Georgia Resilient Agriculture, Irrigation and Land Project (GRAIL) – P175629
Loan No. 9504-GE

Terms of Reference for Monitoring and Evaluation Software Solution for Georgia Resilient
Agriculture, Irrigation and Land Project (GRAIL)

OCTOBER 2024

GEORGIA

I. PROJECT BACKGROUND

1.   The Government of Georgia jointly with the World Bank is implementing the Georgia Resilient Agriculture, Irrigation, and Land Project (GRAIL). The Project Development Objective (PDO) is to: (a) improve irrigation, and drainage services, and agricultural production in project areas, and (b) strengthen national irrigation and land management institutional capacity for climate resilient planning.

2.   Key results of the project will be measured with the following indicators:

  (a) Increase in gross value of agricultural production in project areas.

  (b) Landowners with access to improved irrigation and drainage services (disaggregated by gender).

  (c) Irrigation service delivery performance monitoring and decision support system established and operational in the central office and selected service centers of Georgian Amelioration in project areas.

  (d) Hydro-Agro Informatics Center established and operational for real-time monitoring and dissemination of water, land, agriculture, and climate information for water efficient and climate resilient planning.

  (e) Multi-purpose agricultural Land Information System (LIS) operationalized.

1. The Project consists of the following two main components: **Component 1. Resilient Irrigated Agriculture** encompasses the implementation of high-priority investments in irrigation and drainage (I&D) infrastructure, agriculture support, and institutional strengthening for national irrigation and rural development agencies. It finances civil works, goods, equipment, and related services as well as technical training for agency staff and farmers to boost the productivity of irrigated agriculture and **Component 2: Improved Land Management Capacity** encompasses activities aimed at improving national land administration and management systems and facilitating access to and use of geospatial data through development and implementation of a National Spatial Data Infrastructure (NSDI).

2. The project targets the following five short-listed schemes: (a) Tashiskari and (b) Tiriponi schemes in Shida Kartli region, (c) Zeda Arkhi scheme in Kvemo Kartli region, (d) Zemo Alazani scheme in Kakheti region, and (e) Narekvavi scheme in Mtskheta-Mtianeti region located in Eastern Georgia. The shortlist also includes a drainage scheme (Shavgele Massif in Samegrelo-Zemo Svaneti region) in Western Georgia and a part of Kvemo Samgori Scheme (G33 and G33-1).

3. The total command area of the I&D systems under consideration is **26,887 selected** based on hydrological, technical, economic, and agricultural parameters. Direct project beneficiaries of the project, defined as landowners across all short-listed schemes, equal to **36,377** with 95 percent of beneficiaries across schemes designated as smallholders (farm plots of less than 1 ha). Please see Table 1 below for the details of beneficiaries and area considered under the Project.

    Table 1. Beneficiaries and area by targeted schemes

Short-listed Scheme	Region	Municipality	Total Number of Landowners	Number of Female Landowners	Landowners with Less Than 1 ha (% out of total)	Area Considered under the Project (ha
Tashiskari	Shida Kartli	Borjomi and Khashuri	9,501	4,614	95	12,615
Tiriponi	Shida Kartli	Gori	20,124	9,488	96	5,210
Zeda Arkhi	Kvemo Kartli	Bolnisi	1,326	371	87	1,490
Zemo Alazani (sum of all secondaries)	Kakheti	Telavi and Akhmeta	4,345	1,751	92	6,110
Narekavi irrigation scheme	Mtskheta-Mtianeti	Dusheti and Mtskheta	464	222	98	655
Shavgele Drainage	Samegrelo	Lanchkhuti and Zugdidi	617	265	97	807
Total			**36,377**	**16,711**	**Total Average 95**	**26,887**

4. In addition, the project will target Zeda Ru and Kvemo Samgori Right Magistral schemes. These areas were previously part of the GILMDP project implemented by Ministry of Environmental Protection and Agriculture (MEPA) with World Bank funding, which involved the rehabilitation of main, secondary, and tertiary canals.

5. The project is implemented by the Project Implementation Unit (PIU) within the MEPA, except Subcomponent 2.2. "*Enhancement of the land administration service delivery and building digital governance infrastructure*" implemented by the National Agency for Public Registry (NAPR) within the Ministry of Justice of Georgia.

II. PROJECT MONITORING AND EVALUATION

6. To study the performance of a project and to track to what extent the project is achieving its development objectives, monitoring and evaluation (M&E) systems is used. M&E is based on a project's Results Framework that defines a specific set of indicators that captures different implementation modalities of the project and results of components and subcomponents including the rehabilitation of irrigation systems, agriculture development, and institutional building activities (Annex 1 – GRAIL Results Framework).

7. To measure status of output, and outcome indicators, qualitative and quantitative data needs to be collected on a regular basis. This ensures provision of systematic information to project stakeholders as well as project leadership on project implementation and performance.

8. Qualitative and quantitative data is envisaged to be collected on variety of aspects, including but not limited to agricultural productivity, type and quantity of yields, cropping patterns, grants

awarded, trainings conducted, new services introduced and established, beneficiaries reached, etc disaggregated by location and gender.

9. Qualitative and quantitative data collection takes place using different instruments and approaches such as administration of small scale to large scale surveys (including baseline, mid-term and end-line surveys), collecting and integrating information from external sources etc. All these helps on one hand collect routine type of information on a regular basis as well as learn and evaluate the impact of implemented activities and overall well-being of the targeted population resulted from implemented project activities.

10. The complex and multidimensional nature of the project, along with the need to manage various types of data and collect information from multiple sources and partners, necessitates the identification and use of an M&E software solution. The M&E solution will be deployed on the MEPA server.

III. SCOPE OF WORK

11. Current Terms of Reference is prepared to identify a qualified Consultant that will provide an easy-to-use M&E software solution and will support its placement at the MEPA server.

12. M&E software should ensure collection, management, storing and analysis of various types of required data and information from multiple sources, partners, and other stakeholders. In addition, it should also enable to organize and visualize data and information in an easily accessible and user-friendly manner by providing features such as dashboards, reporting and filtering, maps, tables and other functionalities to be further identified and agreed upon by the Consultant.

13. More specifically, the selected firm will be required to provide a comprehensive M&E software solution that fulfills the following tasks presented as functional and non-functional requirements below:

Functional requirements:
a. Operation and tracking
   - Operate and track project implementation based on 1) monitoring the Results Framework of the project 2) tracking mission aide memoire action tables and project activities categorizing them as accomplished, delayed, or in progress. The point 2) is a function of project management to be embedded into the actual design of the software.
   - Provide implementation ranking (from worst to best) based on the level of performance by sector, geographic location, etc. as per baseline, mid-term and final targets based on progress on each indicator.
   - Set up all types of indicators (simple, quantitative, qualitative, complex, tailored etc.)
   - Analyze results using data analysis and visualization tools
   - Provide an overview with all relevant information displayed (project summary, progress, charts, etc.).
   - Provide built-in tracking and visualization tools
   - Provide instant information with real-time data and appropriate graphics
   - Provide advanced interactive map, Activities, Indicators and Forms Dashboards
b. Data collection
   - Easily create simple or complex forms for data collection using predefined fields (text, lists, dates, numbers, scores, GPS coordinates, etc.).

- Design forms
- Provide both offline and online electronic data collection options, allowing different users to access and complete the standardized form(s) to be collated and submitted to a central server Provide mobile data collection
- Provide data collection through milestones and activity tracking
- Built-in database for registration, integration, and storage of data from different sources, online and offline including baseline, mid-term and end-line data collected through surveys
- Easy-to-use database that allows manual registration of the data, as well as automatic filling up of information through the integration of data from other databases and sources outside the project in Excel, Access, SPSS other formats
- Connection and transfer data from outside project sources to fill
- Integration of filled-in data in the created form into the built-in database

c. Data analysis
- Provide data analysis in qualitative and quantitative forms at activity, output, outcome, and impact levels defined as per the Results Framework
- Provide automatic calculations on e.g. # of beneficiaries (unique and overall), # of training, # of grants issued, # of grants receipts, # of training participants

d. Reporting
- Create custom reports available for download and sharing in various formats
- Provide summary reports on progress at activity output, outcome, and impact levels with a timeline
- Provide interactive interface and reporting by different features, such as year, geography, type of activity/component, type of beneficiary etc.
- Provide dashboards for visualizing the required criteria and indicators
- Geolocation of beneficiaries and achievements

e. A knowledge base of various types of resources
- Share full-resolution images and videos
- Organize any documents or files into Folders
- Provide Document repository
- Store a multiple number of projects

f. Communication and management of the data
- Shared Calendar
- Mailbox
- Alerts
- Bilingual
- Timeline with Milestones
- Documents Repository
- Geographic Data Visualization
- Information Sharing Tools
- Platform and Users Administration Tools
- User registration and login capabilities that can be configured for users with varying levels of access, including restrictions, editing functions, or full administrative functions.

Non-functional requirements
  g. Security
      -   Provide data security
      -   Provide flexibility to control data with recovery, traceability settings, and user rights management
      -   Set User profiles and permissions
      -   Audit Trail for enhanced traceability and transparency
      -   Data deletion Recovery
  h. The M&E software must possess the following characteristics
      -   User-Friendly Interface - Intuitive design that facilitates easy navigation and use by non-technical users.
      -   Scalability - Ability to scale up to accommodate increasing data volume and additional features
      -   Security - Robust security measures to protect sensitive data
      -   Compatibility of the M&E software with existing relevant MEPA application software for required data and information exchange through API
      -   Customizability - Flexible to adapt to specific project needs and evolving requirements.

IV. TASKS AND DELIVERABLES

14. The Consultant is expected to conduct a preliminary needs assessment to identify and learn specific M&E needs, and system functionalities, including the detailed system requirements, software requirements; Timelines, and step-by-step training plan for the identified users and administrators of the M&E system to effectively establish the proposed M&E software solution; maintenance and development plan throughout the project period;

15. Specifically, the Consultant is expected to deliver the following:

- Inception Report
- Technical documents that include a list of all the identified and agreed M&E needs/goals, and system capabilities, including
  a. Stakeholders Requirements Specifications (StRS)
  b. System Requirements Specifications (SyRS),
  c. Software Requirements Specifications (SRS);
- M&E software, including source code and all build and deployment artifacts
- User manuals, handover, and other related technical documentation
- Training for M&E application users and administrators
- Troubleshooting and software issues support during the contract time
- One-year warranty.

V. REQUIRED QUALIFICATIONS, PROFESSIONAL EXPERIENCE AND SELECTION CRITERIA

16. The Consultant shall have the capacity and relevant experience in similar projects to carry out and provide the described tasks and deliverables. Specifically, the Consultant must have:
  -   In operation for an uninterrupted period of at least ten (10) years before submission of their proposal/interest;

- Minimum seven (7) years of experience and proficiency in providing IT services;
- Proven track record in developing and implementing web-based M&E software solutions
- Experience with projects of similar scope and complexity, preferably in the fields of agriculture, environmental protection and irrigation sectors.

17. The consultant shall provide at least three (4) key specialists with the following formal education, proven knowledge and experience listed below. The Consultant team should have proficiency in English both spoken and written.

<u>Business Technology Analyst (also titled as Systems Analyst or System Architect) – Team Leader</u>

- University degree in Information Systems, Software Engineering or Computer Science;
- Minimum10 years of experience in designing information and/or monitoring and evaluation systems;
- Design of minimum one successfully implemented monitoring and evaluation system;
- Business process analysis and re-engineering, including business process mapping (BPMN) tools (Activiti, Bizagi, jBPM, Camunda or similar);
- Systems integration/interoperability and related technologies (JBoss ESB, Mule, or similar);
- UML and related tools;
- Relational and object-relational DBMS (MS SQL Server, Oracle, PostgreSQL or MySQL).
- Workflow and business rule management systems/engines (Activiti, jBPM, Drools or similar);
- Business intelligence and reporting tools (Jasper reports, Pentaho, BIRT or similar).

<u>Software/Solution Architect</u>

- University degree in Information Systems, Software Engineering or Computer Science;
- Minimum 10 years of experience in designing and developing information and/or monitoring systems, also in designing and administering and/or managing relevant databases;
- Software architecture design tools (Sparx System Enterprise Architect, Rational Software Architect or similar);
- Relational, object-relational and geospatial DBMS (MS SQL Server, Oracle, PostgreSQL or MySQL);
- Object-oriented programming languages (C++, Java, Python, or similar);
- O/R mapping (Entity Framework, Hibernate, EJB or similar);
- UML and related tools;
- Workflow and business rule management systems/engines (Activiti, jBPM, Drools or similar);
- Business intelligence and reporting tools (Jasper reports, Pentaho, BIRT or similar);
- Systems integration/interoperability and related technologies (JBoss ESB, Mule, or similar).

<u>Database specialist</u>

- University degree in Information Systems, Software Engineering or Computer Science;
- Minimum 5 years of experience in designing and databases;
- Database modelling tools;
- Relational and object-relational DBMS (MS SQL Server, Oracle, PostgreSQL or MySQL);
- Database programming languages (PL/SQL, Transact-SQL, PL/PgSQL, or similar);
- UML, and related tools;

- ETL and related tools

Full-stack developer

- University degree in Information Systems, Software Engineering or Computer Science or relevant field;
- Minimum 5 years of experience in developing web-based applications;
- Proven knowledge and experience in HTML, CSS, JavaScript, or similar;
- Proven knowledge and experience in React, Angular, and jQuery
- Relational, object-relational DBMS (MS SQL Server, Oracle, PostgreSQL or MySQL);
- Database programming languages (PL/SQL, Transact-SQL, PL/PgSQL, or similar);
- Version control (GitHub, GitLab, or Bitbucket);

18. On the next stage (after the EOI evaluation), the selected Consultant is expected to submit a technical proposal that includes:
 - Description of the proposed software solution including technical specifications and functionalities
 - Compatibly of the proposed M&E software with existing relevant systems of MEPA
 - Timeline and milestones for the project implementation
 - Outline of training programs and support services including warranty and maintenance plan

19. Evaluation Criteria for proposals:
Proposals will be evaluated based on the following criteria:
  a. Technical Capability   40%
          - Quality and comprehensiveness of the technical proposal (15%)
          - Technical expertise and qualifications of the key experts (25%)
  b. Experience and Expertise   30%
          - Consultant's track record and experience with similar projects
  c. Cost-effectiveness   30%
          - Efficiency and transparency of the proposed budget.

20. **Expected timeline:**

   a. **Development and implementation: 6 months**
   b. **Backstopping support and maintenance – throughout the implementation of a project**

ANNEXES

Annex 1 - GRAIL
Results Framework.c