<b>20 days</b>	<b>November 2018</b>	
<b>5</b>	<b>Deliver GPS/GIS Training</b> based on the workflow and protocol training curriculum and corresponding manuals developed in No. (4).	<b>10 days</b>	<b>December 2018</b>	
<b>Total number of days:</b>		<b>62</b>		

## **V. Institutional Arrangement**

### **Roles of consultancy**

- The consultant shall have regular meetings with MoE, Consultants, Service Providers and UNDP to inform the progress of work;
- The consultant shall report on/submit the above deliverables to the MoE/NCSD Focal Points and UNDP Project team;
- The consultant needs to maintain daily communication with the UNDP Country Office when problems emerge during the consultancy, especially if they affect the scope of work;
- The consultant shall adhere to the communications guidelines and rules as prescribed by the donor, USAID.

### **Roles of the MOE/NCSD Focal Points**

- The MoE/NCSD Focal Points provide quality assurance for the services that the consultant will provide for the implementation of planning and management of day-to-day work of project activities.

### **Roles of the UNDP Country Office**

- The UNDP Programme Analyst will provide overall management oversight for day-to-day activities in coordination with the MoE/NCSD Focal Points;
- The UNDP EGR Project Manager and UNDP Environment Units Programme Analyst will serve as the main contact points for the consultant at the UNDP;
- The UNDP will provide overall quality assurance for this consultancy.
- The UNDP EGR team, UNDP Programme Analyst and MOE/NCSD Focal Points will review deliverables for release of payment.

## **VI. Duration of the Work**

62 days, between August and Dec 15<sup>th</sup> 2018

## **VII. Duty Station: Phnom Penh, Cambodia**

The duty station for this assignment is Phnom Penh. During the assignment, the consultant is expected to be based in Cambodia. Transportation costs within Phnom Penh will be covered by the consultant.

**VIII. Minimum Qualifications of the Individual Contractor**

Education:	Master's Degree in Geographical Information Systems or other related field;
Experience:	10 years' professional experience in GIS Proven work experience in preparing GIS guidelines and manuals Experience in producing training material and conduct training on GPS/GIS. Experience in providing training large groups is a strong asset; Experience working with the project with multi-stakeholder is a strong asset.
Competencies:	Good communicator Ability to build relationships Good attention to detail Effective time management skills
Language	Good command of written and spoken English and Khmer

**IX. Criteria for Evaluation of Level of Technical Compliance of Contractor**

Technical Evaluation Criteria	Obtainable Score
Master's Degree in Geographical Information Systems or other related field	10
10 years' professional experience in GIS	25
Experience in preparing GIS guidelines and manuals	25
Experience in producing training material and conduct training on GPS/GIS. Experience in providing training large groups	25
Experience working with the project with multi-stakeholder	15
<b>Total Obtainable Score:</b>	<b>100</b>

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**X. Payment Milestones**

The consultant will be paid on a lump sum basis under the following installments.

N	Outputs/Deliveries	Payment Schedule	Payment Amount
1	Upon satisfactory completion of output 1	<b>Aug 2018</b>	5
2	Upon satisfactory completion of output 2	<b>Aug 2018</b>	10
3	Upon satisfactory completion of output 3	<b>Sept 2018</b>	30
4	Upon satisfactory completion of output 4	<b>Sept 2018</b>	30
5	Upon satisfactory completion of output 5	<b>Oct 2018</b>	25

**XI. Approval**

Signature:

Name:

**Rany Pen**

Assistant Country Director -

Programme Unit

Title/Unit/Cluster:

Date: