Osiligi Charity Projects

Repair of broken hand pumps
in Kenya.

(FF 607)

Final Report Jan - Sept 2022

For the Eagle Foundation

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Summary

This report outlines the progress made from Jan – September 2022 by the Osiligi charity in providing access to water and in the repair of non-functional hand pumps to the rural communities in Kenya, funded by the Eagle Foundation.

The severe drought in the Asal regions of Kenya has increased the stress and demand on existing water sources. The restrictions imposed by Covid has caused travel restrictions and increased the cost of transport and materials.

Despite these constraints the Kenyan team has been able to restore 176 pumps, therefore providing access to water to around 55,000 people, including schools and dispensaries within the communities, and this has been achieved at an average cost per user of 110Ksh (82[1]p).

The sustainability is increased, and cycle of repair reduced to a village hand pump when training and pump management is provided to the local community. If a community generates a water economy through a savings scheme (VSLA) it will enable them to be able to purchase the necessary spares to maintain their pump, either from the Regional Contact Person (RCP) or directly from a supplier. The pump caretaker can then carry out the basic maintenance necessary to keep the pump serviceable. This will not only improve the sustainability of a pump but help to break the cycle of dependence for a community waiting for the next charity to repair their pump (Figure 1).

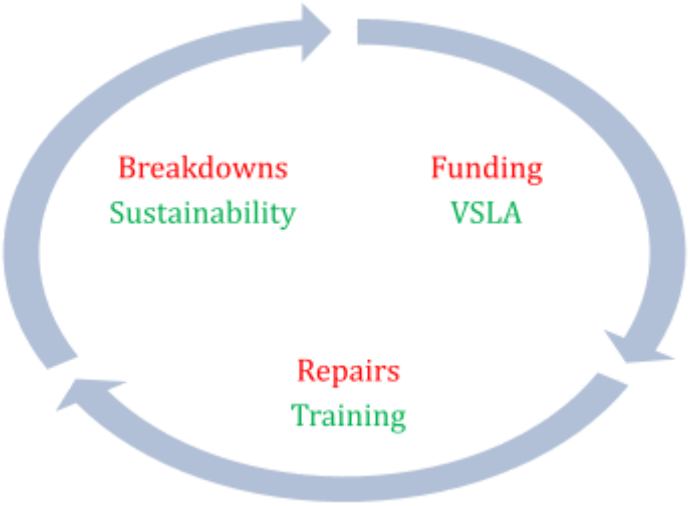


Figure 1. The cycle of repair.

The regional contact personnel (RCP – water engineer) will continue to support the local communities by providing the necessary expertise to carry out a more complex or expensive repairs.

The health of a community is improved once they have access to water, but they also need containers, washing facilities, a separate channel to provide water to their livestock, which is a main source of income. Where there is open defecation the community has need of a ventilated toilet (VIP).

The 4 years of funding from the Eagle Foundation has allowed 799 pumps to be repaired, restored, or replaced giving water to around 236,000 people. The cost per person helped is around 76p per person.

[1] Subject to the exchange rate

Introduction

The Osiligi charity is sponsored by the Eagle Foundation from January to September 2022 in the restoration of non-functional hand pumps in the rural communities of Kenya. This supports a team of Kenyan water engineers whose aim is to continue repairing the non-functional hand pumps in Kenya. This year 176 pumps were repaired serving 55000 members of the rural communities in Kenya.

The aim of the project is to continue repairing and restoring existing and viable non-functional hand-pumps, therefore providing access to ground water.

The Osiligi charity has restored over 1883 hand-pumps in Kenya since 2015 and this number increases year on year, but there are still a lot more pumps to repair, which could not be achieved without the continuing support from the Eagle Foundation.

When a hand-pump, well or borehole fails, the rural community must find an alternative source, and this may make it necessary to purchase water. A neighbouring community may charge for providing access to their pump. The cost of bottled water varies from 5 – 20Ksh for a 20L container. That container weighs 20 Kg, and a woman or child may travel up to 6km in a day to collect water, with the risk from attack or abuse. Time that could be used for alternative employment or keep the child at school. Without an education, there will be limited access to employment, the risk of FGM, early marriage, leading to pregnancy. The collection of water is not only a question of survival but also for the wellbeing of those affected by it.

The alternative water sources are rivers, ponds, or puddles, but these also carry risks. Waterborne diseases such as typhoid and cholera, cause dysentery and diarrhoea, which may lead to death, or poor health and a debilitating illness. Medication is also expensive, or may not be available, adding to the financial burden. From drowning or being attacked by a wild animal or humans.

Hand pumps do need basic and periodic maintenance. They need to be managed due to the environmental conditions and their usage. The training provided will help a community to manage their pump and carry out any basic maintenance necessary. For a few shillings, a seal, O-ring, bobbin, or a bearing that can cause a pump to fail can be replaced and avoid being without access to water and another expensive visit.

Local authorities (LA) provide the authorisation to work in their region and can help to provide security, and information necessary to locate and prioritise a pump repair. The communities often provide resources such as additional labour and information of nearby failed pumps.

The severe drought in the Asal regions of Kenya has increased the stress and demand on existing water sources.

Pump Location by Region.

The Osiligi charity operated in 6 regions this year; Siaya 41, Kisumu 42, and Homa Bay 43, Kitui 15, Makueni 17, Kajiado 34, and Kwale 2, although not restricted to them (Figure 2).

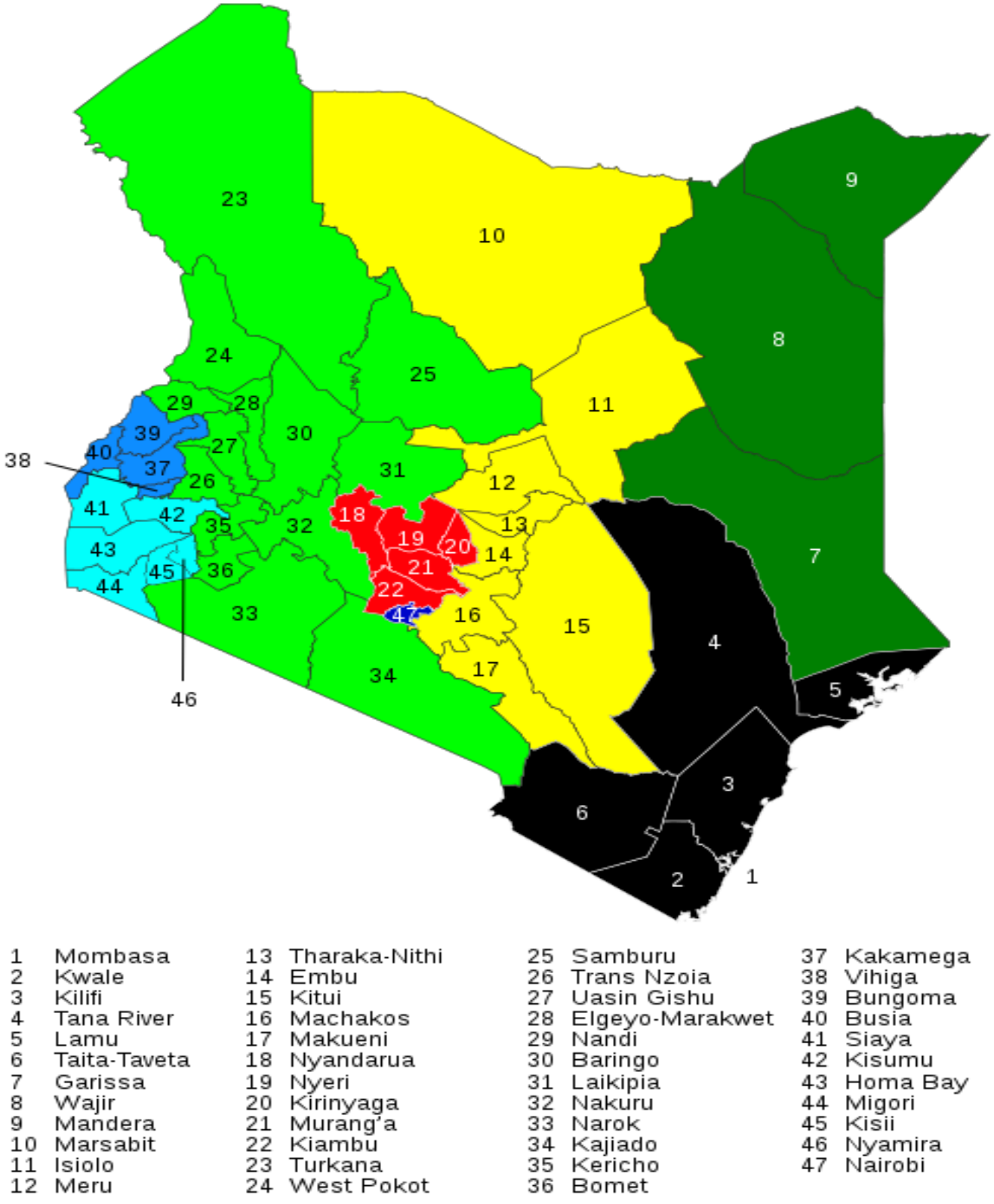


Figure 2. Regional map

Pump repair data.

The number of pumps repaired each month is shown in table 1. Each region is affected by the environmental conditions, access, weather, availability of spares, transport and of course funding.

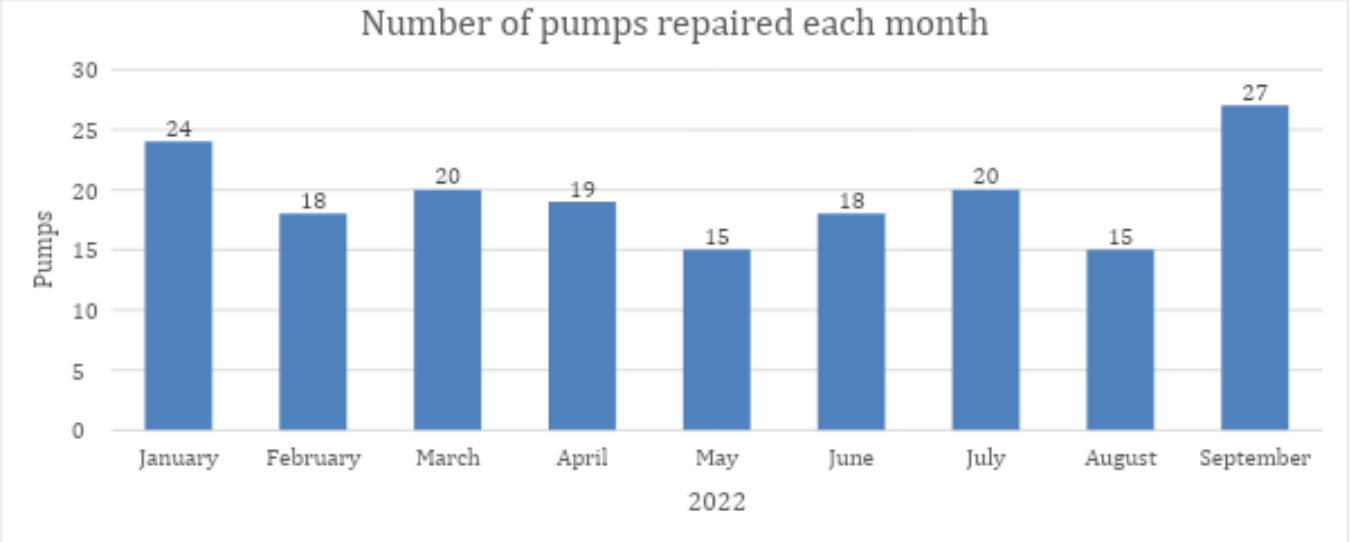


Table 1. Pump repairs by month.

The number of pumps repaired in each region are shown in table 2.

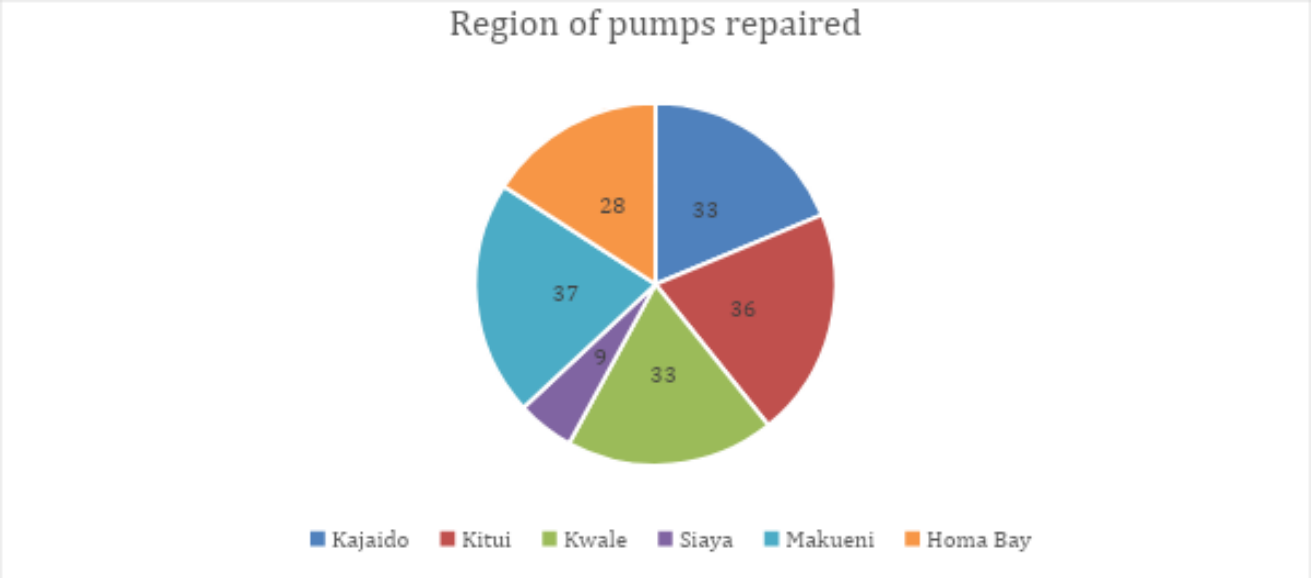


Table 2. Pump locations

The location, need and prioritisation of a pump to be repaired will initially come from the communities themselves. They will notify their local authorities (LA) of a failure and if registered the community can request a repair. Local contacts and the Municipal Council Authorities (MCA) may also make a request and Chiefs, Leaders may also pass on information to them. The local contact (LC) can then notify the Regional Contact Person (RCP) responsible for repairing the pumps in their region.

If a registered community has already applied to their LA to reinstate a non-functional pump, this is still no guarantee that it will be repaired by the LA due to their budget limitations. The when, where, and who repairs the pump is often down to the next charity working in the region involved in pump repairs and who is prepared to restore a non-functional pump.

Access to water

55,072 people within the rural communities now have access to water. Most villages however will not know exactly how many people live in or around a surrounding community, especially if children are included.

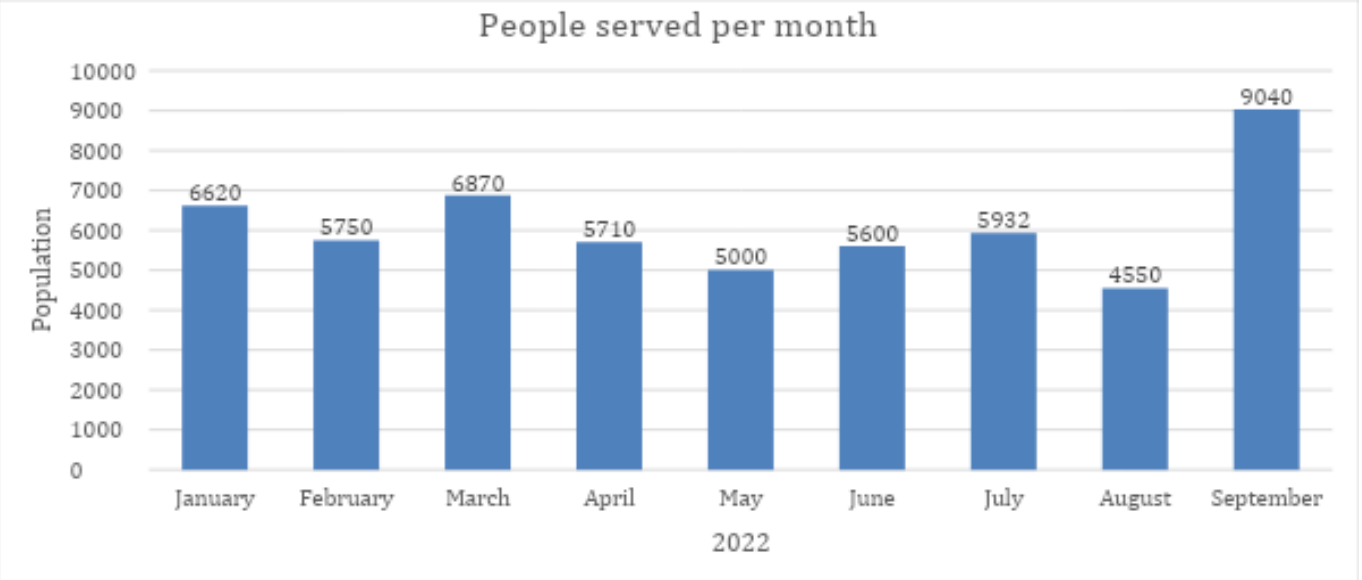


Table 3. Access to water

A borehole may serve a community of between 5 to 100 households. This may include a primary & secondary school of 250 – 1000+ pupils, and a dispensary.

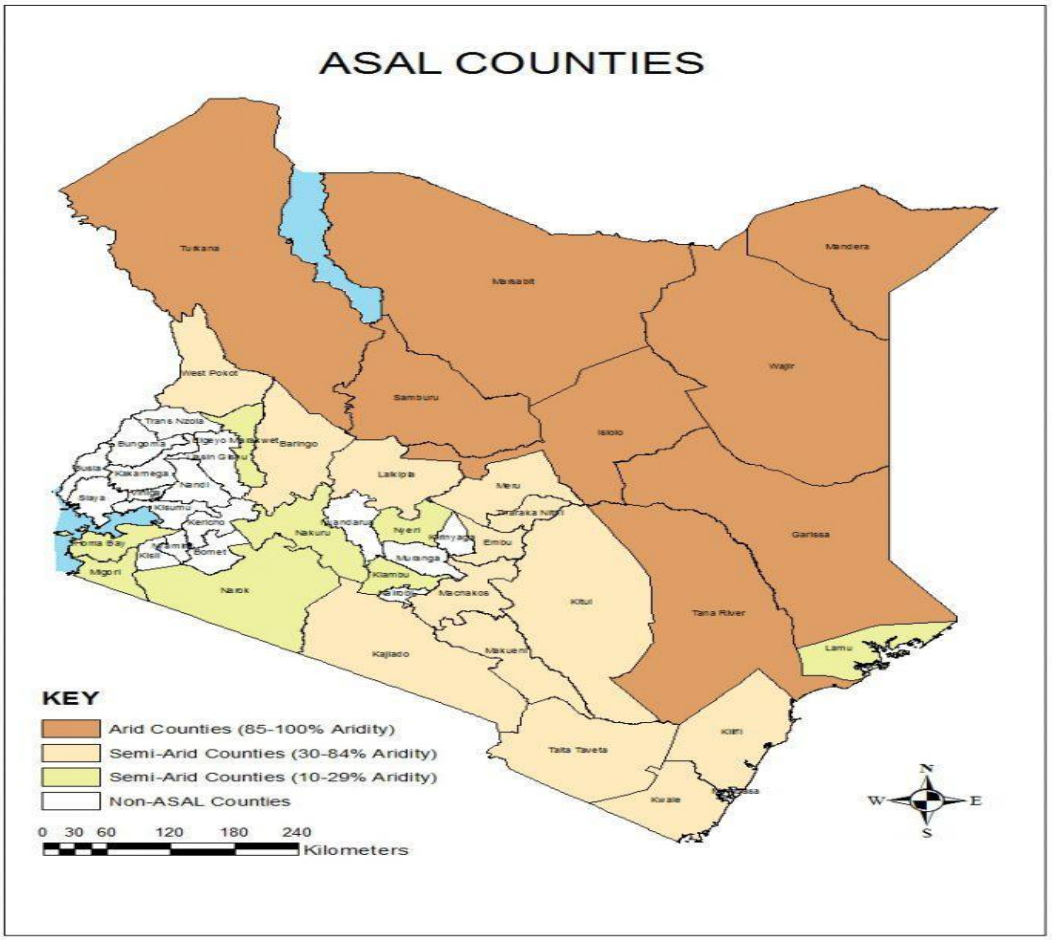
Each household may contain grandparents, parents, and children, and extended families of up to 5 -10 or above may be living in a household. An estimate therefore of people served by a pump is between 50 to >1000 people. On average the number of people that have access to water from a borehole will be around 250 - 300 people.

Challenges

Drought

“The ASALs in Kenya are spread across 29 counties with varying degrees of aridity. These extreme climatic conditions have had devastating effects on the environment and livelihoods of communities.

The Arid and Semi-Arid Lands (ASALs) occupy over 80% of the country’s landmass. It is home to about 36% of the population, 70% of the national livestock and 90% of wildlife. The annual rainfall in arid areas ranges between 150 mm and 550 mm and semi-arid areas between 550 mm and 850 mm per year. Temperatures are high throughout the year, with high rates of evaporation.



These drought conditions have increased the stress on existing working pumps, the demand for pump repairs and for communities to share their access to water if they have a working or repaired pump. 18 months of drought have caused crops to fail, food to become scarce and their animals die and that will mean the loss of their family income.”

Source: Copyright © 2019, Kenya Agricultural & Livestock Research Organization

Figure 3. Drought areas

Costs

The recent causes of inflation increasing the cost of accommodation, contractors, materials, and transport have also made it difficult to maintain costs. Despite these pressures the team has continued to improve their productivity and maintain their ability to restore non-functioning pumps.

Restrictions

Covid and the election has meant that travel to Kenya has been restricted and it has not been possible to verify a sample of the pumps repaired. An extended visit is now planned across all the regions in early 2023.

Verification

To help manage the challenge for the verification of the 176 pumps repaired in 2022 a Memorandum of Understanding (MOU) is signed off by the local authority and their communities. The MOU's can be reviewed to see if the expectations of stakeholders have been met, or if there are any areas where improvements can be made (Appendices A & B).

Although it has not been possible for the UK team to visit the pumps this year the **process** of pump repairs includes the collection of data using a google form which is been entered into 5 worksheets:

1. From May – Sept
2. Jan – Dec
    a. Population
    b. Categories of Repair
    c. Funding
3. By Region
4. By Month.
5. The form has a series of questions to provide further verification data including GPS tagged photographs..

Monthly meetings (google meet) are held on the last Sunday of each month and the RCP's update on the progress of pump repairs for that month and identify any issues that have arisen.

The RCPs provide the data including photographs using a **GPS mapping app** (GPS Map Camera Lite) that automatically inserts the positional **GPS/Lat/Long location**. The pump repair data will

Figure 4 Verification photograph including GPS location

include the date it has been restored into a working condition, the name of the county, district, village, and pump location.

A borehole should be registered with the LA, but this is not always the case if they have been installed privately. The community should also be registered and applied for assistance to repair their pump, again this is often not the case.

The pump data will also include the number of homes and population, the depth of the borehole and water column.

The Lat/Long or GPS coordinates are also recorded, and photographs before and after repair provide these coordinates and location mapping is included.

If a pump is obsolete or not viable for repair, then this can be noted for a later repair.

The caretaker or person responsible for the pump is recorded. The community and caretaker are often involved in the repair for training purposes.

Figure 5. Verification of a repaired pump and trained caretaker

All this data is unique to any pump repair.

Cost of Repair

A summary of the pump repair costs is shown in table 4.

2022			By Donation			By Year		
Date	Donations	Money Used	Pumps	Users	Cost	Pumps	Users	Avr cost
January								
22/12/2021	KES 739,500	KES 700,000	24	6620	KES 106	24	6620	KES 106
February								
31/01/2022	KES 753,545	KES 700,000	18	5750	KES 122	42	12370	KES 114
March								
28/02/2022	KES 753,206	KES 700,000	20	6870	KES 102	62	19240	KES 110
Total 1Q2022	KES 2,246,251	KES 2,100,000						
Carry forward	KES 146,251							
April								
30/03/2022	KES 738,684	KES 710,000	19	5710	KES 124	81	24950	KES 113
May								
25/04/2022	KES 739,700	KES 710,000	15	5000	KES 142	96	29950	KES 119
June								
26/05/2022	KES 709,891	KES 700,000	18	5600	KES 125	114	35550	KES 123
Total 2Q2022	KES 2,334,526	KES 2,120,000						
Carry forward	KES 214,526							
July								
29/06/2022	KES 704,483	KES 700,000	20	5932	KES 118	134	41482	KES 127
August								
29/07/2022	KES 677,621	KES 650,000	15	4550	KES 143	149	46032	KES 130
September								
31/08/2022	KES 683,850	KES 680,000	27	9040	KES 75	176	55072	KES 121
Education program		KES 640,000						
Total 3Q2022	KES 2,280,480	KES 2,670,000	176	55072				
Totals	KES 6,861,257	KES 6,890,000						

Table 4. Cost of pump repairs, by month and year.

The actual expenditure and any additional costs are discussed at monthly meetings so as to account for the work done, supported by the pump data. The following next month's budget can then be released.

There are discrepancies that may occur when a volunteer has an illness, a domestic issue or their work clashes with their availability. Weather and environmental conditions can also cause disruption and delay adding extra costs to a pump repair. 10% is allocated for an education program for the volunteers and their families.

Table 5 provides an indication on the budget expenditure and includes expenses such as Accommodation, Contractors, Materials, Travel, Petty cash, Transport etc. The materials and transport cost will depend on the supplier, for example if the shop location or distribution centre is located in or near the region where the community hand pump is located. Miscellaneous and administration can be for renumeration to chiefs, leaders for providing information, having to manage damage and unexpected civil works, or fishing for broken parts.

Cost	%	Ksh
Accommodations	4%	300000
Communications	2%	107500
Contractors	29%	2025000
Food - Drink	6%	430547
Materials	31%	2150000
Misc	2%	103636
Transport - Fuel	10%	670000
People transport	4%	300000
Educationn program	9%	640000
Administration	2%	157500
Totals	**100%**	**6884183**

Table 5. Distribution costs and expenditure

The cost of a repairs is broken down into 5 categories (table 6), A to E. A (40 pumps) is a simple repair where the parts cost less than 5,000Ksh (£35). B (118 pumps) is a more extensive repair where more spare parts are required at a cost of between 5000Ksh and 25,000Ksh (£178). Category C (13 pumps) is a more extensive repair where pipes and rods may have to be replaced. These repairs cost between 25,000 - 50,000Ksh (£356). D (3 pumps) is the installation of a new pump if the old one is beyond economic repair 700,000Ksh (£500). Finally, E(2 pumps) needed additional resources, such as having to employ a contractor to fish out broken pipes, flush a borehole, or any additional civil works 150,000Ksh (£1000). When a new pump is required any old parts, if possible, are recycled.

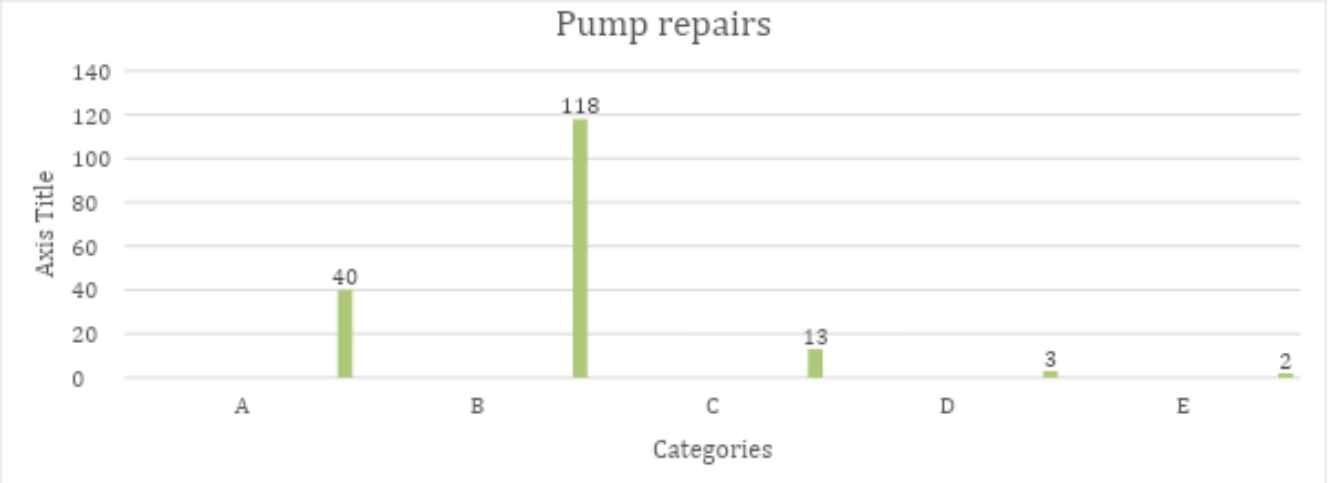


Table 6. Category of repairs

Comments and Concerns

The team has performed well this year repairing 176 pumps, and hopefully will be able to continue in 2023 subject to available funding. Unfortunately, costs have risen but hopefully the productivity of the team will continue to increase.

Access to water is key to the quality of life for a community but so is their health and wellbeing . If resources were available for washing facilities and ventilated toilets, then this would help to minimise open defecation and improve hygiene for the communities in Kenya.

Appendix A. MOU - Local Authority template.

Osiligi Charity Projects is a UK registered charity, number 1135331.

Memorandum of Understanding

MOU - 2022

Hand Pump Project – Kenya

Osiligi Charity (OC)

&

Local Authority (LA)

This Memorandum of Understanding (MOU) sets out the terms and understanding between the OC and LA in the repair, restoration and maintenance of hand pumps providing access to water to rural communities.

Background

When a hand pump has been repaired there is a need for it to be maintained. The aim of the Osiligi hand pump project is to restore non-functional hand pumps and for the communities to maintain them.

Purpose

This MOU outlines how a partnership between the OC & LA will enable the shared use of resources to benefit the rural communities, by the effective, efficient and efficacy of their resources e.g., the shared use of data for the pumps, their prioritisation and maintenance by the community committees.

The aim of the hand pump project will be achieved from the following objectives:

1. Informing sub county officials.

2. Establishing security.
3. Sharing data (borehole registration, pump location, committee certification and priorities in repair.
4. Sharing resources e.g., transport, equipment, training in the restoration of the hand pumps.
5. Proof of verification

The outcome will be a more effective use of knowledge and resources for the benefit of the rural communities, as it will enable hand pumps to be restored in a qualitative and cost-effective manner.

Reporting

Monthly reports on the number of pumps repaired, including expenditure to monitor the progress of the outcomes and benefit of the partnership to the rural communities

Funding

There is no commitment to funding by either partner.

Duration.

This MOU is '*at will'* and may be modified by mutual consent of authorised officials from the Osiligi charity and Kwale County. This MOU shall become effective upon signature by the authorised officials and will remain in effect until renewed on a yearly basis, modified, or terminated by any one of the partners by mutual consent. In the absence of mutual agreement by the authorised officials, this MOU shall end on 31st December 2020.

Contact Information

1. Regional Contact Person

Name:

Mobile:

E-mail:

2. Local Authority

Name:

Mobile:

Email:

1…….. Date: ……

(Partner signature)

(……, Osiligi Charity.)

…….

Date…….

2..…….. Date:

……

(Partner signature)

(…….)

…….

Date…….

Appendix B. MOU - Community template.

Osiligi Charity Projects is a UK registered charity, number 1135331.

Date xx/yy/zz

Memorandum of Understanding (MoU)

Between:

Osiligi Charity (OC)

and

xxxxx of…… in yyyy County

For the supply, installation, and maintenance of a pump at xxx in yyyy ward, zzzz county

Drawn by: Osiligi Charity Foundation

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING (hereinafter "MoU") is made on the day of xx/yy/zz

BETWEEN

OSILIGI CHARITY a charity, registration number 1135331(hereinafter referred to as **OC**)

AND

The xy (hereinafter referred to as "**XY**") whose expression shall where the context admits include and extend to their successors and is assigned to the person deriving title under them.

WHEREAS IT IS AGREED as follows:-

A. **OC** is to supply and install an electric pump in the village (hereinafter referred to as “The Project”) to provide the school and the villagers with access to ground water.

B. **XY** has agreed to the sustainable opportunity of the installation and maintenance of a pump.

NOW THEREFORE, THIS MEMORANDUM WITNESSETH AS FOLLOWS:

Obligation

1.1 The **OC** in coordination with the **XY** shall undertake to install or restore an electric pump.

1.2 Prior to the commencement of the electric pump installation, the **XY** shall ensure that all Land Issues are settled.

1.3 That in facilitating the project, **OC** will undertake all the supervision of the project.

1.4 The **XY** guarantees to provide access for the project by ensuring that all villages are aligned to the project and no compensation shall be claimed.

1.5 The **XY** shall call a meeting that must be attended by not less than the minimum required number of members to provide a quorum for signing off the Agreement between the village members and the **XY** as stipulated in this MoU.

1.6 The **XY** shall provide **OC** with a copy of the said Agreement which shall form part of this MoU.

1.7 The **XY** shall ensure that community members provide security for the electric pump and Osiligi staff during and after the installation.

1.8 The **XY** will ensure there is day to day security of the electric pump and its location.

1.9 The **XY** will establish measures to protect the water source from contamination.

1.10 The **XY** will undertake to educate and raise awareness amongst water users about best practices to be adopted to protect clean water and maintain a high standard of hygiene and sanitation around the water source.

Duration of the project

1.11 The duration of the project will be from xx/yy/zz to xx/yy/zz.

Notices and language

1.12 All notices, requests, consents, demands, waivers, or other communications under or in connections with this MoU shall be in writing, signed by the parties concerned.

1.13 That communications by telephone may be used for emergency cases only or for any query that needs immediate response.

1.14 The official language of this MoU shall be in English.

Dispute resolution

1.15 This MoU shall be governed in accordance with the Law of Kenya.

Any dispute arising out of or in connection with this MoU shall be settled amicably by the Parties concerned. Should this fail, the aggrieved party may take legal action at the Court having authority to entertain the dispute.

Implementation of the agreement

1.16 Each of the Parties undertake all steps necessary for its implementation that is considered necessary to fulfil the objective of this MoU.

1.17 Information and guidance in the implementation of the MOU, for sustainability and water economy through a VSLA is given at the end of the MoU.

IN WITNESS WHEREOF the parties hereto have caused this MoU to be executed by their authorised representative on the date and year as follows:

Dated this xx day of xx/yy/zz

FOR AND ON BEHALF OF THE OSILIGI CHARITY ORGANIZATION

Signature: ……..

Name: ……

Title: ……

FOR AND ON BEHALF OF XXXX AND YYYY COMMUNITY

Signature: ……..

Name: ……

Title: ……

IN WITNESS WHEREOF the parties hereto have caused this MoU to be executed by their authorised representatives on the date and year as follows:

Dated…

FOR AND ON BEHALF OF THE OSILIGI CHARITY ORGANIZATION

Signature: ……..

Name: ……

Title: ……

FOR AND ON BEHALF OF XXXX

Signature: ……..

Name: ……

Title: ……

Borehole Protection

An animal-proof fence should be constructed around every completed borehole which is intended for community or public use. Hedges or timber can be used in constructing the fence.

Boreholes are constructed as a point for collecting water. Water collected should be utilized at home.

Washing the clothes and household utensils and bathing are prohibited near a well/bore hole.

Mixing of chemicals, washing of petroleum products and containers, and handling of potential pollutants near the bore hole are also prohibited.

A 30-meter protection zone must be built and maintained.

Livestock (cattle) should not be allowed near wells/bore holes.

The community has direct ownership and responsibility for the borehole or public well. The community should protect the borehole and pump from theft, vandalism, and misuse.

Best Practices for clean and safe water.

1. **Post -delivery contamination:** water that is safe at the point of delivery can prevent significant health risk of recontamination during collection, storage, and drawing. Steps that can be taken to minimize such risks include improved collection and storage practices.

2. **Water collection and storage:**
    a. People need vessels to collect water, to store it and use it for washing cooking and bathing. These vessels should be clean, hygienic, and easy to carry.

b. The amount of storage required depends on the size of the household, e.g., approx. 5 litres per person is appropriate where there is an appropriate daily supply.
c. Promotion and monitoring of safe collection, storage and drawing provide an opportunity to discuss water contamination issues with vulnerable groups, especially women and children.

3. **Water Disinfection:**
    a. Water should be treated with a residual disinfectant such as chlorine if there is a significant risk of water source or post-delivery contamination.
    b. This risk will be determined by conditions in the community, such as population density, excreta disposal arrangements, hygiene practices and the prevalence of diarrheal disease.

Maintenance, Repair and Sustainability

OC will provide one visit per year by a qualified and trained technician through Engineering who will check on the general condition of the electric pump.

A technician can be contacted on **xxx.** This is restricted to two calls within three years to prevent any nuisance calling.

Water Economy - Village Savings Local Association (VSLA)

The **XY** is encouraged to form a water management committee to generate a water economy from their pump. The objective is to provide sustainability for the pump and provide an economy to the community by having access to groundwater.

An example of a savings scheme but not restricted to is a Village Savings and Loan Association (VSLA) group, who regularly save a small amount then members can take small loans from these savings.

Share purchases and loans must be recorded in a Passbook. Water Fund, Loan Fund, Social Fund balances and shares are noted by the record-keeper/s. Passbooks remain locked between meetings, to prevent tampering or alteration of loan records.

The Group has a five-person Management Committee elected for one cycle. Groups develop a constitution that contains the Social Fund, Share-purchase, and Loan policies of the Group.

Each member has one vote in electing the Management Committee and developing the constitution. At the end of every annual cycle, all outstanding loans are recovered, and the Loan Fund is shared out. The Loan Fund (which includes profits)

is divided by the total number of shares purchased by members during the cycle, to calculate the share value. Each member then receives his or her pay-out according to the number of shares purchased. Further information can be obtained from

http://www.fsnnetwork.org/sites/default/files/vsl_programme_guide_for_village_agents_-_version_1.04_english.pdf

The objective of the VSLA is to break the cycle of the community's dependence on a 3rd party to repair or restore their pump.