TROCAIRE
TOGETHER FOR A JUST WORLD

DUHAMIC-ADRI

Terms of Reference (ToR) for conducting a feasibility study and production of a detailed Bill of Quantities (BoQ) for the rehabilitation of irrigation infrastructure in Duwani marshland, Ndola Sector, Gisagara District, Southern Province

Program name: Climate Just community (CJC)

Donor: TROCAIRE

May 2025

1. BACKGROUND

The Scottish Government (SG) was the first Government globally to commit funds specifically to climate justice, launching the Climate Justice Fund (CJF) in 2012, and ensuring that this fund not only supports communities in partner developing countries to become more resilient to climate change but does so in way that acknowledges, and tackles embedded inequalities.

Following an independent evaluation in 2021 of the Climate Justice Fund's work, drawing on experiences of communities in Malawi, Zambia and Rwanda who have implemented or are supported by the Fund and stakeholder feedback on the Climate Justice Fund, the Scottish Government set a future approach for action on climate justice and prioritized targeting the funding to the people most vulnerable to climate change in the communities particularly women and youth and ensuring their participation is at the centre of the Fund's work which will be achieved through delivering against distinct pillars of climate justice. In March 2022, in line with this revised approach, the Scottish Government relaunched the CJF and a Supplier Event to provide details of this opportunity and answer questions on the programme specification, procurement and tendering process was held. In May 2022, the Scottish Government advertised a competitive, open tender procedure for the Provision of Climate Just Communities in Malawi, Zambia and Rwanda but the invitation to tender was published on 7 September 2022.

In response to this invitation to tender, a consortium made of Trõcaire, the Scottish Catholic International Aid Fund (SCIAF) and Christian Blind Mission (CBM) UK was constituted, with local partners including Rwanda Climate Change and Development Network (RCCDN), its member's organizations (DUHAMIC-ADRI, DUTERIMBERE NGO) as well as the National Union of Disabilities Organisation Rwanda (NUDOR). This Consortium submitted a tender on 18 November 2022 and on 11 July 2023, the Scottish Government awarded the CJC contract to the Consortium. The contract entered into force on 1 August 2023 and will run until March 2025, with the option to extend up until March 2026.

The purpose of the 3-year Scottish Government funded CJC Programme is to implement effective climate justice interventions focusing on community voice and needs, prioritizing marginalized communities, women, and people with disabilities, and considering the Scottish Government's pillars of climate justice. The CJC Programme will be "of" and "for" the community: communities will be engaged in a participatory, culturally sensitive manner to identify climate-change-related needs (in their own terms) then design interventions (owned by them) to respond.

The Programme will be implemented across 3 Districts (Gisagara, Karongi & Ngororero) and jointly in consortium with Trocaire (Principle Sub-Contractor) and local delivery partners including Rwanda Climate Change and Development Network (RCCDN), its member's Organizations (DUHAMIC-ADRI, DUTERIMBERE NGO) as well as the National Union of Disabilities Organisation Rwanda (NUDOR)

2. RATIONALE

The **Duwani Marshland**, located in **Ndola Sector, Gisagara District** in Rwanda's Southern Province, spans approximately **100 hectares** and has previously undergone development for agricultural purposes, including the establishment of a **gravity-fed irrigation system supported by solar-powered infrastructure.** Over the past four years, however, the irrigation infrastructure has **deteriorated and is no longer functional,** significantly hampering agricultural productivity and resilience among smallholder farmers relying on the marshland.
In alignment with the CJC principles and objectives, there is a critical need to **conduct a feasibility study and prepare a detailed BoQ** for the rehabilitation of the Duwani Marshland's irrigation infrastructure. This will enable the revival of sustainable and climate-resilient agricultural production for the benefit of the local community.

According to the simple survey jointly conducted by DUHAMIC-ADRI, district officials and community/users of the marshland, deterioration of the irrigation infrastructure is attributed to a combination of technical, environmental, socio-economic, and institutional factors. Here are the main causes contributing to the current non-functional state of the irrigation system:

- **Poor Operation and Maintenance (O&M):** Gravity-fed and solar-powered systems require routine cleaning, inspection, and servicing, especially for pipes, canals, solar panels, and control structures. Local farmers or cooperatives may not have received adequate training to manage and maintain the infrastructure properly.
- **Lack of clear management structure**: Absence of a functional water user association (WUA) or weak institutional ownership of the system. No financial mechanism or local budget allocated for upkeep and repair.
- **Environmental and Climate-Related Factors:** The marshland experienced sediment buildup in canals or intake structures due to erosion and flooding.
- **Infrastructure design and construction issues:** The original design may not have accounted for climate variability, soil type, or water flow patterns, leading to early wear and tears. Use of poor-quality materials or construction errors may have shortened the system's lifespan.
- **Vandalism or Theft:** Irrigation infrastructures are often targeted for theft or vandalism, especially in isolated rural areas. Community members may have altered parts of the system without understanding the consequences.
- **Socio-economic Dynamics:** Farmers might not have been actively involved in the planning, leading to low ownership and responsibility. If land used around the marshland changed (e.g., migration, land fragmentation), the infrastructure may have been neglected.

Why is this matter for feasibility study?

Understanding these root causes is essential for designing a sustainable and climate-resilient rehabilitation plan that:

- Addresses technical flaws.
- Integrates local capacity-building.
- Ensure community ownership.
- Prepares for climate shocks.
- Aligns with CJC principles (climate justice, equity, participation, and sustainability).

3. STUDY OBJECTIVE

To conduct a comprehensive feasibility study and needs assessment to determine the viability and requirements for rehabilitating the existing, non-functional irrigation infrastructure in the Duwani Marshland, and to produce a detailed Bill of Quantities (BoQ) to inform the design, budgeting, and implementation of the rehabilitation work.

Specific Objectives:

A. **To assess the current state of the irrigation infrastructure:**
   - Evaluate the physical condition of the gravity-fed irrigation system, solar energy components, and distribution networks.
   - Identify the root causes of system failure and infrastructure degradation.
   - Determine which components can be rehabilitated, which need replacement, and which can be upgraded for climate resilience.
   - Provide DUHAMIC-ADRI and stakeholders with the necessary information regarding the feasibility (about the success or potential failure if implemented) to inform the decision

B. **To analyze the technical, environmental and hydrological feasibility of rehabilitation:**
   - Conduct detailed topographic, hydrological, and soil studies to determine current conditions and suitability for irrigation.
   - Examine water availability, flow dynamics, drainage, and climate-related risks.

C. **To evaluate the socio-economic context and community needs:**
   - Engage local farmers, cooperatives, and stakeholders (including women, youth, and people with disabilities) to identify irrigation-related needs and expectations.
   - Analyze the potential socio-economic benefits of a fully functioning irrigation system for the community.
   - Explore opportunities to enhance community ownership, operation, and maintenance of the infrastructure.

D. **To propose technically sound and cost-effective rehabilitation options:**
   - Recommend viable technological solutions (e.g., gravity systems, solar pumping alternatives, hybrid systems).
   - Align recommendations with local capacities, environmental standards, and long-term sustainability.

E. **To produce a detailed and itemized Bill of Quantities (BoQ):**
   - Develop a comprehensive BoQ capturing materials, labor, equipment, and all other costs required for rehabilitation.
   - Ensure the BoQ meets national engineering and procurement standards and is suitable for donor and implementing partner review.

F. **To provide guidance on institutional arrangements for future management:**
   - Recommend community-based or cooperative models for the operation and maintenance of the irrigation system.
   - Suggest training and capacity-building needs for sustainable infrastructure management.

4. SCOPE OF WORK

The consulting firm or expert team will undertake a comprehensive feasibility study and technical assessment to inform the rehabilitation of the Duwani Marshland irrigation infrastructure in Ndola Sector, Gisagara District. The assignment will be guided by the Climate Just Communities (CJC) programme principles, emphasizing community inclusion, climate resilience, and sustainability. The scope of work shall include, but not be limited to, the following key tasks:

A. Preliminary assessment and stakeholder engagement

- Conduct an initial desk review of available documents, maps, and reports related to the Duwani Marshland and previous irrigation interventions.
- Engage relevant stakeholders, including local government authorities, community members (especially women, youth, and persons with disabilities), cooperatives, and CJC implementing partners.
- Organize a participatory inception meeting to validate the approach and gather initial insights

B. Site investigation and technical assessment

- Carry out detailed field surveys to assess:
   - Topography and land suitability for irrigated agriculture.
   - Soil characteristics and water retention capacity.
   - Hydrological features, including water sources, flow rates, and seasonal variations.
   - Condition and capacity of existing irrigation canals, inlets/outlets, solar components, and storage structures.

- Document existing infrastructure issues, including physical damage, design limitations, and operational failures.

C. Environmental and socio-economic analysis

- Identify and analyze potential environmental impacts of rehabilitation works, including biodiversity concerns, erosion risks, and water use conflicts.
- Conduct consultations to gather community perspectives on irrigation needs, climate challenges, and equity concerns.
- Assess the socio-economic context, focusing on how improved irrigation can enhance food security, income generation, and resilience for vulnerable groups.

D. Design of rehabilitation options

- Develop and evaluate multiple technical solutions for restoring or upgrading the irrigation infrastructure. These may include enhanced gravity systems, solar-powered pumping, or hybrid systems.
- Prepare schematic layout diagrams and conceptual designs based on engineering best practices.
- Justify recommended options using a comparative analysis of cost, sustainability, technical feasibility, and community preferences.

E. Preparation of detailed bill of quantities (BoQ)

- Quantify and cost all materials, labor, and equipment required for the rehabilitation.
- Provide clear specifications and assumptions used in cost estimation.
- Ensure the BoQ aligns with national, organization and donor procurement standards for transparency and accountability.

F. Development of an implementation plan and budget

- Create an implementation strategy, detailing:
  - Construction timelines
  - Key milestones
  - Required human and material resources
  - Community involvement strategies
- Estimate total project costs, including contingencies and supervision.
- Propose institutional arrangements for infrastructure operation, maintenance, and management.

G. Reporting

- Compile and submit the findings report, including:
  - Inception Report
  - Feasibility Study Report comprising of Infrastructure condition assessment, environmental and Socio-economic Analysis, design and rehabilitation proposals, detailed BoQ and final implementation plan and budget.
- Prepare and deliver a PowerPoint presentation summarizing the key findings, recommendations, and implementation roadmap to key stakeholders.

5.DELIVERABLES

The consulting firm or expert team will be expected to deliver the following outputs, aligned with the objectives of the assignment and in compliance with the Climate Just Communities (CJC) program principles:

A. Inception Report

- A detailed report outlining the consultant's understanding of the assignment.
- Presentation of the proposed methodology and data collection tools.
- Work plan with a timeline and clearly defined roles/responsibilities.
- Risk analysis and mitigation strategies.
- Submitted within 3 days of contract signing and subject to approval by the commissioning organization.

B. Feasibility study reports

- Alignment with national irrigation strategies and climate resilience objectives.
- Feasibility Study Report comprising of Infrastructure condition assessment, environmental and Socio-economic analysis, design and rehabilitation proposals, detailed BoQ and final implementation plan and budget.
- Prepare and deliver a PowerPoint presentation summarizing the key findings, recommendations, and implementation roadmap to key stakeholders.
- Final Report integrating all feedback and providing a consolidated document with all findings, analysis and recommendations.

NOTE: The successful bidder will be requested by DUHAMIC-ADRI to present the study findings to DUHAMIC-ADRI and its partners at various stages., and they shall be responsible for addressing all relevant comments and feedback provided during these presentations.

6. DURATION OF THE ASSIGNMENT

The consultancy is expected to commence immediately upon contract signing. This assignment is expected to take a period not more than 15 days up on signing of the contract.

7. QUALIFICATION OF THE FIRM/EXPERT TEAM AND PROFILES OF CONSULTING FIRM'S KEY STAFF REQUIRED

7.1. Qualification of the firm

The bidding company should possess the following minimum qualification:

- Be recognized consultancy firm operating in Rwanda.
- Be known in irrigation consultancies for last 3 years (with proof documents).
- Have conducted successfully four (4) similar studies (with proof documents).
- Being in the sector of marshland reclamation and related feasibility studies for more than three years.
- Strong GIS skills for mapping and spatial analysis.

7.2. Profiles of consulting firm's key staff

7.2.1. Team Leader

Qualification and experience: The Team leader must have a master's degree in the field of Rural Engineering (Irrigation), soil and water conservation engineering, Civil Engineering or Water Resources Engineering. He/she must have at least seven (7) years of drainage and irrigation experience with 3 references (Team leader of marshland drainage and irrigation scheme design studies) on similar assignments (in terms of complexity) in African countries (preferably in the sub-region).

Responsibilities of Team Leader shall include but not limited to:

i. Coordinating the work of the Consultant and for ensuring that the agreed implementation program adhered to.
ii. He/she shall be the main contact and focal point between the members of his team and the Client.
iii. Shall be capable of formulating an overall design of the marshland drainage-irrigation system and all related technical aspects.
iv. Shall have strong managerial capacity and interpersonal relations.

7.2.2. Hydrologist.

The person recruited for this position shall have at least a bachelor's degree in Hydrology, water resources engineering or equivalent with five (5) years of extensive experience in conducting hydrological studies and three (3) references in similar studies. The Hydrologist will be responsible for the hydrological analysis. Must also have practical experience related to rainfall-runoff and numerical modelling in data scarce areas with knowledge of GIS and Earth observation techniques

and software. Must demonstrate field experience in hydrological modelling, collection of all relevant data concerning the rainfall and river discharge in the study area; assess values of the design flood events, peak value and flood volume, assess the effect of irrigation structures on floods (peak, volume, reservoir flood routing, river flood routing).

7.2.3. Civil Engineer

He/ She Shall have a master's degree in civil engineering, Hydraulic Engineering, Water Resources Engineering, or a related field is highly desirable, especially for projects involving complex hydraulic structures and environmental considerations with at least 7 years of professional experience in civil engineering, with a focus on hydraulic structures, water management, or similar projects.

7.2.4. Mechanical Engineer

Shall have a master's degree in mechanical engineering, Hydraulic Engineering, or a related field is advantageous, particularly for complex projects involving mechanical systems and fluid dynamics with at least 5 years of professional experience in mechanical engineering, with a focus on projects related to water infrastructure, hydraulics, or mechanical systems.

7.2.5. Geotechnical engineer

The person recruited for this position shall have least bachelor's degree in geotechnical, physical land resources or other related fields with five (5) years of extensive experience in engineering project (3) references in similar studies. The Geotechnical engineer shall prepare the program and detailed specifications of geotechnical investigations for the dam and appurtenant foundations and construction materials for embankment and aggregate for structures. The expert will work closely with the hydraulic engineer, especially in seepage and stability analysis of the embankment, abutment and reservoir slopes.

7.2.6. Topographic surveyor

S/He shall have a bachelor's degree in surveying studies with at least five years of relevant experience on field and three (3) references in similar studies. He will be responsible for surveying works and drawings.

7.2.7. Environmental Specialist (1)

He/she must have a postgraduate qualification in Environmental Studies or a related field, with a minimum of five (5) years of general experience and at least three (3) years of proven, certificate-backed work experience in Environmental Assessments, and must be registered under RAPEP. He/she will lead and manage the ESIA process, including scoping, baseline data collection, impact prediction, stakeholder engagement, and reporting

7.2.8. Social development specialist (1)

He/she must have a postgraduate qualification in sociology, development studies, or a related field, with a minimum of five (5) years of general experience and at least three (3) years of proven, certificate-backed work experience in social development. The Specialist will support the

Environmental and Social Impact Assessment (ESIA) by identifying, assessing, and managing the social impacts of the proposed project in compliance with national regulations and international standards.

7.2.9. Biodiversity specialist (1)

He/she must have at least a postgraduate degree in biodiversity, ecology, or a related field, with a minimum of five (5) years of general experience and at least three (3) years of proven, certificate-backed experience in biodiversity conservation. He/she will lead the assessment of potential impacts of the proposed project on biodiversity, including flora, fauna, habitats, and ecosystems, and contribute to the ESIA in compliance with national environmental laws and international best practices

7.2.10. Other Professional Staff

It is expected that the profiles of the Engineering Surveyors (topographic survey), AutoCAD specialists and other relevant staff will be defined by the Consultant. They will, however, be expected to hold a basic qualification in their areas of specialization and at least 4 years of relevant experience.

8. EVALUATION CRITERIA

The following are the criteria that shall be observed during evaluation:

Criteria	Criteria description	Weight/100
Company profile	**Proven experience in similar assignments with proof:** ● Provide a comprehensive company profile including the full company name, physical address, and contact information. The profile should offer a detailed description of the company's experience specifically in marshland rehabilitation, conducting feasibility studies, and other related assignments. The submission must include a summarized list of similar assignments previously executed, specifying the name of the client/organization, the nature and scope of the work, the contract value, and the period of execution. ● Provide at least 4 similar references (certificates of good completion and their related contracts for work performed under consultancy that can verify the applicant's ability to deliver quality work efficiently and in an organized fashion	30
Methodology	Soundness of the proposed approach and methodology: ● Proposes a reasonable, detailed, clear work plan (15 calendar days) and methodology describing how the	15

Criteria	Criteria description	Weight/100
	consultancy firm will complete the needed work related to this study. • The consultancy firm should develop a clear methodology that demonstrates that they understand the assignment and illustrates very well how the assignment is going to be executed. • Demonstrates good report writing and communication skills as well as ability to compose clear, compelling written documents in English.	
Team Composition	Qualification and experience (CVs) of the proposed team personnel as well as their signed availability commitment note to perform the assigned tasks	25
Total technical evaluation marks		**70**
Financial Proposal	Reasonableness and allowability of proposed cost relative to the above-mentioned qualification requirements and level of assignment.	30
TOTAL		**100**

9. ORGANIZATION AND MANAGEMENT

(1) The study will be under the overall supervision and control of DUHAMIC-ADR in partnership with TROCAIRE and other project stakeholders such as District and RAB. The study implementing agency will be DUHAMIC-ADRI. DUHAMIC-ADRI will be responsible for liaison between the project stakeholders and the consultancy firm for the day-to-day supervision of the study and the provision of any assistance to the consultancy firm as required by the contract.

(2) The Consultancy firm shall appoint a team leader who will be responsible for liaison with the Client and for the organization and management of the study.

10. RESPONSIBILITY OF THE CLIENT

The client will:
(i)Ensure free access to the site and locations connected with the execution of the study.
(ii)Provide the Consultant with any assistance as the Consultant may be entitled to in accordance with the Terms of Reference.
(iii)Provide the Consultant with all documents, information reports, data, any existing photographs and other information pertaining to the study that are available and not withhold any information pertinent to the Consultants work.
(iv)Facilitate organization of planned workshops for presentation of comprehensive report compiling all findings, designs, BoQ, and recommendations.

11. RESPONSIBILITY OF THE CONSULTANT

(1) The Consultant shall carry out the Study in a professional manner in keeping with internationally accepted standards, using qualified and appropriate staff. They shall endeavour to implement the assignment with diligence and within the time agreed upon in the contract. In this regard the Consultant shall provide to the DUHAMIC-ADRI the full curriculum vitae of each of the members of the team it proposes for the Study.

(2) The Consultant shall be responsible for providing their staff all payments including salaries, travel and accommodation cost as they may be required. The Consultants shall replace any staff member who is unable to carry out the work or is considered by the Client to be unsuitable. As per the rules in keeping with internationally accepted standards for assignment of this nature, the replacement of any of the Consultants' staff should be by a person of equal competence at the same cost and subject to the approval of the Client.

(3) The Consultant shall be responsible for its office costs, the cost of housing and other services for his staff whilst in Rwanda and procurement and transport of all office, technical equipment, machinery and hire of vehicles needed for the study.

(4) The Consultant shall be responsible for arranging and meeting the cost of all but not limited to supporting services for assessments, topography survey, soil surveying, geotechnical investigation, laboratory analysis, and for the printing of all reports (in English).

(5) The consultant shall work together with relevant professional and technicians from GISAGARA district and RAB (Gisagara station) and other institutions with experience and expertise in marshland development.

(6) The consultant will work with client until the approval for design and drawings for DUWANI Marshland reclamation and the permit for marshland development is given by Rwanda Agriculture Board (RAB).

(7) The consultant will prepare and submit an environmental and social impact assessment report in line with the General Guidelines and Procedures established by the Rwanda Environment Management Authority. The report will include an environmental and social impact assessment certification, along with the conditions of approval issued by Rwanda Development Board (RDB).

12. GENERAL CONDITIONS

12.2. The Consultants shall commence work not later than (3) days after the date of signature of the contract, and shall, as promptly as practical, notify the Client in writing of the date on which field operations are to commence.

12.3. The parties shall agree to be bound by the General and Special Conditions of Contract for Consultancy Services by the Public Procurement Directorate, Ministry of Finance.

13. SITE VISIT

A mandatory site visit will be organized and conducted on 4th June 2025 in Gisagara District, Ndola Sector, DUWANI Marshland and its catchment area at 11:00 AM. Each bidding company shall be represented on the visit by at least one person who will participate in the proposed work. **It is also advisable to contact DUHAMIC-ADRI staff on 0788892124 (Project field officer) for any facilitation and guidance during the field visit.**

Instructions to Consultants, Data Sheet

Technical proposal Reference	The format of the Technical Proposal to be submitted is: Full Technical Proposal 1. Letter of submission of the Technical and financial proposals (separately) 2. A valid Certificate of Good Standing issued by RDB 3. A valid copy of the certificate of non-levy towards RSSB 4. A valid certificate of no debt to the RRA 5. Proof of using EBM (An invoice submitted in the past or EBM proof certificate) 6. Site visit certificate signed and stamped (To be provided by DUHAMIC-ADRI) 7. A bid security equivalent to 413,700 Rwf (Failure to submit it will result in automatic disqualification). 8. Work experience demonstrated 4 certificates of good completion with their related contracts. 9. Description of the methodology and the proposed work plan to accomplish the mission. 10. Team composition and responsibilities of its members (Curriculum Vitae (CV) for the proposed key personnel, a Copy of the notified diploma's proposed key personnel along with their signed commitment of availability in the assignment) 11. The currency to be used in financial proposal and payment is Rwandan Franc (Rwf). 12. The language for official written communications and production of consultancy reports is English.

14. Proposed timeline for this consultancy

DUHAMIC-ADRI expects to have the final report no later than 15 calendar days upon the signing of the contract.
The following timeline was proposed when any force majeure does not happen to interrupt this consultancy work.

15. Submission Modalities for Bid Offers

1. Submission Requirements:

- The deadline for submission of bids of technical and financial proposals for development of DUWANI Marshland is June 9, 2025, at DUHAMIC-ADRI head office located in Kicukiro District, Niboye, Sector at 11:00 AM.
- Bidders are required to submit their offers in one main sealed envelope. This main envelope must contain two separate sealed envelopes:
    - Envelope A: Technical Proposal
    - Envelope B: Financial Proposal
    - Envelopes must be properly sealed and clearly labeled with the title of the tender and the name of the bidding company.

2. **Opening Proposals:**

Financial Proposal Opening:

- The financial proposals of the shortlisted bidders will be opened in a separate public session. The date, time, and location of the financial proposal opening will be communicated to the shortlisted bidders.
- Only bidders whose technical proposals meet the required standards and are shortlisted will be invited to the opening of the financial proposals (Envelope B). Bidders not shortlisted in the technical evaluation (less than 70% mark) will not have their financial proposals opened, and their financial proposals will be returned unopened.

Note: Opening of Proposal: Only financial proposal opening will be done

3. **Confidentiality:**

- All information provided by bidders will be treated as confidential. The procurement process will be conducted in a transparent manner to ensure fairness and competitiveness.

16. Final disposition and disclaimer

1.DUHAMIC-ADRI reserves right for not accept any proposal with the submitted technical and financial proposals that do not meet the client expectations.

2.All interested bidders are encouraged to carry out a mandatory site visit before putting together their technical and financial proposals.

3.Interested bidders will comply with travel regulations and procedures for request of movement clearance for a mandatory field visit.

4.DUHAMIC-ADRI has right to negotiate with all bidders with good and acceptable technical proposal to size the cost for this consultancy in the limit of available budget.

5.All direct and indirect costs engaged by bidders to prepare and submit its proposal until presentation and acceptance of inception report will be in fully responsibility of the bidder. DUHAMIC-ADRI will not be held responsible for any payment and compensation of any charges associated with the consultant rather than consultancy fees to be agreed on with the winning bidder after reception and acceptance of inception report.

Done at Kigali on May 30, 2025

Prepared by:	**Reviewed:**	**Approved by:**
MINANI Ernest	HABIMANA Theogene	MUHIGIRWA Benjamin
Project coordinator	M&E Specialist	Executive Secretary

DUHAMIC ADRI B.P .1080 Kigali