



Kenya Red Cross Society

**Integrated Emergency Drought Programme in Loitanit/Nakinomet,
Long'olemar and Ekicheles Villages of Kaikor/Kaaling Division of
Turkana North**

Turkana North District, Kenya

Terms of Reference for Production of Designs, Drawings and Bills of Quantities for 4 Sand Dams in Turkana North District

**Project title: Integrated Emergency Drought Programme in
Loitanit/Nakinomet, Long'olemar and Ekicheles Villages of
Kaikor/Kaaling Division of Turkana North**

1.0 Introduction and back ground information.

1.1 Background:

The Kenya Red Cross Society (KRCS), with funding support from the Kenyans for Kenya Initiative intends to carry out a 12 month Mid to long-term Drought Risk Reduction Project in Turkana North District commencing January 2012. The Project's goal and outcomes are as stated below:

1.2 Project Goal:

To contribute to Disaster Risk Reduction interventions in Turkana County by the year 2013.

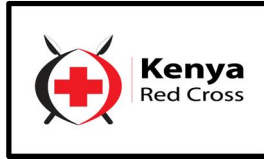
1.3 Outcome : Increased number of water supply systems improved (for domestic, livestock and small scale irrigation) aiming at saving lives and mitigating the economic impact of the current drought emergency among the pastoral communities of Turkana County, KENYA.

1.4 Specific Objectives:

1. Support emergency water provision in the most affected villages within the two critical divisions.
2. Increased food production through small scale irrigation and introduction of kitchen gardens.

1.5 Outputs

- Improved emergency water provision in the most affected villages within the division in addition to DRR strategies adaptation.
- Improved food production



In order to deliver the project's goal and outcomes, the project seeks to lay focus on food security, which will be targeted by implementing activities to ensure water security and key agricultural interventions to enable the beneficiary community grow its own food and sustain the same. The project seeks to develop credible long term water sources which may be used for domestic consumption, animal consumption and for irrigation practise, the focus being on shifting the culture and practices of these beneficiary communities from a pastoral way of life to a farming society.

The limiting factor to the farming potential of the beneficiary communities is the availability of water, the knowledge of modern farming techniques and the availability of high quality seeds and fertilisers; all of which the project seeks to address.

1.6 Location:

The proposed project targets the local Community population that includes the aged, youths, orphans and vulnerable children, people living with disabilities, widows, widowers and single parents of Kaikor division.

The project area includes Nakinomet, Kaikor Centre, Longøplemar & Ekicheles 1,800 villages in Kaikor/Kaaling Division.

Specifically the following interventions are planned:

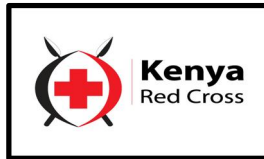
- Drill and equip 5 new boreholes at Loitanit (2), Kaikor (2) & Longøplemar (1) for domestic and irrigation water supply.
- Construction of 4 sub-surface dams, infiltration galleries, pumps Sump-wells and elevated Storage tanks along Lagga Kotome (2), Ekicheles (1) & Longøplemar (1).
- Train Water management committees on operation and maintenance of the Water Systems.
- Provide initial agricultural inputs (appropriate Seeds, tools etc).

In view of this Kenya Red Cross Society would like to appoint a consultant to produce technical designs, drawings and bills of quantities for 4 water supply projects in the following locations - Lagga Kotome (2), Ekicheles (1) & Longøplemar (1); all of which have been agreed upon with the Turkana North DSG in a project entry meeting held previously.

2.0 Scope of work:

The expected tasks under the consultancy shall include and not limited to:

1. Liaise with the District Authorities, in particular the District Water Office, the District Agriculture Office and the District Administration Office to pick data on the proposed sites and carry out a thorough desk review of the proposed project areas in order to derive technically competent and successfully water supply systems.



2. The consultant is expected to establish facts and advice on the technical requirements of the project which will entails construction of a sub-surface dams, coupled with infiltration galleries, a sump well on the side of the river bank, a pumping systems (renewable energy in line with the recommendations from the DWO's perspective), an elevated storage (or pressured rising mains, whichever is more feasible), pipeline for delivery and water points for domestic, livestock and irrigation.
3. The consultant is required to carry out detailed site measurements and tests to determine the best location along the proposed lagas where potential for fresh water is high and the technical requirements for successful construction of a subsurface dam may be achieved. The areas located should have good proximity to the beneficiary community. The consultant is encouraged to make use of hydrogeological investigations on the lagas to determine the salinity of the water in the respective points and propose lagas which can yield fresh water, for this, the district hydrogeologist should be consulted as a wealth of information exists in this office. Lagas chosen should undergo stratigraphic investigations to confirm bedrock profiles as well as sand water retention exercises. The consultant will be expected to make their final recommendations on the site chosen based on these investigations. All these investigations should be documented and made part of the final design report.
4. The water demand for each system would also be required to be assessed and this demand should be projected for an ultimate design period of 20 years. The demand projections should include for domestic, irrigation and animal watering (in that order of preference) and compared to the projected calculations of water storage that would be achieved in the laga of choice.
5. The consultant is required to analyse the sand formations in the laga to determine storage as well as define the grain distribution curve of the same to effectively design the infiltration galleries. This will be done so as to ensure adequate infiltration without compromising serviceability through clogging of pores.
6. The consultant is required to design a sump of adequate storage so as to supply the system effectively, taking in mind peak demand dynamics
7. The consultant is required to design a pumping system (preferably renewable energy - using recommendations from the DWO on the most locally adaptable systems) in order to deliver water of adequate quantities to supply the projected demand
8. The consultant is expected to design an elevated water tower or ground water tanks at appropriate locations to ensure gravity transmission or pressured pumping mains (which may work directly off the pumping system if this proves to be a more economically and efficient system) so as to deliver water with required pressure head to meet the domestic, irrigation and animal demand
9. The consultant is to design the water distribution facilities which include the water kiosks for domestic consumption, the pipeline for connection to irrigation systems and anima troughs for watering of animals. All the facilities must be designed so as to meet the demand required.



3.0 Outputs of the Consultancy:

The following will be deemed as the outputs of the consultancy exercise and this contract will only be deemed complete on receipt of the following:

1. A final design report for each water supply system, detailing the considerations taken in siting the infrastructure, the laga technical details, the demand projection, calculation for each of the technical components of the water supply and the formulas used to derive the technical designs
2. A full set of detailed drawings for all water system, including, but not limiting to - a site layout schematic, a horizontal layout schematic with levels taken, detailed designs of the subsurface dam geometrics, detailed drawings of the infiltration galleries showing geometric layout and infiltration pipeline details, drawings of the sump, including its geometrics, material specifications and structural detailing, horizontal and vertical layouts of the rising and gravity mains, detailed drawings of the elevated storage, detailed drawings of the Kiosks and animal troughs complete with structural detailing where necessary. The kiosks and animal troughs may be adapted from standard designs from the Ministry of Water to enhance standardisation, however, the consultant will be expected to report on their adequacy as well as ensure the drawings are detailed enough to guide contractors and site supervisors
3. A full set of priced Bills of Quantities for each system, complete with a schedule of technical specifications the contractor should adhere to.
4. A proposed construction schedule showing the expected items of works, critical paths and the overall construction and implementation time or duration, with brief descriptions and recommendations

This are expected to be presented in two hard copy print out of each stated document and soft copy in CD-Rom. The drawing should be in AutoCAD and PDF while the reports to be presented in Microsoft office applications and PDF as appropriate.

4.0 Role of KRCS

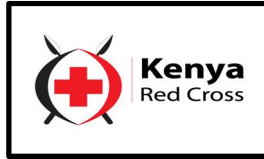
The KRCS will provide all logistics in the field, relevant program documents and be the link between the consultant and the project target communities and stakeholders. KRCS will also review all draft reposts and comment on the recommendations before final documents are submitted.

The consultant will be responsible for conducting the researches, designs and preparation of reports and outputs as stipulated in the scope of work and output.

5.0 Payment Terms:

30% advance on signing contract
70% on receipt of the above required documents

6.0 Time Frame:



The project is required to urgently commence with rains projected in May. In order to trap these rains, the consultant will appreciate the nature of urgency to have the works appointed to a contractor.

The time frame for the delivery of these drawings, designs and BOQs is two weeks from the letter of appointment. This will enhance the client's efficiency in delivering the project and the consultant is required to be sensitive toward this.

7.0 Technical proposal

The bidder is expected to submit a technical proposal with their bid which shall include and not limited to:

1. A submission letter
2. Particulars of the consultant including curriculum vitae of the proposed experts and personnel to be included in the execution of the work.
3. Comments and suggestion of the consultant on the terms of reference, personnel, facilities and other requirements expected for the work.
4. Description of the methodology and work plan for performing the assignment and time schedules.
5. Any proposed staff to assist in the assignment.

The consultant is expected to submit this as an attached document to the bidding documents.

8.0 Financial proposal.

The financial proposal shall be prepared and submitted by the consultants and shall contain the following.

1. A submission letter indicating the total fees
2. Summary of costs
3. Breakdown of fees per items of work and activities.
4. Breakdown of any reimbursable costs or expenses per activity.
5. Any miscellaneous expenses.

This shall be submitted in a separate envelope from that of the technical proposal.

Note.

The two envelopes containing the technical and financial proposals must be sealed and marked with the tender number then enclosed in one common envelope that shall be addressed and labelled with the tender number.