



**TERMS OF REREFENCE FOR BIOMEDICAL ENGINEERING CONSULTANTS TO
PROVIDE SUPERVISORY EXPERTISE IN THE PROVISION OF OXYGEN IN THE
FOCUS COUNTIES IN KENYA FOR THE PERIOD 2022 - 2023**

AMREF HEALTH AFRICA IN KENYA

TENDER NO. AMREF/19/01/2023/004

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1 Amref Health Africa:

Amref Health Africa, headquartered in Kenya, remains the largest Africa-based international non-governmental organisation currently running programmes in over 35 countries in Africa with lessons learnt over 60 years of engagement with governments, communities and partners to ensure sustainable health access in Africa. Amref Health Africa also incorporates programme development, fundraising, partnership, advocacy and communication offices in Europe and North America as well as subsidiaries including Amref Flying Doctors, Amref International University (AMIU) and Amref Health Innovations.

Amref Health Africa in Kenya is an independent non-profit, non-governmental organization (NGO) founded in 1957. The organization has footprint in all the 47 counties, that is both physical and through partners. Amref in Kenya believes that the power for lasting transformation of Africa's health lies within its communities and works side by side with individuals in communities to empower them to build the knowledge, skills and means to transform their own health.

Amref Health Africa's Strategy Goal is to advance Africa's health by catalyzing an evidence-based movement aimed at reducing the gap between communities and the rest of the health system using a series of programme drivers that are crosscutting and process-based. The programme themes that will lead to realization of the strategy are partnership with communities for better health; building capacity for strengthened communities and health system responsiveness and health systems research for policy and practice.

Amref Health Africa's vision is for lasting health change in Africa and is committed to improving the health of people in Africa by partnering with and empowering communities, and strengthening health systems. Our mandate is executed through a systems approach through the following programme areas: HIV/AIDS, TB and Malaria, Health Systems Strengthening (HSS), WASH & NTDs, RMNCYAH, and Non-Communicable Diseases.

2 Background:

Oxygen has in the last one year emerged as one of the essential commodities in the management of COVID-19 specifically for cases requiring breathing support making it critical to have adequate and consistent supply.

Pre-COVID-19, availability of oxygen was low across Kenya particularly in the public health facilities estimated at 16%, and where available the supply has not been optimal and lacked the necessary distribution and delivery infrastructure to the user points. Some progress has been reported in the past year as counties and facilities prepared to respond to the pandemic. Some installed oxygen-generating plants, a few installed bulk liquid oxygen tanks while others set aside resources to procure more oxygen in cylinders as well as investments in the diagnostic tools in the form of pulse oximeters.

Despite these investments, access barriers have been observed and reported by majority of facilities. A recent submission by counties on the current oxygen challenges indicated that COVID-19 has driven the cost of oxygen to increase by over 75% due to the high number of cases requiring oxygen as well as the high flows administered to COVID-19 patients. In places where onsite generating plants are available,

these were piped to one or two units therefore limiting supply to a few patients. Equipment failure and lack of spare parts have also been reported in this category. Where cylinders are used, these are by the bedside per patient- an inefficient and costly delivery mode in times of a crisis.

Amref Health Africa in Kenya through the Global Fund COVID-19 Response Mechanism (C19RM) is supporting the following infrastructure works;

1. Supply of oxygen through procurement of liquid oxygen, onsite generating PSA plants and cylinders;
2. Installation of high-volume supply capacity through bulk liquid tanks, PSAs and centralized manifolds accompanied by oxygen piping to bed outlets; and
3. Supply of oxygen therapy kits (humidifiers, regulators, flow meters) to facilities using cylinders.

In this regard, Amref Health Africa in Kenya seeks to recruit a biomedical engineering Consultants to provide expertise to supervise the above infrastructure works, for the period 2022-2023. The consultants will work closely with Amref in Kenya team, Ministry of Health and the County Health Department.

3 Key Tasks:

The consultants will provide technical supervision to the contractors in the provision of oxygen in the focus counties in Kenya. The consultant will work closely with the Amref team to ensure the installation and commissioning of the procured equipment for delivery of oxygen takes place at identified sites. The assignment requires travels to various sites in Tanariver, Lamu, Garissa, Mandera, Wajir, Isiolo, Marsabit, Meru, Nakuru, Samburu, Busia, Kisumu, Siaya, Trans Nzoia, Turkana, and WestPokot.

4 Key Responsibilities:

4.1 Reporting to the Amref Oxygen Project Team:

The BME Consultants shall;

1. Prepare and submit an inception and implementation plan per LOT;
2. Provide working Schedule and supervision plans in form of a gantt chart. This shall be project overview and scope abstract' with methodology with measurable factors involved in a robust, safe and operations Medical Gas Piping System (MGPS) for Oxygen delivery.

4.1.1 Stage 1: Preliminary:

1. Involving Facility and County Biomedical Engineers in suitable site identification, determination of terminals outlets points and taking measurements for the piping and oxygen supply installation requirements. This will be done if need for assistance is identified by a contractor.
2. Ensure all sites are ready for the piping work by providing working drawings to the contractors, for each site using information from the Amref Oxygen Project Team, Provided BoQs and the county BMEs data.
3. Thorough inspection for Equipment for quality and standards compliance for each component of the oxygen ecosystem and supply network. - e.g. Plants, Cryogenic LiOX Tanks systems, manifolds, copper pipes and outlets as well as electrical standards for the power panels.

4. Inspection of compliance with the standards and Memoranda like HTM 02 part 2, ISO 7396-1: 2016 and ISO 13485 (Medical Gas Piping System installation, tests and compliance assessments) for the materials, installation process and on installed and commissioning works.
 - a. These shall include but not limited to the following;
 - i. Handling to maintain the inertness of the copper pipes and outlets as well as the manifolds.
 - ii. Pipeline caccarsing, chasing and trunking workmanship acceptance.
 - iii. Harnessing infrastructure and standards such as height and anchoring strength.

4.1.2 Stage 2: Work Supervision:

The Consultant will share traveling plans for each site to be visited for approval by contractors and Amref Oxygen Project Team.

1. Provide a signed and stamped job card as a proof the site visit.
2. Dully fill the provided supervision template with the following considerations;
 - Inspect, qualify and quantify the delivered materials, equipment and machines and create inventory for the same at all sites.
3. Adhere to work ethics in all sites.
4. Ensure work schedules are adhered to and manage variances.
5. Involvement of the County BME's in work harmonization.
6. Submit weekly reports of work progress and manage contractors' activities to achieve set timelines and standards.
7. Ensure compliance to medical gases work safety at work regulations and rules.
8. Provide an appraisal report on the performance of the contractors.

4.1.3 Stage 3: Testing, Commissioning and Handing Over:

1. Jointly with the Contractor conduct and document Testing and commissioning of oxygen provision in the facilities. This shall include but not limited to the following (as per HTM 02 part 2, ISO 7396-1: 2016 and ISO 13485 standards);
 - Pressure tests
 - Leakage test method and compliance values
 - Flow rate test method and results
 - Oxygen purity and cleanliness.
 - Interaction, compatibility and automatic changeability to the other primary or secondary sources of oxygen.
 - Confirm that the User and Technical training for BMEs has been conducted and countersign training certificates.
 - Draw and adapt a monitoring tool for maintenance schedule during the Contractors warranty period.
2. Facilitate contractors work handover reports to Amref Oxygen Project Team for sign off of the completed works.
3. Submit final project report to the Amref Oxygen Project Team for review.

5 Deliverables:

1. Site inspection reports
2. Work supervision reports
3. Installation and variation management.
4. Testing and commissioning report
5. Completion Certificates and reports.

6 Specific Instructions:

1. The bidders will be required to pay non-refundable fee of Ksh.1,000. The payment should be made through the following Bank account(s): **Kenya Commercial Bank, Kipande House Branch, Account No: 111429243** OR **National Bank of Kenya, Wilson Branch, Account No: 01020058235400**.
2. The bidders will then attach the banking/deposit slip as proof of purchase.
3. Closing date for applications is on **Thursday 9th February, 2023** at **12 noon**. Only electronic bidding is permitted for this exercise. Please email your proposal and supporting documentation to: Consultancy.Kenya@Amref.org. Late bids will be rejected.

Bids will be opened immediately thereafter in the presence of the candidates, representatives or bidders. To access the link for registration for tender opening, kindly log onto;

https://amref.zoom.us/meeting/register/tZwucemrrT8rGdGD2_aLRQCYygn49hMejrBj

After registering, you will receive a confirmation email containing information about joining the meeting.

4. Prices quoted should be inclusive of VAT and all other applicable taxes and must be in Kenya Shillings and shall remain valid for 90 days from the closing date of the tender. The prices in your financial quotation should be broken down as follows: (**Do not key in your financial quotation in this section**).
 - i. Unit cost per component
 - ii. 16% VAT
 - iii. Other applicable taxes
 - iv. TOTAL Cost

NOTE: Global Fund grants are tax exempt. Bidders will be required to submit quotations inclusive of 16% VAT. Payment(s) to the successful bidder(s) shall be made in total exclusive of VAT and tax exemption certificate will be issued accordingly. Successful applicants shall be required to submit proforma invoice and valid tax compliance certificate upon receipt of LPO for processing of specific VAT exemption certificate.

5. **Validity of Tenders.**

Tenders shall remain valid for 90 days after date of tender opening prescribed by Amref Health Africa. Tender valid for a shorter period shall be rejected by Amref Health Africa as non- responsive. In exceptional circumstances, Amref Health Africa may solicit the tenderers consent to an extension of the period of validity. The request and the responses thereto shall be made in writing.

The tenderer may refuse the request. A tenderer granting the request will not be required nor permitted to modify its tender.

6. **Pre-Bid Conference**

Interested eligible bidders are also invited for a pre-bid conference to be on **Tuesday 24th January 2023** starting 9 a.m. to 11 a.m. To access the Link for registration for the pre-bid conference, log onto Amref Health Africa website <http://amref.org/ways-to-give/tenders/>

7 Eligibility Requirements and Technical Specifications:

7.1 Preliminary Evaluation Criteria:

Proposals received will be evaluated based on the below criteria.

Bids **lacking any of the documents** below will be considered as non-responsive and therefore will be eliminated at this stage.

No.	Mandatory Requirements	Score	Remarks
1.	Provide a proof of a higher national diploma or degree in biomedical engineering technology or relevant engineering field.	1 or 0	
2.	Provide a CV of the Biomedical Engineer.	1 or 0	
3.	Provide a copy of certification / membership of a relevant regulatory authority; Association of Medical Engineers(AMEK) OR Engineers Boards of Kenya (EBK)	1 or 0	
4.	Copy of valid KRA PIN	1 or 0	
5.	Must attach original deposit/banking slip as proof of purchase of tender document.	1 or 0	
6.	Attach a list of at least 2 references (in the last 3 years) of consultancies of a similar nature where you have done similar assignments.	1 or 0	

(Bids missing any one of the 6 requirements listed above shall be disqualified at this stage.)

7.2 Technical Evaluation Criteria:

To perform this assignment successfully, one should be an expert with knowledge, skills, abilities, meet the level of education, training, and/or work experience required as listed below:

No.	Technical Requirements	Max Score	Score
1.	Minimum 5 years professional and relevant work experience in oxygen delivery systems. (<3 years – 5 mks; 3-5 years -10 mks; >5 years- 15mks)	15	
2.	Provide at least 3 proof of conducting and/or supervising similar works of installation of medical oxygen plants, supply equipment, piping infrastructure and therapy services	15	

(3 proof documents – 15 mks; 2 proof documents -10 mks; 1 proof documents – 5mks; No proof document- 0)

3. Provide proof of relevant training on oxygen systems, medical equipment, medical devices, installation regulations and standards. 5

Total Marks 35

NB: The pass mark for technical evaluation will be 70%. Bidders who score below the pass mark will be considered non-responsive and will not move to the next evaluation stage (financial evaluation).

8 Financial Proposal:

No.	Item Description	Daily Consultancy Fee Rate (Kshs.)
1.	Biomedical Engineering Consultant	

Kindly note that the consultant shall be managed as Amref staff and paid DSA and Allowances as per Amref rates.

NB: We expect the consultant to make 3 trips per facility as per the stages indicated in 4.1 of this document and cover at least 2 facilities per day owing to most of them being in close proximity.

CLOSING DATE FOR RECEIVING APPLICATIONS

Only electronic bidding is permitted for this exercise and closing date for receiving proposals is on **Thursday 9th February 2023 at 12 noon.**

Complete application documents (curriculum vitae with details of qualifications, experience, current contact information, email address and names of two referees) with the position reference and name clearly marked on top should be email to: Consultancy.Kenya@Amref.org. Late bids will be rejected.

Bids will be opened immediately thereafter in the presence of the candidates, representatives or bidders. To access the link for registration for tender opening, kindly log onto; https://amref.zoom.us/meeting/register/tZwucemrrT8rGdGD2_aLRQCYygn49hMejrBj

After registering, you will receive a confirmation email containing information about joining the meeting.

Amref Health Africa reserves the right to accept or reject any or all bids and is not bound to give reasons for its decision.

9 Annex 1: Scope of Works

County	Facility Name	Install PSA	Install cylinder manifold	Install piping infrastructure
Busia	Khunyangu Sub County Hospital		Yes	Yes
Busia	Nambale Sub County Hospital		Yes	Yes
Busia	Port Victoria Hospital		Yes	Yes
Busia	Sio Port Sub County Hospital		Yes	Yes
Busia	Teso North Sub County Hospital		Yes	Yes
Garissa	Balambala sub county hospital	-	Yes	Yes
Garissa	Bura district hospital Garissa	Yes	Yes	Yes
Garissa	Dadaab Sub County Hospital	Yes	Yes	Yes
Garissa	Iftin Sub County Hospital	-	Yes	Yes
Garissa	Ijara Sub County Hospital	Yes	Yes	Yes
Garissa	Masalani Hospital	-	Yes	Yes
Garissa	Modogashe sub county hospital	-	Yes	Yes
Isiolo	Gafarsa health centre 2		-	-
Isiolo	Garbatulla sub county hospital		Yes	Yes
Isiolo	Merti health centre		Yes	Yes
Isiolo	Narapuu health centre		-	-
Isiolo	Oldonyiro health centre		Yes	Yes
Isiolo	Isiolo district hospital		Yes	Yes
Kisumu	Ahero SC Hospital		Yes	Yes
Kisumu	Chulaimbo SC Hospital		Yes	Yes
Kisumu	Gita SC Hospital		Yes	Yes
Kisumu	Kombewa Sub County Referral Hospital		Yes	Yes
Kisumu	Manyuanda SC Hospital		Yes	Yes
Kisumu	Lumumba sub county hospital		Yes	Yes
Kisumu	Muhoroni County Hospital		Yes	Yes
Kisumu	Katuitu SC Hospital		Yes	Yes

Kisumu	Nyahera Sub District Hospital		Yes	Yes
Kisumu	Nyakach County Hospital		Yes	Yes
Kisumu	Nyamaringba SC Hospital		Yes	Yes
Kisumu	Victoria SC Hospital		Yes	Yes
Lamu	Faza sub county hospital	Yes	Yes	Yes
Lamu	Lamu County Referral Hospital		Yes	-
Lamu	Mpeketoni sub county hospital	Yes	Yes	Yes
Mandera	Banisa sub county Hospital	Yes	Yes	Yes
Mandera	Elwak District Hospital	Yes	Yes	Yes
Mandera	Lafey Sub-County Hospital		Yes	Yes
Mandera	Mandera central sub county hospital		Yes	Yes
Mandera	Mandera County Hospital	Yes	Yes	Yes
Mandera	Modogashe sub county hospital Mandera		Yes	Yes
Marasbit	Kalacha Sub County Referral Hospital	Yes	Yes	Yes
Marasbit	Laisamis Sub county Referral Hospital (MARSABIT SOUTH)	Yes	Yes	Yes
Marasbit	Logologo HC		Yes	Yes
Marasbit	Boru Haro HC		Yes	Yes
Marasbit	Dukana HC		Yes	Yes
Marasbit	Loiyangalani HC		Yes	Yes
Marasbit	Marsabit County Referral Hospital		Yes	Yes
Marasbit	Moyale Sub County Hospital		Yes	Yes
Meru	Kanyakine District Hospital		Yes	Yes
Meru	Kunene		Yes	Yes
Meru	Mboroga		Yes	Yes
Meru	Meru District hospital		Yes	Yes
Meru	Maua Methodist		Yes	Yes
Meru	Mikinduri Sub-District Hospital		Yes	Yes
Meru	Mutiokiana health center		Yes	Yes
Meru	Nyambene District Hospital		Yes	Yes
Nakuru	Bahati Sub County Hospital		Yes	Yes
Nakuru	Elburgon Sub County Hospital		Yes	Yes
Nakuru	Kabazi Sub County Hospital		Yes	Yes

Nakuru	Gilgil Sub county Hospital		Yes	Yes
Nakuru	Kiptangwany Health Centre		Yes	Yes
Nakuru	Molo Sub County Hospital		Yes	Yes
Nakuru	Njoro Sub-County Hospital		Yes	Yes
Nakuru	Nyamamithi Health Centre		Yes	Yes
Nakuru	Olenguruone Hospital		Yes	Yes
Nakuru	PGH Annex Level 4 Hospital		Yes	Yes
Nakuru	Sachangwan Health Centre		Yes	Yes
Nakuru	Subukia Sub-County Hospital		Yes	Yes
Samburu	Archer's SubCounty Hospital	-	Yes	Yes
Samburu	Samburu county referral hopsital	Yes	Yes	Yes
Samburu	Kisima Health Centre	-	Yes	Yes
Samburu	Suguta Marmar Health Centre	-	Yes	Yes
Samburu	Wamba Health Centre	Yes	Yes	Yes
Siaya	Ambira Sub-County Hospital		Yes	Yes
Siaya	Bondo County Referral Hospital		Yes	Yes
Siaya	Rwambwa Sub-county Hospital		Yes	Yes
Siaya	Yala Sub County Hospital		Yes	Yes
Tana river	Bura distict hospital		Yes	Yes
Tana river	Garsen Sub county Hospital		Yes	Yes
Tana river	Ngao Sub district hospital	Yes	Yes	Yes
Tana river	Hola County Referral Hospital		Yes	-
Trans nzoia	Cherangany Sub County Hospital		Yes	Yes
Trans nzoia	Endebess Sub- County Hospital		Yes	Yes
Trans nzoia	Kapsara Sub County Hospital		Yes	Yes
Trans nzoia	Kitale County Hospital		Yes	Yes
Trans nzoia	Kwanza Sub County Hospital		Yes	Yes
Trans nzoia	Mt Elgon Hospital		Yes	Yes
Trans nzoia	Saboti Sub-County Hospital		Yes	Yes
Turkana	Elelea sub county hospital		Yes	Yes
Turkana	Kaikor SCH		Yes	Yes
Turkana	Kanamkemer Subcounty Hospital	-	Yes	Yes

Turkana	Kapedo Sub County Hospital	Yes	Yes	Yes
Turkana	Lodwar County Referral Hospital		Yes	Yes
Turkana	Lokitaung Sub County Hospital	Yes	Yes	Yes
Turkana	Lokori SCH	-	Yes	Yes
Turkana	Lopiding Sub County Hospital	-	Yes	Yes
Wajir	Bute District Hospital		Yes	Yes
Wajir	Eldas sub county hospital		Yes	Yes
Wajir	Griftu District Hospital		Yes	Yes
Wajir	Habaswein District Hospital		Yes	Yes
Wajir	Khorof Harar Sub-District Hospital		Yes	Yes
Wajir	Tarbaj		Yes	Yes
Wajir	Wajir County Referral Hospital	Yes	Yes	Yes
West pokot	Chepareria Sub District Hospital	-	Yes	Yes
West pokot	Kacheliba District Hospital	Yes	Yes	Yes
West pokot	Alale Health Center	-	Yes	Yes
West pokot	Lomut Health Center	-	Yes	Yes
West pokot	Kabichbich Health center	-	Yes	Yes
West pokot	Sigor Sub County hospital Pokot	Yes	Yes	Yes
West pokot	Ortum Mission Hospital		Yes	Yes
TOTAL		32	109	109