****

Republic of Zambia

**Ministry of National Development Planning**

**Zambia Integrated Forest Landscape Project (ZIFLP)**

**TERMS OF REFERENCE**

**FOR**

**THE DEVELOPMENT OF THE CLIMATE CHANGE PORTAL**

1. **BACKGROUND OF THE PROJECT**

The Zambia Integrated Forest Landscape Project (ZIFLP) is an initiative of the Government of the Republic of Zambia with the support of the World Bank. The Project Development Objective (PDO) is" to improve landscape management and increase environmental and economic benefits for targeted rural communities in the 9 districts of Eastern Province. The project aims to provide support to rural communities in Eastern Province in order to enable them to sustainably manage the resources in their landscapes by enhancing benefits they receive from forestry, agriculture and wildlife. This is envisaged to reduce deforestation in the aforementioned communities as well as vulnerability to climate change. Overall, the ZIFLP aims at improving the livelihood of rural communities of Eastern Province while at the same time enhancing sustainable management of natural resources and reducing greenhouse gas emissions.

Activities supported under ZIFLP will advance Government’s objectives to develop and **implement low emission sustainable development strategies across sectors that will contribute** to social and economic development of the country by reducing climate change-related vulnerabilities, reducing emissions, enhancing GHG sinks and raising awareness and technical knowledge on climate change.

The Zambia Environmental Management Agency (ZEMA) is the focal Agency responsible for climate change monitoring and reporting for the Government of the Republic of Zambia (GRZ) through National Communications (NC), Biennial Update Reports (BUR) and Nationally Determined Contributions (NDC). ZEMA, under ZIFLP will develop and enhance national and regional Green House Gas (GHG) emission-related processes and systems to advance accurate, effective and efficient measuring, monitoring, reporting and verification of GHG emissions and emission reductions. To meet this objective, an Information and Communications Technologies (ICT) web-based climate portal will be developed at ZEMA to enhance multi-level and cross-sectoral data and information sharing and reporting. The Climate Change web-based portal will house a National Centralized Database that will store and backup multi-level cross-sectoral data. The web-based ICT platform will be linked to smart inspectorate kits and other national public and private databases to facilitate cross-sectoral information sharing and improve the effectiveness and efficiency of GHG data collection, analysis and reporting. This approach, along with the expanded capacity building and GHG Statutory returns will ensure GHG emission monitoring measurement and reporting is fully integrated into ZEMA’s Standard Operating Procedures (SOPs) and activities across government disciplines, leading to a more sustainable GHG Inventory Management system with near real- time data. The ICT platform provides a key opportunity to integrate disparate databases into a national system and with sufficient resource support, the hardware, software and internet connectivity, the National Centralized Database will be developed/enhanced to provide the benefits outlined above. All these processes, when fully developed will lead to a sustainable national GHG Management System and National Measurement Reporting and Verification (MRV) system that will feed into NCs, BURs and NDCs.

1. **OBJECTIVES OF THE CONSULTING ASSIGNMENT**

The main purpose of the consultancy is to design, develop and implement a user friendly and comprehensive web-based Climate Change Portal that will provide for the automation of cross-sectoral climate change related-data and information collection, analysis, reporting and management. ZEMA is formalizing institutional arrangements for long-term data sharing via a set of Memoranda of Understanding. To facilitate the operationalization of the MOUs, ZEMA intends to develop a Portal along with all necessary components. The Portal requires both a front-faced public access website and permission-level access to other data and information related to the overall system and the following components:

* National Greenhouse Gas Inventory Management System;
* Domestic Measurement, Reporting and Verification (MRV) System;
* National Social & Environmental Safeguard Information System; and
* National Project Database (public, private and CSO projects).

Data collection will be achieved via links with other existing GRZ databases and databases of ZEMA regulated facilities across all Intergovernmental Panel on Climate Chang (IPCC) reporting sectors (Agriculture, Forestry and Other Land Uses (AFOLU); Industrial Processes and Product Use (IPPU), Energy and Waste); digital tablets (e.g. Smart Inspectorate); web-based systems (e.g. Statutory Returns); and remote sensing tools and other systems. The Portal will also provide additional database space and functionality where sectors have identified related system needs. Reporting features will need to be developed for frequent queries to ease reporting burdens for cross-sectoral GRZ agencies and staff while simultaneously creating an additional incentive for data-sharing.

Specific objectives include the design, development, implementation, testing, refinement and training on the following:

1. A comprehensive system specifications document that outlines all functionalities, links to other databases with clear recommendations on development of all components, including presentation of the tradeoffs of various approaches;
2. Appropriate database technology, including hardware and software specifications and internet bandwidth to host the Climate Change Portal including the MRV systems for GHG accounting and all other components functionalities;
3. Data collection tools to address all component requirements and functionalities;
4. Geographical Information System (GIS) Map Server using Open-Source Mapping Tools to enable users on the Local Area Network (LAN) to plot locations/boundaries and generate maps using data stored in the Portal on GHG emission sources and sinks;
5. Appropriate system and database structure for storing, managing, analyzing and reporting on quantitative, qualitative, spatial and non-spatial data (e.g. Greenhouse Gas inventory (GHGi);
6. Document library system with a ZEMA and stakeholder endorsed folder hierarchy with storage, retrieval, searching, uploading/downloading, archiving, tracking and version histories, management, hyperlink sharing functionalities;
7. Mirrored document library management system at another ZEMA office (e.g. Ndola);
8. Full integration with the workflow of other Management Systems under development by ZEMA, such as the Centralised Environmental Management System (CEMS) of the Zambia Mining and Environmental Remediation and Improvement Project (ZMERIP);
9. User Manual and capacity building of Systems Administrators in the management and maintenance of the system;
10. User Manual for the Portal;
11. User Manuals for all data collection components;
12. Development and implementation of Training of Trainers manual/s and curriculum for system users, field testing, refinement and full roll-out of the system.
13. **SCOPE OF WORK**

The scope of work for the consultancy involves the design of a web-based Climate Change Portal. The works will include but not be limited to the items below and will, where technically appropriate, rely on existing infrastructure, hardware and software licenses to generate technical, financial and temporal efficiencies. The institutional arrangements for cross-sectoral data/ information sharing and reporting will be established via a set of MOUs between ZEMA and stakeholders.

**Task 1: System Specification, User Requirement Assessment, Documentation & Validation**;

* Gain familiarity of ZEMA operations through various documents such as the Environmental Management Act No. 12 of 2011 (the EMA) and its subsidiary legislation; climate change data collection, management, analysis and reporting requirements; and documents that guide the operations of the Agency, including visits to some nearby facilities and stakeholders to develop, test, refine and roll-out the system and all its components.
* Determine detailed technical and user requirements for the Climate Change Portal, Greenhouse Gas Management System, Smart Inspectorate, Statutory Returns, other data collection systems; links to other available GRZ databases; and identification of GRZ agency requirements where databases do not currently exist that the Portal could support.
* Undertake stakeholder mapping.
* Relevant data source identification within ZEMA and stakeholder systems, interrogation and integration into the Portal design, development and implementation.
* Develop data collection tools and templates required for all component requirements and functionalities and reporting at each level of reporting.
* Data analysis and reporting functionality that addresses: Internal climate change requirements such as the IPCC 2006 guidelines and Biocarbon Fund requirements; and initial single-reporting functionality for other identified stakeholders, including content, formats and frequency. Identification of requirements for establishing interface compatible with the IPCC 2006 and the updated 2019 (to be released) software.
* Detailed assessment of information flow requirements (into, within, and out of the Climate Change Portal).
* Appropriate data structures and integration of data between the Climate Change Portal and CEMs.
* Produce draft detailed design recommendations (Systems Requirement Study) for the proposed Climate Change Portal for stakeholder vetting and approval.
* Produce final detailed design recommendations for the proposed Climate Change Portal.
* Validate detailed design recommendations with ZEMA and stakeholder users.

**Task 2: Development of the Climate Change Portal**

* As a Management Information System (MIS), the Portal is intended to automate related operations at ZEMA and stakeholders for climate change data collection and management, including analysis and reporting. The portal should adhere to the latest security protocols for web and database management. Once the Systems Specification Document has been approved by ZEMA and stakeholders, the Consulting Firm will proceed to develop and deploy the Climate Change Portal including the MRV System for GHG accounting and reporting and all of its components within these TORs, which will comprise the following modules:

1. **The Database**

The consulting firm is required to engage directly with ZEMA and all identified stakeholders and institutions to understand all requirements, technical capabilities and gaps, data and information and other needs.Where parallel initiatives are occurring (e.g. Smart Zambia), engagements will be conducted to maximize the effectiveness, efficiency and sustainability of the Portal.

Using various data collection tools and processes described below, the relational database is required to store Zambia’s climate change- and NRM-related data and information based on a ZEMA- and stakeholder-endorsed folder hierarchy; manage this data and information using best-practice technical approaches, including development/implementation of a mirrored database at an offsite location; create and/or integrate with appropriate analytical tools (e.g. IPCC 2006 Software); and generate reports on quantitative, qualitative, spatial and non-spatial data (e.g. Greenhouse Gas inventory (GHGi). The data and information captured in the Portal will cut across all components (see Section iii).

The database will contain contact details and geo locations for all facilities, projects, programs and initiatives; known as “the Client”, including the ability to generate various system communications with contacts (individually or in tailored groups) to support enhanced data collection and communication. In cases where there is more than 1 site, contact details for each of the sites is captured in this database, including details on types of licenses, reports and other documentation held with ZEMA and stakeholders. A serial number for each Client is auto generated by the system. This module will be the key source of contact details for all communications with clients and is used by all departments that require to communicate with Clients. Each facility will have a Client Manager known as an Inspector and they will be associated with each Client.

1. **System requirements**

ZEMA will provide the hardware and software tools to be specified by the Consultant. The hard requirement will be based on the system architecture taking into account the best performance, high availability, disaster recovery, etc of the system. The system should have the following:

1. Provision to handle limitless users.
2. At least a database size of 2 TB to handle all records and transactions that will be captured within the system. The data model must be scalable, with expandable data storage and data integration and management mechanisms.
3. Should be scalable enough to integrate with existing and future systems at ZEMA to enhance information sharing.

The architecture should suit the best possible industry response times. Response time should be based on real - time architecture requirements using a combination of hardware and software components such as interconnectivity of the system processors, system link speed, processor speeds, memory size etc.

1. **Web app hosting requirements**

The Climate Change Portal should have the following minimum web app hosting requirements:

1. Domain purchase and registration for 3 years
2. Hosting for 3 years
3. 1TB of storage
4. 8 GB of RAM
5. 2 Static Public IP addresses
6. Unlimited Databases
7. Unlimited Transactions
8. 99.9% Server Uptime
9. Secure Shell (SSH) Access
10. SSL Wildcat Certificate
11. **Data Collection**

Data collection across GRZ IPCC reporting sectors: Agriculture, Forestry and Other Land Uses (AFOLU); Industrial Processes and Product Use (IPPU), Energy and Waste will be achieved via links with other existing GRZ and private sector databases[[1]](#footnote-1); Smart Inspectorate data collection tablets; web-based systems (e.g. Statutory Returns); Emissions Monitoring Stations, remote sensing tools and other systems such as the National Forest Monitoring System (NFMS).

* 1. **Database Links vs. Housing Data & Information in the Portal:** The Consulting Firm will undertake an analysis of advantages and disadvantages of linking the stakeholder systems to the Portal versus housing their data and information on the Portal. ZEMA and stakeholders will determine the best approach for each institution and the Portal design and development will be designed/developed accordingly.
  2. **Smart Inspectorate Tablets:** ZEMA has secured funding for 37+ Tablet Kits (tablet, case, keyboard, backup power, stylus, etc.) within the ZIFL-P that will support Inspector field data collection for all relevant climate change data points. The Consulting Firm is required to develop required systems and applications for each ZEMA technical module to capture all relevant data and information organized in a ZEMA-endorsed process (quantitative, qualitative, pictures, videos, geolocations, etc.) and link it to appropriate locations within the database to allow for all related management within the respective folder hierarchy, analytical and reporting processes. The applications will be designed/developed to accommodate various users input methods (keyboard, stylus, camera/video, other).

ZEMA will provide the respective module forms to the Consulting Firm. The Consulting Firm will provide technical specifications on the Smart Inspectorate Tablet Kits and procurement timing for component development.

* 1. **Statutory Returns:** ZEMA is developing a web-based Statutory Returns system to facilitate submission of data and information by licensed facilities that will link to the CEMS. The Climate Change Portal will expand data collection across data providers in the AFOLU and additional sectors and is required to fully integrate with the developed system, including the workflow management system and all other functionalities, for all identified data and information requirements.
  2. **Emissions Monitoring Stations:** ZEMA has procured an initial set of emissions monitoring stations with plans to add more units over time. As with the other data collection components described above, the data from these stations will need to be stored based on the required folder hierarchy and managed to address for all relational analyses and reporting requirements.

1. **Components**

The Portal will house and collect recurring data and information that will be used in the development of the components below. In all instances, full relational analysis across all components is required along with User Interfaces (UIs) that allow for effective and efficient access to each Portal component.

* National Greenhouse Gas Inventory & Management System (GHGi-MS): Using an interface that directly links to the IPCC 2006 software[[2]](#footnote-2) (2019 if released), Ex-Ante Carbon-balance Tool (EXACT) and the Agriculture and Land use (ALU) Software[[3]](#footnote-3) that will be housed on the Portal servers, the Consulting Firm will develop the GHGi-MS to address analysis and reporting requirements.
* Domestic Measurement, Reporting & Verification (MRV) System: **M**easure­ment is needed to identify emissions trends, determine where to focus GHG reduction efforts, track mitigation-related support, assess whether mitiga­tion actions planned under NDCs or otherwise are proving effective, evaluate the impact of support received, and monitor progress achieved in reducing emissions. **R**eport­ing and **V**erification are important for ensuring transpar­ency, good governance, accountability, and credibility of results, and for building confidence that resources are being utilized effectively.[[4]](#footnote-4)

While the overall Domestic MRV System will be developed as part of another project for all IPCC Sectors, the relational data analysis and reporting requirement within the Portal and the data and information that will be housed and collected on a recurring basis will address the **M**easurement and **R**eporting requirements of the prospective MRV system. These functionalities need to be developed within the Portal. The prospective Domestic MRV System will be developed based on these functionalities and housed within the Portal. While **V**erification will be conducted via processes outside the Portal, the resulting reports will be housed on the Portal.

* National Social & Environmental Safeguard Information System (SIS): The Portal will integrate with all functionality of the existing SIS. Where enhancements to the SIS are necessary, ZEMA and stakeholders will work with the Consulting Firm to identify requirements from the outset inside the specifications document.
* National Project Database (public, private and CSO projects): The Portal requires a user interface (UI) to support the National Project Database. Data and information will either be linked to or housed within the Portal. Related requirements will need to be outlined by the Consulting Firm from the outset in the specifications document.

1. **Data Analysis**

Data analysis and reporting functionality is required that addresses: Internal ZEMA requirements; IPCC 2006[[5]](#footnote-5) requirements and Biocarbon Fund and other requirements; and initial single-report functionality for other identified stakeholders, including content, formats and frequency. An IPCC 2006 software interface is required that links directly to and backs up the related software database on ZEMA servers. ZEMA and stakeholders will provide the Consulting Firm all reporting requirements.

1. **Interface and user-rights**

A web-based front-facing interface is required to allow for public access to predefined data and information by each module and component. Additionally, permission-level login functionality will allow for access, analysis, downloading, uploading, exporting and other functionalities for identified users. Data security and confidentiality protocols developed with clear roles and responsibilities for identified authorized personnel, training of all users and implemented are required to be developed by the Consulting Firm. Based on the pre-endorsed folder hierarchy, uploading of data and information into the portal is achieved in the most effective and efficient method to limit Portal management burdens. Additional database requirements include, but are not limited to, full integration with the CEMS Workflow Management System and enhancements that are Portal-specific.

Development of a windows-based **mobile application interface** is required to capture field data and transmit into the climate change portal. The application should have offline data capturing capabilities for use in remote areas, to allow data export when connectivity is established.

**Task 3: ZEMA & Stakeholder Capacity Building for Implementation Support**

The primary activities of the Consultant Firm in this regard will include:

* Documentation and Training: The Consultant Firm will develop electronic and hardcopy documentation for all aspects of the Climate Change Portal, data collection systems and provide appropriate training to relevant users, including the System Administrator/s on the management and maintenance of the Portal. All user manuals will be tested with users and refined as necessary, including screenshot images with step-by-step instructions.

1. **DELIVERABLES AND TIMING**

The Consultant Firm is required to prepare and deliver the following to ZEMA:

|  |  |  |
| --- | --- | --- |
| **Deliverable** | **Description** | **Duration** |
| Inception Report | Inception report and detailed work plan and budget covering all Information Management System products under the Climate Change portal | 3 weeks |
| Systems specifications/Requirements Manual | All key aspects of design (System structure, report formats, information flow, hosting arrangements, additional, hardware/software/ data/ connectivity and bandwidth requirements, institutional arrangements, etc.) | 2 weeks |
| User Manuals | User Manuals (management and maintenance of the system; Portal; all data collection components; Trainer’s manual/s and curriculum for system users, field testing, refinement and full roll-out of the system. | 1 month |
| Complete Climate Change Web Portal installed on ZEMA Servers | Piloting Stage: Database, software, tablet, web-based system testing, full data entry and roll-out for selected modules.  Full Roll-out Stage: deployment of system (all modules) | 3 months |
| User Acceptance Test (UAT) | Tests will be performed using business process, operational and functional requirements. This is to ensure that the system meets its objectives thoroughly throughout its implementation process. The Consultant shall provide a detailed functional specification and system design documents that will be referred for detailed UAT test design. The following criteria will be followed through the UAT:   1. All exceptions should have corrective actions and timelines for resolutions. 2. User profiles related to the test system should be documented and available. 3. The test Environment should be configured according to documented configuration guidelines with access to all required test systems, sub systems and interfaces. 4. Test strategy should be shared with all testing stakeholders in a timely manner. 5. Signed off test cases should be available with resources identified for testing. 6. Test execution schedules should be reviewed and agreed by all test execution participants prior to formal test execution.   The test phase shall be deemed complete, once the following conditions are met:   1. Entire test suit for the given test phase has been executed. 2. All test results have been recorded. 3. All defects observed have been reported accurately. 4. All unacceptable defects have been tracked through to closure. 5. All outstanding defects have agreed corrective actions and timeline between all stakeholders. | 2 months |
| Documentation and Training | System documentation (design, use, and training manuals, organizational roles, source code, site security, site maps etc.), Workshops & on-the-job training | 3 weeks |
| Capacity building of ICT personnel | In-depth back-end administrator training to facilitate transfer of knowledge (in terms of system design, code, structure, etc), which cover the following;   1. Database operations 2. Overall system architecture 3. Troubleshooting | 3 months |
| Post Roll-out reports and updates | Handholding support, proactive use surveys, customization of reporting module based on user requests, bug fixes & updates till end of assignment | 6 months |
| System support post deployment | Warrant period for system support will include services such as, fixing of errors, publishing a monthly system health check, publishing system security and access check reports, system logs, log analysis to identify potential threat and risk, system performance report, update of user and administrator’s manual, technical support, etc. | 12 months |

1. **DURATION OF ASSIGNMENT**

The Consultancy is expected to complete the work within a period of six (06) calendar months and provide backup service for another six (06) calendar months after completion of the assignment to ensure any Buggs are fixed in the system. Further the system should have a warrant of twelve (12) months.

1. **DATA, LOCAL SERVICES, PERSONNEL AND FACILITIES TO BE PROVIDED**
   1. **Data to be Provided by the Client**

ZEMA will make available to the consultants all relevant project documents/ reports, but the consultants shall be fully responsible for the interpretation and use of the material in question. ZEMA will provide the following to the Consultant Firm:

1. The EMA and its subsidiary legislation;
2. All GHG reporting requirements;
3. Statutory returns forms;
4. Servers for systems installation;
5. Ongoing feedback on user interface and deliverable developments; and,
6. Any other document required for system development.

All documents and data provided to the consultant shall be confidential and shall not be used for any other purposes or shared with a third party without any written approval from ZEMA.

* 1. **Personnel to be Provided by the Client**

ZEMA will provide an Officer to work closely with the consultant.

* 1. **Facilities to be Provided by the Client**

When carrying out the services, the consultant shall make his/her own arrangements for all office and living accommodation, transportation, supplies, surveys, investigations, testing, secretarial services, etc. in connection with the services required by these Terms of Reference.

1. **QUALIFICATION OF THE CONSULTANT FIRM**
   1. **The Firm**

The consultant firm should have prior experience in designing, developing and supporting implementation of a computerized and web-enabled Management Information Systems (MIS). The consultant firm must have considerable experience in design and operationalization of MIS in similar projects. The Consultant Firm should have the following:

* 1. A minimum of 5 years’ experience in carrying out similar assignments in designing, developing and operationalisation of a computerized and web-enabled Management Information Systems (MIS), preferably in similar conditions or in the sub-Sahara Africa Region;
  2. Should be skilled in the use of standard methodologies for developing Information System designs, and adopt such a methodology for this project;
  3. 5 years’ demonstrated experience of working with multi-lateral agencies and development bank;
  4. Must demonstrate that the core business of the firm is in proposed area of the assignment;
  5. The Consultant should be skilled in presenting complex technical and other issues to non-technical managers;
  6. Demonstrate to have undertaken similar assignments;
  7. Demonstrate managerial capacity to undertake the assignment;
  8. Must demonstrate/showcase at least 3 web development projects or similar projects on a larger scale in the last 5 years;
  9. Must demonstrate experience in delivery GIS analytical solutions, WEB portals and GIS Portals;
  10. Must demonstrate similar projects in remote data capturing using mobile platforms devices;
  11. Must have a local contact person who shall be an Information Technology expert;
  12. 5 years’ experience with relevant qualifications of the firm’s directors/or firm’s principals.
  13. **Qualification of Key Experts**

The Consultant Firm will provide a team of experts with the following skill sets who shall be adequately qualified and experienced in both Development projects and IT related Field to satisfactorily and timely deliver the expected outputs:

|  |  |  |
| --- | --- | --- |
| **Name of Position** | **Key qualification** | **Experience** |
| Team Leader | Post Graduate in IT/Computer Science and Project Management | 1. Minimum of 10 years’ experience in systems and software development which includes at least 6 years of experience in web-based MIS development of comparable projects. 2. Demonstrated experience in systems requirements specification gathering, evaluation and software implementation. 3. Demonstrate advanced skills with leading -edge programming tools complemented by proven ability to assimilate and rapidly utilize emerging technologies. |
| Web Developer | Graduate in Computer Engineering, Web Design, or related area. | 1. Programmer and architect with 5+ years’ experience success devising innovative and tailored development of internal and external secure web-based systems for large projects. 2. Experience as a web developer for systems development projects of similar nature and scale as this consultancy 3. Demonstrate ability to design and implement web-based solution systems with fundamental knowledge acquisition in system conversion management and project management aspects. 4. Experience in creative designing and art would be an added advantage. 5. Proficient with GIS Web Application Programming Interfaces (APIs) and a strong understanding of GIS and database fundamentals, strong understanding of modern web design and development practices in the context of tabular and spatial data presentation. |
| Systems analyst | B.S. degree in computer science, applied mathematics, statistics or other quantitative fields | 1. Minimum of 5 years’ experience working with robust web-based system solutions. 2. Demonstrate ability to design client-based requirements and ensuring timely delivery of the development conforming to the required standards. 3. Comfortable working with very large data sets, experience with big data frameworks preferred 4. Demonstrate knowledge in multi-threading concepts and programming. 5. Attentive to detail, accuracy, logic and an ability to communicate complex ideas to others |
| Climate Change Expert | A minimum of Bachelor of Science Degree in Climate Change or environmental related field | 1. 5 years’ post qualification work experience in Climate Change field. 2. Good understanding of GHG inventory, other Carbon accounting tools and guidelines such as IPPC Guidelines and Bio-carbon requirements will be added advantage. |
| System Quality control/testing Expert | Minimum of bachelors in Computer science/Project Management with professional certifications such as Six Sigma | 1. Minimum of 5 years’ experience with systems design, implementation, testing, training and a good knowledge of database management. 2. Must demonstrate knowledge of quality assurance terminology, methods, and tools. 3. Demonstrate ability to monitor risk-management procedures, and maintain and analyze problem logs to identify and report recurring issues to management and product development. 4. Attentive to detail, accuracy, logic and an ability to communicate complex ideas to others. |

1. **INSTITUTIONAL AND ORGANIZATION ARRANGEMENTS FOR THE ASSIGNMENT**
   1. **Reporting Arrangements**

The Firm consultant will be accountable to the Director Planning, Information and Research, at ZEMA while the day-to-day oversight on the assignment will be provided by the Principal Inspector – Climate Change who has been assigned as a contract manager. The contact details are as follows:

**Physical address:** Zambia Environmental Management Agency, Corner Church and Suez Roads, Lusaka, Zambia

**Mailing address:** Zambia Environmental Management Agency, P.O. Box 35131, Lusaka, Zambia

**Telephone:** +260-211-254023/59

**Fax:** +260-211-254164

**E-mail:** [info@zema.org.zm](mailto:info@zema.org.zm)

* 1. **Intellectual Property**

All maps, databases, systems, source codes and documents prepared under this consultancy will be the sole property of ZEMA. If there is any sensitive information, the Consulting Firm shall sign a non-disclosure agreement form with ZEMA.

1. Examples of existing Zambia databases: Zambia National Spatial Data Infrastructure led by the Surveyor General: <http://www.nsdi.mlnrep.gov.zm/>; Integrated Land Use Assessment Project II Dashboard: <http://zmb-nfms.org/iluaii/index.php?option=com_wrapper&view=wrapper&Itemid=138>; Central Statistical Office: [Zambia Data Portal](http://zambia.opendataforafrica.org/); Mining Cadastre: <http://portals.flexicadastre.com/Zambia/>; and AfriGIS site: <http://zambia-forest-change.appspot.com/>; etc. [↑](#footnote-ref-1)
2. IPCC 2006 Software: <https://www.ipcc-nggip.iges.or.jp/software/index.html> [↑](#footnote-ref-2)
3. [↑](#footnote-ref-3)
4. MRV 101: UNDERSTANDING MEASUREMENT, REPORTING, AND VERIFICATION OF CLIMATE CHANGE MITIGATION: <https://www.wri.org/publication/mrv-101-understanding-measurement-reporting-and-verification-climate-change-mitigation> [↑](#footnote-ref-4)
5. IPCC 2006 Software: <https://www.ipcc-nggip.iges.or.jp/software/index.html> [↑](#footnote-ref-5)