

ASSESSMENT REPORT

Institutional Cook stoves and Lighting Systems of Social Institutions in Kakuma Refugee Camp and Kalobeyei Integrated Settlement

Drafted by SNV Kenya
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Introduction

This report presents the findings of a survey on energy access in social institutions in Kakuma refugee camps, Kalobeyi settlement and the immediate host community. The survey was carried out in January and February 2020. The report summarises the findings of the assessment and provides recommendations on improved lighting and cooking solutions across 51 social institutions, incl. schools, hospitals and related services, and agencies.

MBEA II Project

The Market Based Energy Access (MBEA) Phase II project promotes supply, distribution and use of clean cooking and solar-powered lighting solutions through a mix of market based and behavioural change approaches in Kakuma refugee camp and Kalobeyi settlement. Implemented within SNV EnDev Phase III, the project promotes the use of cleaner energy solutions by households, SMEs and social institutions in the camps. Social institutions include primary, secondary and tertiary schools and training institutions, hospitals, institutional cooking in the agencies working in the camps, institutions that cater for the persons of concerns inside the camps, and any other related social institutions.

Objective

To gain insight on the current situation and needs in relation to cooking and lighting among social institutions, an assessment was conducted for all social institution in Kakuma refugee camp, Kalobeyi integrated settlement and the immediate host community. The purpose of this assessment was to ascertain the status of the current lighting and cooking situation in each institution, with the aim to recommend maintenance measures and/or instalment of new lighting or cooking solutions to serve the population better.

Approach

The lighting and cooking situation in the social institutions was assessed through face to face interviews and on-site assessments. The institutions included primary schools, secondary schools, hospitals, dispensaries and health centres, and agency centres operating in the camps such as the JRS centres (Jesuit Refugee Service for persons with special needs). For each institution, a standardised assessment form was filled in, indicating details on the type of the social institution, location, population size and contact details. In addition, the form includes section on cooking and lighting, outlining the technologies in use and recommendations for improvement. This includes recommendation for repairs, replacements or new instalments. The available stoves were assessed on their status and adequacy of the stoves capacity as per each school's population. For lighting, the current system's efficiency and possibility/frequency of outages were identified. The assessment forms for the institutions are provided in the report.

Main findings and recommendations

Cook stoves

The assessment on the stoves found that almost all stoves are in need of repair. In addition, most stoves used in the schools do not operate at their maximum efficiency. Almost all chimneys require replacement due to a lack of adequate maintenance such as cleaning. The assessment revealed a lack of training on the use and maintenance of the stoves to increase durability and reduce wastage of fuel.

General recommendations include:

- Technical services should be available to do annual checks, cleaning and repairs of the stoves and chimneys, and advice on (quality) replacements when necessary.
- When new stoves are installed, training should be provided to end users on use and maintenance to prevent mishandling and improve durability. In addition, careful supervision of workmanship/ finishing of the stoves needs to be taken seriously to prevent early breakages. To this end, training of relevant staff on selection of quality stoves and materials would help.
- Many schools use three stone open fires to cook teachers' meals. Suppliers of improved cook stoves should do awareness raising activities to inform schools on cleaner/more efficient alternative stoves. The stoves used in schools to cook students' meals require expansion and repair in many cases.
- In some cases, the base of the stove was too small leaving part of the stove hanging, and so leading to the inner stove body to collapse. Therefore, the stove building base should be wider than the stove (at least 1.5 meters) to ensure sufficient strength and stability.

Lighting

The lighting assessment found that despite the presence of many solar panels in the institutions, panels were often not (fully) utilised. This was due to dysfunctional batteries, mishandling of materials/switches or unfinished installation. Some installations have broken down as early as one month after set-up. General recommendations therefore include:

- A qualified technician should be available in the camps to provide technical services for solar panels and batteries, including installation (or supervision thereof) and ongoing follow-up after installation. Setting up a central technical services and information point in the camps is advisable. These service points should also provide information on what to do when batteries have reached the end of their warranty period.
- Suppliers and installers should provide training to end users on use and maintenance of the systems.
- Schools should have clear policies to prevent students from mishandling the systems.
- The use of solar-powered systems should also be considered for kitchens, e.g. for lighting, fans, ventilation and air conditioning appliances.

Cooking and lighting assessment social institutions

1. Mogadishu/Ngundeng' Primary School

Name of Institution : Mogadishu/Ngundeng' Primary School
Contact person : Paskal Lukosi
Contact phone number : 0728875101
Location : Kakuma 1 Zone 1
Population : 3446
Boarding status : Day
Functional hours : 11 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities <ul style="list-style-type: none"> - The first two stoves containing 100 litres each have poor inner body and chimney - Repair and chimney replacement will cost Ksh 22,000 per stove.¹ - Stove three of 50 litres needs a grill and the repair cost is Ksh 25,000 - 3 stone cooking is also experienced in 3 different sites.
Recommendations <ol style="list-style-type: none"> 1. Based on the population, the school requires stoves which can accommodate a total of not less than 1700 litres.² 2. All the stoves should be replaced with 3 stoves each containing 500 litres and one containing 200 litres or alternatively, the kitchen should be expanded to create space for more stoves.
Summary of lighting system <ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Has 84 fluorescent tubes, 42 fans and 12 panels of 275W - No outages and still efficient
Recommendations <ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels through extending wiring.

¹ Repair costs indicated in the reports include the costs of replacing the worn out parts like chimneys, grills, stove doors and any other indicated parts.

² The number and sizes of stoves recommended on the detailed report is dictated by the population of the students in the schools.

2. Unity Primary School

Name of Institution : Unity Primary School
Contact person : Shila Cherop
Contact phone number : 0726037632
Location : Kakuma Zone 2 Block 4
Population : 1669
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities <ul style="list-style-type: none">- Stove one of 100 litres has poor liner body, no grill, no door and no chimney.- Its estimated cost of repair is Ksh 27000- Stove 2 also has poor inner body, no door and no chimney.- Estimated cost is Ksh 24500
Recommendations <ol style="list-style-type: none">1. Either the two stoves are replaced with 2 stoves containing 400 litres each @ Ksh 220000 or the kitchen be expanded to accommodate more stoves then 2 stoves containing 300 litres each @ Ksh 180500 to be added.2. The kitchen should also be renovated.
Summary of lighting system <ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting, charging phones and running fans.- Have 7 panels of 275W each, 60 fluorescent tubes and 30 fans- No outages yet
Recommendations <ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

3. Jebbel Mara Primary school

Name of Institution : Jebbel Mara Primary school
Contact person : Richard Ekiru
Contact phone number : 0704538822
Location : Kakuma 1 Zone 2 block 4
Population : 1272
Boarding status : Day
Functional hours : 10 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities <ul style="list-style-type: none">- Only one stove of 100 litres is in a poor state- Has no stove top, very poor chimney, no grill and poor inner stove body- Estimated cost of repair is Ksh 37000- Full replacement of the same size will cost Ksh 87000
Recommendations <ol style="list-style-type: none">1. The stove should be demolished and replaced with same 2 stoves containing 300 litre each @ Ksh 180500 or 3 stoves containing 200 litres each @ Ksh 120000
Summary of lighting system <ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting, charging phones and running fans.- Have 12 panels of 275W each, 68 fluorescent tubes and 22 fans- No outages yet
Recommendations <ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability of the systems2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

4. Bhar El Nam Girls School

Name of Institution : Bhar El Nam Girls School
Contact person : Fridah Mulama
Contact phone number : 071050974
Location : Kakuma 1 Zone 2 Block 14
Population : 2027
Boarding status : Day
Functional hours : 10 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- Both the stoves of 100 litres have poor inner body, very poor chimney, no stove doors and no grills.- Estimated repair cost is Ksh 27000 per stove.- All the four stainless steel sufurias are in good state (100 litres each)
Recommendations
<ol style="list-style-type: none">1. 3 extra stoves each of 200 litres are required each @ Ksh 125000. The existing 2 should also be repaired each @ Ksh 270002. The kitchen should either be expanded or a new one be built altogether.
Summary of lighting system
<ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting, charging phones and running fans.- Have 14 panels of 275W each, 68 fluorescent tubes and 22 fans
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring. The bulbs and fluorescent tubes are not adequate for the classes and rooms although the panels are sufficient.

5. Fashoda Boys Primary School

Name of Institution : Fashoda Boys Primary School
Contact person : Paul Owiti
Contact phone number : 0713287915
Location : Kakuma 1
Population : 1468
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - 2 stoves of 100 litres each are in poor inner stove body, no doors, stove two have no grill and both stoves have very poor chimneys. - Estimated stove repair cost for stove one is Ksh 22,000 while that of stove 2 is Ksh 27,000 - Three stone outdoor cooking also going on.
Recommendations
<ol style="list-style-type: none"> 1. Two more stoves of 250 litres each needed (each @ Ksh 155,500) 2. Estimated repair cost of stove one is Ksh 22000 and stove 2 is Ksh 27,000 3. The kitchen needs to be expanded.
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 12 panels of 275W each, 40 fluorescent tubes and 19 fans - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

6. Clush Primary School

Name of Institution : Clush Primary School
Contact person : Baelomona Mtebwa
Contact phone number : 0796962778
Location : Kakuma 1 Zone 3 Block 6
Population : 2302
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 boiler of 400 litres outer body is still good but the inner wall collapsed and this would most likely cause the outer body to wear out very fast because it is still being used. - It does not have outer grill or chimney - Estimated cost of repair is Ksh 82500 - Uses 3 bundles of firewood per day equivalent to Ksh 210 - Stove 2 is a locally built stove. It is a double stove holding two 100 litres sufuria. - It has no chimneys and the inner body is poor. - Consumes a lot of firewood (5 bundles per day) equivalent to Ksh 350 - Stove 3 is energy saving (250 litres). It is still in good state. - Consumes 1.5 bundles per day equivalent to Ksh 105
Recommendations
<ol style="list-style-type: none"> 1. Being that 100 litre sufurias are available, a double energy saving stove holding 100 litre and one holding 300 litre should be added/built.
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 14 panels of 275W each, 52 fluorescent tubes and 26 fans - Some fan switches are dysfunctional - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. Fan switches need repair

7. Malakal Primary School

Name of Institution : Malakal Primary School
Contact person : Paul Toloch
Contact phone number : 0723202210
Location : Kakuma 1 Zone 4 Block 3
Population : 2305
Boarding status : Day
Functional hours : 10 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 boiler of 250 litres has poor inner body and very poor chimney - Consumes 2 bundles of wood daily - 4 locally built stoves of 100 litres each - Consumes a lot of fuel wood @ 2.5 bundles per day totalling to 10 bundles daily.
Recommendations
<ol style="list-style-type: none"> 1. Stove 1 should be repaired at a cost of Ksh 24,000 2. The 4 locally built stoves should be replaced with an energy saving four in one stove type being that the sufuria are available. Building cost will sum up to Ksh 228,000 3. Two extra stoves needed for 250 litre each @ Ksh 155,500
Summary of lighting system
<ul style="list-style-type: none"> - They use solar as their source of power/energy for lighting and charging phones - The school has a total of 57 fluorescent tubes and 29 fans - 15 panels of 275W are installed to support the above - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. Frequent maintenance services and follow-up should be done 2. There is need for training for the end users to enhance sustainability and durability 3. Students should be encouraged/guided to stop mishandling the switches and fans 4. Kitchen and fans should be connected to the solar panels, through extending wiring

8. Shambe Primary School

Name of Institution : Shambe Primary School
Contact person : Lotonia Charles
Contact phone number : 0721140968
Location : Kakuma 1 Zone 4 Block 2
Population : 1900
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- Stove 1 inner boiler of 400 litres has poor inner body and very poor chimney- Consumes 3 bundles of wood daily- No extra sufurias- Stove 2 and 3 boilers have poor inner body and very poor chimneys- Three stone open fire cooking in use
Recommendations
<ol style="list-style-type: none">1. Stove 1 requires repair @ Ksh 250002. Stove 2 and 3 needs repair worth Ksh 22000 each3. There is need for an extra stove of 350 litres worth Ksh 205000
Summary of lighting system
<ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting, charging phones and running fans.- Have 12 panels of 275W each, 12 fluorescent tubes and 12 fans- Some tubes and fans kept for future installation- No outages experienced yet
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

9. Kadugli Primary School

Name of Institution : Kadugli Primary School
Contact person : Joseph Waiyaki
Contact phone number : 0721916331
Location : Kakuma 1 Zone 3 Block 1
Population : 2018
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove one has poor body state and very poor chimney state (100 litres capacity) Ksh 22000 - Stove two has poor inner body, no grill and no chimney (100 litre capacity) repair @ Ksh 25000 - Too much 3 stone use is experienced
Recommendations
<ol style="list-style-type: none"> 1. Three new stoves of 250 litres each needed 2. Available space can only accommodate 2 big stoves hence the kitchen should be expanded.
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 14 panels of 275W each, 32 fluorescent tubes and 16 fans - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

10. Eliyes Primary School

Name of Institution : Eliyes Primary School
Contact person : Abigael Muchanja
Contact phone number : 0724370305
Location : Kakuma 3 Zone 4 Block 4
Population : 1912
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 boiler of 250 litres has a poor inner state and very poor chimney state - Stove 2 boiler of 100 litres is not in use due to its poor condition, poor inner body and very poor chimneys (repair @ Ksh 24000) - Three stone cooking mostly used - Kitchen so squeezed and the wood stove collapsed.
Recommendations
<ol style="list-style-type: none"> 1. Two extra stoves of 250 litres and one stove of 200 litres are needed as well as repair of the above two stoves.
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 14 panels of 275W each, 32 fluorescent tubes and 16 fans - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

11. Hope Primary School

Name of Institution : Hope Primary School
Contact person : Karl Peters Makai
Contact phone number : 0721110968
Location : Kakuma 4 Zone 1 Block 9
Population : 2527
Boarding status : Day
Functional hours : 10 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Has two boiler stoves of 250 litres each and both have poor inner body and chimney state (repair @ Ksh 23000) - 3 stone outdoor cooking experienced - Limited kitchen space
Recommendations
<ol style="list-style-type: none"> 1. Three more 250 litres stoves and their stainless steel sufuria required (@ Ksh 155,500) 2. Kitchen expansion required
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 23 panels (18 by green light and 5 by key company), 92 fluorescent tubes and 49 fans - The battery of the 5 panels in the library are dysfunctional - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be taken through best practices training to do away with mishandling and vandalism 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. Close follow-ups should always be done to enhance efficiency and durability 5. Battery repair/replacement

12. New Light Primary School

Name of Institution : New Light Primary School
Contact person : Christine Lusweti
Contact phone number : 0729489052
Location : Kakuma 4 Zone 1 Block 8
Population : 1666
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Has 2 boiler stoves of 250 litres each - Stove door needs repair - Stove chimneys not too bad but won't last - Generally stoves are still in good condition - 3 stone outdoor cooking experienced
Recommendations
<ol style="list-style-type: none"> 1. Minor maintenance services needed at a cost of Ksh 5000 2. Two more stoves of 200 litres each needed 3. Kitchen needs expansion for any new stove to fit in.
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 14 panels of 275W each, 43 fluorescent tubes and 20 fans - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

13. Horseed Primary School

Name of Institution : Horseed Primary School
Contact person : Nick Lomorukai
Contact phone number : 0712304219
Location : Kakuma 2 Zone 1 Block 8
Population : 2730
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 of 100 litres have poor inner body and very poor chimney state (estimated repair cost of Ksh 25000) - Stove 2 of 100 litres inner body is poor, broken grill and no chimney (estimated repair cost of Ksh 25000) - Inner body of stove 3 is poor, stove has no grill and has very poor chimney (Repair cost of Ksh 25000) - Very limited kitchen space - One stove is cracked
Recommendations
<ol style="list-style-type: none"> 1. Needs 4 extra stoves of 250 litres each @ Ksh 150000 2. The kitchen should be expanded and cracked stove repaired
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 18 panels of 275W each, 68 fluorescent tubes, 30 fans and 10 bulbs - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

14. Fuji Primary School

Name of Institution : Fuji Primary School
Contact person : Aly Mathias Ibrahim
Contact phone number : 0796962747
Location : Kakuma 2 Zone 1 Block 6
Population : 2462
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 boiler has poor inner state, no grill and very poor chimney (repair @ Ksh 25000) - Stove 2 boiler has poor inner body, no stove door no grill and very poor chimney (repair @ Ksh 27000) - Three stone outdoor cooking experienced
Recommendations
<ol style="list-style-type: none"> 1. Some more stoves needed. 4 stoves containing 250 litres each @ Ksh 150500 2. The kitchen can accommodate only one extra stove hence requires expansion
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 26 panels of 275W each, 52 fluorescent tubes and 55 fans - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. More bulbs should be added to cover all classes

15. Ghambela Primary School

Name of Institution : Ghambela Primary School
Contact person : Patrick Sifuna
Contact phone number : 0727806906
Location : Kakuma 2 Zone 2 Block 5
Population : 3170
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 boiler has poor inner state, no door and poor chimney (repair cost of Ksh 24000) - Stove 2 and 3 have poor inner body and poor chimneys (repair cost of Ksh 22000 each) - All the three stoves contain 100 litres each - 3 stone cooking experienced. - Serves both primary and pre school
Recommendations
<ol style="list-style-type: none"> 1. Four extra stoves needed (either 2 of 200 litres and 2 of 100 litres, or 3 for 200 litres) 2. The kitchen is so squeezed and should be enlarged.
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 19 panels of 275W each, 86 fluorescent tubes and 37 fans - Fans stopped working abruptly due to technical hitches - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

16. Gambela Pre-school

Name of Institution : Gambela Pre-school
Contact person : Elias Mpenda
Contact phone number : 0729013378
Location : Kakuma 2 zone block 5
Population : 590
Boarding status : Day
Functional hours : 5 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- Has no kitchen- Outdoor threes stone cooking experienced
Recommendations
<ol style="list-style-type: none">1. Should have own kitchen and two stoves of 150 litres each installed in it.
Summary of lighting system
<ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting, charging phones and running fans.- Have 6 panels of 275W each, 16 fluorescent tubes and 8 fans- No outages experienced yet
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

17. Peace Primary School

Name of Institution : Peace Primary School
Contact person : Joane Bar
Contact phone number : 0741218128
Location : Kakuma 4 Zone 2 Block 2
Population : 3806
Boarding status : Day
Functional hours : 10 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - 2 boiler stoves of 200 litres each has poor inner body and poor chimneys - 3 stone cooking experienced
Recommendations
<ol style="list-style-type: none"> 1. Three extra stoves of 500 litres each needed (though the kitchen space is limited) 2. Firewood store required
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 18 panels of 275W each, 57 fluorescent tubes and 57 fans - Still efficient - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

18. Lokitang Primary School

Name of Institution : Lokitang Primary School
Contact person : Benedict Nyongesa
Contact phone number : 0713680053
Location : Kakuma 3 Zone 3 Block 3
Population : 2436
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Has 3 stoves of 100 litres each and all are in very poor state - All have very poor inner body, no door, only one has a grill and has very poor chimneys - Stove 1 and 3 estimated repair cost is Ksh 27000 while stove 2 is Ksh 24000 - Kitchen is spacious
Recommendations
<ol style="list-style-type: none"> 1. Needs 3 more stoves of 250 litres each
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 18 panels of 275W each, 46 fluorescent tubes and 38 fans - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. A technician should check on the system

19. Al-nuur Primary School

Name of Institution : Al-nuur Primary School
Contact person : Werunga Cornelious
Contact phone number : 0726223461
Location : Kakuma 3 Zone 3 Block 5
Population : 1856
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- Stove 1 of 200 litres has no chimney but not too bad (repair cost @ Ksh 20,000)- Stove 2 of 100 litres also not too bad (repair cost @ Ksh 16,000)- Too much outdoor 3 stone cooking
Recommendations
<ol style="list-style-type: none">1. Enough space in the kitchen for 3 more stoves2. Needs at least 3 more stoves containing 200 litres each3. The stoves need minor repairs
Summary of lighting system
<ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting, charging phones and running fans.- Have 14 panels of 275W each, 68 fluorescent tubes and 35 fans- No outages experienced yet
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

20. Palotaka Primary School

Name of Institution : Palotaka Primary School
Contact person : Ronald Shituma Simiyu
Contact phone number : 0715018006
Location : Kakuma 3 Zone 1 Block 2
Population : 2950
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Has 2 stoves containing 100 litres each with poor inner body, no grill and very poor chimney - Estimated stove repair is Ksh 27000 each - A lot of 3 stone cooking/ outdoor experienced - Has poor quality stainless sufuria - Kitchen in poor state and can only accommodate one stove
Recommendations
<ol style="list-style-type: none"> 1. More stoves needed 2. Better and faster option is to expand the kitchen to accommodate more stoves 3. More sufurias also needed (stainless sufuria)
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 12 panels of 275W each, 76 fluorescent tubes and 38 fans - Still efficient - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. Needs frequent checkups

21. Sheballe Primary School

Name of Institution : Sheballe Primary School
Contact person : Robert Wangila
Contact phone number : 0725956614
Location : Kakuma 3 zone 2 block 5
Population : 2121
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Have three stoves of 100 litres each with poor inner body, no doors and poor chimneys. - Estimated repair cost is Ksh 24000 each
Recommendations
<ul style="list-style-type: none"> - Kitchen still strong and spacious - Cooking hasn't started yet but signs of three stone cooking are evident - Needs 3 more stoves of 250 litres each
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 12 panels of 275W each, 88 fluorescent tubes and 44 fans - Efficient though the security lights are sensor type - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. Security guards prefer non-sensor type of security lights

22. Angelina Jolly Primary School

Name of Institution : Angelina Jolly Primary School
Contact person : Muthoni Isabella
Contact phone number : 0724299878
Location : Kakuma 1
Population : 250 girls
Boarding status : Boarding
Functional hours : 16 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- Stove 1 of 100 litres is not being used, no chimney, no grill- Stove 2 and 3 of 100 litre each has fair inner body, no grill and fair chimneys (Repair costs @ Ksh 16000 each)- 4th stove of 200 litres is still in good condition, chimneys only needs cleaning
Recommendations
<ol style="list-style-type: none">1. Stove 1 needs replacement with a 200 litre stove2. Minor repairs needed for the rest of stoves
Summary of lighting system
<ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting, charging ICT gadgets (50) and laptops- Have 40 panels and 68 bulbs- Most of the batteries died hence need replacement- Outage sometimes experienced during cloudy weather
Recommendations
<ol style="list-style-type: none">1. Frequent check-ups on the lighting system2. Technical training needed for the end users3. Students should be encouraged/guided to stop mishandling the switches and fans4. Frequent checkups on the power system

23. Future Primary School

Name of Institution : Future Primary School
Contact person : Emmanuel Wamalwa
Contact phone number : 0707603552
Location : Walobeiye Village 3
Population : 5480
Boarding status : Day
Functional hours : 7 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Has 3 stoves of 500 litres each - Inner body needs repair/poor rationing of materials and poor type of bricks used - Chimneys need cleaning - Repair cost per stove is Ksh 15,000 - Kitchen is so squeezed hence no space for additional stoves. - Underfeeding due to lack of adequate stoves to cook enough food
Recommendations
<ol style="list-style-type: none"> 1. A new kitchen should be built or the existing one be expanded to accommodate more stoves 2. Three more stoves needed (two 500 litres and one of 200 litre)
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and running fans. - Have 6 panels of 275W each, 10 fluorescent tubes, 7 fans and 12 bulbs - Fans are not functional - No outages experienced yet
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

24. Joy Primary School

Name of Institution : Joy Primary School
Contact person : Mellan Adoani
Contact phone number : 0724944484
Location : Kalobeyei Village 2
Population : 2232
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : wood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- All stoves are in good condition- No firewood stove hence cooking problem during raining season
Recommendations
<ol style="list-style-type: none">1. Firewood stove should be built2. Frequent chimney maintenance/cleaning required
Summary of lighting system
<ul style="list-style-type: none">- Solar is the source of energy- Used for lighting and charging- Only installed in two classes and fans not yet connected- Have 6 panels, 12 fluorescent tubes and 6 fans
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans

25. Friends Primary School

Name of Institution : Friends Primary School
Contact person : Honesmas Luseno
Contact phone number : 0728162234
Location : Kalobeyei Village 2
Population : 2372
Boarding status : Day
Functional hours : 12 hours
Type of fuel used : Wood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - The first two stoves need minor repairs (inner body, foundation skirting and chimney cleaning) - Poor workmanship on new stoves more so inner body, skirting and roof filling
Recommendations
<ol style="list-style-type: none"> 1. Minor repairs should be done to the noted areas above to enhance durability.
Summary of lighting system
<ul style="list-style-type: none"> - Has no source of power
Recommendations
<ol style="list-style-type: none"> 1. At least a solar panel should be installed to cater for minor needs 2. There is need for training for the end users to enhance sustainability and durability 3. Students should be encouraged/guided to stop mishandling the switches and fans 4. Kitchen and fans should be connected to the solar panels, through extending wiring

26. Settlement Primary School

Name of Institution : Settlement Primary School
Contact person : Salim Ramadhan
Contact phone number : 0728280422
Location : Kalobeyei Village 1
Population : 4752
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : wood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - One stove of 200 litres and 2 stoves of 200 litres available - All the 3 stoves are in good condition - Blocked chimneys - Two stoves have no doors
Recommendations
<ol style="list-style-type: none"> 1. Minor repairs/maintenance needed on the available stoves 2. Two more stoves needed for 500 litres each.
Summary of lighting system
<ul style="list-style-type: none"> - Solar is the source of energy - Used for lighting and charging - 6 panels, 8 fluorescent tubes and 5 fans
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

27. Morning Star Primary School

Name of Institution : Morning Star Primary School
Contact person : Caren Wafula
Contact phone number : 0714919797
Location : Kalobeyei
Population : 3305
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Wood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- Have three stoves of 500 litres each- Stove 1 need a skirting to prevent collapsing of the inner body- Lack some stove door locks due to frequent removal
Recommendations
<ol style="list-style-type: none">1. Re-fixing of the stove 1 chimney2. Chimney cleaning3. User training needed
Summary of lighting system
<ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting and charging- Have 6 panels, 15 fluorescent tubes but only 9 in use and 7 fans also not connected
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

28. Brightster Integrated Secondary School

Name of Institution : Brightster Intergrated Secondary School
Contact person : Caroline Kuria
Contact phone number : 0714677247
Location : Kalobeyel village 1
Population : 447
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Three stone cooking going on though for teachers food only - No lunch program yet for students - Has a small temporary kitchen
Recommendations
<ol style="list-style-type: none"> 1. If feeding program will be introduced then a kitchen and an energy saving stove should be built in consideration of the population
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar - Used for lighting and charging - Has 6 panels, 5 fans, 25 fluorescent tubes and 2 bulbs - Installation only done in the laboratory
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. More panels and installations be done in classes too

29. Vision Secondary School

Name of Institution : Vision Secondary School
Contact person : At5hman Mwarua
Contact phone number : 0722520141
Location : Kakuma 4 zone
Population : 2700
Boarding status : Day
Functional hours : 11 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - All the three stoves are still in good condition though not adequate considering the population - Three stone cooking still experienced
Recommendations
<ol style="list-style-type: none"> 1. More stoves of 500 and 400 litres are required as well as a double teachers stove
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones and ICT gadgets - Have 7 panels and 8 bulbs and a printer - Batteries are faulty
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. Battery servicing or replacement needed 5. More panels / backup needed

30. Monshapel Secondary School

Name of Institution : Monshapel Secondary School
Contact person : Irene Kinyanjui
Contact phone number : 0722589983
Location : Kakuma 1
Population : 346
Boarding status : Girls Boarding
Functional hours : 17 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Has three stoves of 200 litres each - Inner body not so good - Chimneys are in very poor state - Estimated cost of repair is Ksh 16,000 each
Recommendations
<ol style="list-style-type: none"> 1. Enough stoves for the population should be built 2. Chimneys need replacement 3. Inner body needs repair
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy and generator as backup - Used for lighting, charging phones and laptops - Have 54 panels and 32 bulbs but few batteries - Solar can only support one hour lighting during prep time where they then switch to generator - Use diesel 80L per month
Recommendations
<ol style="list-style-type: none"> 1. GIZ offered support for lighting and field construction 2. There is need for training for the end users to enhance sustainability and durability 3. Students should be encouraged/guided to stop mishandling the switches and fans 4. Kitchen and fans should be connected to the solar panels, through extending wiring 5. Addition and replacement of the solar battery 6. Frequent follow-ups should be made

31. Kakuma Secondary

Name of Institution : Kakuma Secondary
Contact person : Stanley Kioko
Contact phone number : 0716283103
Location : Kakuma 1 zone 1
Population : 3779
Boarding status : Day
Functional hours : 12 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Has two stoves of 100 litres each - Very poor inner body state, no grill and poor chimneys for both stoves - A lot of 3 stone cooking taking place
Recommendations
<ol style="list-style-type: none"> 1. Needs three more stoves of 500 litres and one of 200L to serve students 2. The kitchen is spacious enough 3. Needs more food serving materials (plastic basins)
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones/ICT gadgets, running projector, 3 printers and 2 fans - Have 24 panels and 14 bulbs - Classes have no lights yet - Poor battery system hence outage frequently experienced
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

32. Kalobeyei Settlement Secondary School

Name of Institution : Kalobeyei Settlement Secondary School
Contact person : Daniel Ndambuki
Contact phone number : 0726396996
Location : Kalobeyei village 2
Population : 1232
Boarding status : Day
Functional hours : 7 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Three stone cooking experienced - No feeding program yet - Kitchen well done - Can accommodate 3 to 4 stoves depending on the size
Recommendations
<ol style="list-style-type: none"> 1. Three stoves of 250 litres needed as well as two small ones for teachers
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging phones, laptops, printing and laboratory operations - Have 7 panels and 17 bulbs - No lights yet in the classrooms - Outages experienced at night if fans are used during the day - Low battery strength
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. More panels and batteries needed (8 more panels and 16 batteries needed) 5. Battery servicing/replacement needed

33. Somali Bantu Secondary School

Name of Institution : Somali Bantu Secondary School
Contact person : Noel Yego
Contact phone number : 0723751411
Location : Kakuma 3
Population : 2359
Boarding status : Day
Functional hours : 10 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- No installed stove- Three stone being used for teachers meal- No feeding program yet
Recommendations
<ol style="list-style-type: none">1. Needs 3 stoves of 400 litres each
Summary of lighting system
<ul style="list-style-type: none">- Uses solar as source of energy- Used for lighting and charging phones- Have 6 panels and 8 bulbs- Can't support lighting up to past 8 pm
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

34. New Light Secondary School

Name of Institution : New light Secondary School
Contact person : David Onyango
Contact phone number : 0790829182
Location : Kakuma 2
Population : 2587
Boarding status : Day
Functional hours : 10 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- No installed stove- 3 stone being used
Recommendations
<ol style="list-style-type: none">1. 3 stoves of 500 litres each required2. Teachers stove of 10 litres or 20 litres also needed (double if possible)
Summary of lighting system
<ul style="list-style-type: none">- Solar is the source of power- It is used for lighting- 22 panels, 4 fans, 5 bulbs and ICT package- No outage experienced
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

35. Kakuma Girls Primary School

Name of Institution : Kakuma Girls Primary School
Contact person : Elizabeth Napur
Contact phone number : 0728218223
Location : Kakuma Town
Population : 726 girls
Boarding status : Day
Functional hours : 16 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 boiler of 100L has very poor inner and outer body, no chimney - 2 rocket stoves of 200 litres each still in good condition, only blocked chimney - Three stone cooking experienced
Recommendations
<ol style="list-style-type: none"> 1. Stove needs full replacement 2. User training for rocket stove needed 3. 2 smaller stoves of 10-50 litres needed to replace the three stones.
Summary of lighting system
<ul style="list-style-type: none"> - Uses electricity though solar panels are also installed (their battery failed) - Used for lighting and charging - Has 72 bulbs, printers and learning ICT gadgets - Wiring not yet done in some blocks - Has 32 panels but not being used because of a dysfunctional battery
Recommendations
<ol style="list-style-type: none"> 1. Solar batteries should be replaced 2. There is need for training for the end users to enhance sustainability and durability 3. Students should be encouraged/guided to stop mishandling the switches and fans 4. Kitchen and fans should be connected to the solar panels, through extending wiring

36. Good Shepherd Primary School

Name of Institution : Good Shephard Primary School
Contact person : Sister Priscah Chebii
Contact phone number : 0701730539
Location : Kakuma town
Population : 387
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : Individual Suppliers
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 boiler of 200 litres still new and in good condition - Stove 2 locally built, no breathers, no chimney, consumes a lot of wood and produces a lot of smoke - Cooks request for an extra double stove of 100 litres and 20 litres
Recommendations
<ol style="list-style-type: none"> 1. An extra 100 litres stove needed 2. Another smaller stove needed for teachers meals
Summary of lighting system
<ul style="list-style-type: none"> - Both electricity and solar used - Used for charging and electricity - Has 80 bulbs, 3 computers and a printer - Efficient
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

37. Kakuma Mixed Primary School

Name of Institution : Kakuma Mixed Primary School
Contact person : Stephen Njoroge
Contact phone number : 0723988200
Location : Kakuma Town
Population : 2199
Boarding status : Day and Boarding
Functional hours : 16 hours
Type of fuel used : Firewood
Source of fuel supply : Individual suppliers
Summary of cooking facilities
<ul style="list-style-type: none"> - Stove 1 boiler state very poor, only the stove outer body and a 250 litre sufuria available - Stove 2 of 200 litres is also in a very poor state - All stoves not in use due to the poor conditions - Three stone still used
Recommendations
<ol style="list-style-type: none"> 1. Two stoves of 250 litres each required 2. The two available stoves also needs to be re-done
Summary of lighting system
<ul style="list-style-type: none"> - Solar is the source of power - Used for lighting, charging, photocopying, computers, printing, fans and TV - Outage experienced when all the appliances are connected
Recommendations
<ol style="list-style-type: none"> 1. More panels or backup needed 2. There is need for training for the end users to enhance sustainability and durability 3. Students should be encouraged/guided to stop mishandling the switches and fans 4. Kitchen and fans should be connected to the solar panels, through extending wiring

38. Nationokar Intergrated Primary School

Name of Institution : Nationokar Intergrated Primary School
Contact person : Edward Lobuin
Contact phone number : 0724564261
Location : Kakuma 4 / Kalobeyei village 3
Population : 1019
Boarding status : Day and Boarding
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply: School purchasing locally.
Summary of cooking facilities
<ul style="list-style-type: none"> - Has one boiler stove of 200 litres still in good state and well maintained - 3 stone also being used - Kitchen is squeezed
Recommendations
<ol style="list-style-type: none"> 1. Two more stoves of the same capacity needed 2. The kitchen should be expanded
Summary of lighting system
<ul style="list-style-type: none"> - Uses solar as source of energy - Used for lighting, charging and TV programs - Have 7 panels, 8 bulbs and a printer - No lights in the dormitories - No security lights - 20 panels but only 6 working since batteries of the rest died - Only three classes have lights
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring

39. Kalemchuchu Primary School

Name of Institution : Kalemchuchu Primary School
Contact person : Sabina Akwam
Contact phone number : 0716062803
Location : Morungole Sub-location
Population : 469
Boarding status : Day
Functional hours : 10 hours
Type of fuel used : Firewood
Source of fuel supply : School sourcing
Summary of cooking facilities
<ul style="list-style-type: none">- One boiler stove of 200 litres. It has poor inner body, poor chimney and no grill- 3 stone cooking experienced- A new stove by county government (no sufuria) but by virtue of its design it is unlikely to last.
Recommendations
<ol style="list-style-type: none">1. The stove needs a repair worth Ksh 24,000
Summary of lighting system
<ul style="list-style-type: none">- Solar and electricity used- Used for lighting and charging tablets- Have 10 panels and 18 fluorescent tubes
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Students should be encouraged/guided to stop mishandling the switches and fans3. Kitchen and fans should be connected to the solar panels, through extending wiring

40. General Hospital

Name of Institution : General Hospital
Contact person : Regina Itwara
Contact phone number : 0702572069
Location : Kakuma 4
Population : 180
Boarding status :
Functional hours : 24 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - Has three boiler stoves of 200 litres each with fair inner body and chimneys - Stove 1 has a poor door and poor grill - There is a 4 in one stove of 15 litres each. It has poor grill and a fair chimney
Recommendations
<ol style="list-style-type: none"> 1. Repair needed for all the first 3 stoves 2. Estimated repair cost is Ksh 10,000 per stove
Summary of lighting system
<ul style="list-style-type: none"> - Solar/generator used - Used for lighting, reading biometric equipment, fridges, air conditioners and fans - Has 6 panels of 375W each and 61 panels of 275W each, none are functional due to battery shutdown - Solar inverters are faulty - Generator breakdown in some cases
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Kitchen and fans should be connected to the solar panels, through extending wiring 3. Battery replacement/repair 4. Frequent servicing needed for both solar system and generator

41. Main hospital

Name of Institution : Main hospital
Contact person : Furaha Simiri
Contact phone number : 0728839116
Location : Kakuma 1
Population : 40
Boarding status : Day / Boarding
Functional hours : 24 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none">- Have three stoves of 200 litres each- Also have a double stove of 30 litres each but no chimneys and no grills- Stove 2 has very poor chimney- Stove three has poor chimney
Recommendations
<ol style="list-style-type: none">1. Stove 1, 2 and 3 needs chimney replacement2. Very minor repair needed for the inner body3. A total of Ksh 50,000 can carter for the repairs and replacement
Summary of lighting system
<ul style="list-style-type: none">- Uses electricity and solar- Used for lighting and biometric equipment- Has 4 panels for backup
Recommendations
<ol style="list-style-type: none">1. There is need for training for the end users to enhance sustainability and durability2. Kitchen and fans should be connected to the solar panels, through extending wiring3. More panels for backup needed

42. Kakuma 4 NRC Youths Center

Name of Institution : Kakuma 4 NRC Youths Center
Contact person : Emanuel Ekadeli
Contact phone number : 0726091884
Location : Kakuma 4
Population : 250
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : Lokado
Summary of cooking facilities
<ul style="list-style-type: none"> - have 2 stoves of 200 litres each - stove 2 has poor inner body
Recommendations
<ol style="list-style-type: none"> 1. minor repair and chimney cleaning needed 2. roof filling needed around the chimneys 3. estimated repair cost for the stove is Ksh 18,000
Summary of lighting system
<ul style="list-style-type: none"> - generator is the source of power - used during computer lessons only
Recommendations
<ol style="list-style-type: none"> 1. There is need for training for the end users to enhance sustainability and durability 2. Students should be encouraged/guided to stop mishandling the switches and fans 3. Kitchen and fans should be connected to the solar panels, through extending wiring 4. Need solar for backup 5. Require frequent maintenance

43. Women Center IRC

Name of Institution : Women Center
Contact person : Fardossa Hassan
Contact phone number : 0725727017
Location : Kakuma
Population : 175
Boarding status : Day
Functional hours : 3 hours
Type of fuel used : Charcoal
Source of fuel supply :
Summary of cooking facilities
- Have 2 Kenya ceramic jikos and 4 baking ovens
Recommendations
1. Not much cooking, hence no larger stove needed
Summary of lighting system
- Solar is used - Has 6 panels and 3 bulbs - No other appliances
Recommendations
1. There is need for training for the end users to enhance sustainability and durability 2. Kitchen and fans should be connected to the solar panels, through extending wiring

44. JRS Safe Havens Center 1

Name of Institution : JRS Safe Havens Center 1
Contact person :Paul Moseti
Contact phone number :0710716059
Location : Kakuma 1
Population : 60
Boarding status : Boarding
Functional hours : 24 hours
Type of fuel used : Firewood
Source of fuel supply : no specific supplier
Summary of cooking facilities
- Rocket double stove of 100 and 50 litres
Recommendations
1. Needs minor repair worth Ksh 10,000
Summary of lighting system
- solar used - used for lighting, charging and TV - 4 panels of 150w and 12 bulbs
Recommendations
- Still in good conditions but needs check-ups

45. Special Needs Department Area JRS Center 1

Name of Institution : Special Needs Department Area Center 1
Contact person : Simon Gatnor
Contact phone number : 0704150562
Location : Kakuma 1
Population : 46
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : No specific suppliers
Summary of cooking facilities
<ul style="list-style-type: none">- Locally built stove- Very smoky- Looks exposed to too much heat
Recommendations
<ol style="list-style-type: none">1. Needs a well-designed and ventilated stove
Summary of lighting system
<ul style="list-style-type: none">- Solar used- Used for lighting and charging- 2 panels and 9 bulbs
Recommendations
<ul style="list-style-type: none">- Still efficient but needs check-ups for sustainability

46. JRS Center 2 Special Needs

Name of Institution : JRS Center 2 Special Needs
Contact person : David Banyang
Contact phone number : 0701025715
Location : Hong Kong
Population : 76
Boarding status : Day
Functional hours : 9 hours
Type of fuel used : Firewood
Source of fuel supply : No specific suppliers
Summary of cooking facilities
- Triplet rocked stove well maintained hence in good condition
Recommendations
1. More user training needed 2. Frequent chimney cleaning needed
Summary of lighting system
- No power yet
Recommendations
- Needs lights for security purposes and powering equipment/appliances

47. JRS Center 3

Name of Institution : JRS Center 3
Contact person :Charles Gatuya
Contact phone number : 0796531154
Location : Kakuma 2
Population : 200
Boarding status : Day
Functional hours : 8 hours
Type of fuel used : Firewood
Source of fuel supply : No specific suppliers
Summary of cooking facilities
<ul style="list-style-type: none">- Locally double built stove- Has built chimney but not sucking- Too much heat in the kitchen
Recommendations
<ol style="list-style-type: none">1. Needs full replacement with a well-designed and ventilated stove
Summary of lighting system
<ul style="list-style-type: none">- Uses solar- 1 panel of 50W- Used for charging
Recommendations
<ul style="list-style-type: none">- Security lights required

48. JRS Special Needs Department Center 4

Name of Institution : JRS Special Needs Department Center 4
Contact person : Jamar Husain
Contact phone number : 0716742079
Location : Kakuma 4
Population : 69
Boarding status : Day care
Functional hours : 7 hours
Type of fuel used : Firewood
Source of fuel supply : No specific suppliers
Summary of cooking facilities
<ul style="list-style-type: none"> - Locally built double stove with no treatments hence a lot of smoke experienced - Built chimney not working
Recommendations
<ol style="list-style-type: none"> 1. Needs replacement with a well-designed and installed stove
Summary of lighting system
<ul style="list-style-type: none"> - No power yet - Has 8 rooms - Learning and caregiving ongoing
Recommendations
<ul style="list-style-type: none"> - Needs lights for security purposes

49. Safe Haven Department JRS Center 4

Name of Institution : Safe Haven Department JRS Center 4
Contact person : Paul Moseti
Contact phone number : 0710716059
Location : Kakuma 4
Population : 18
Boarding status : Boarding
Functional hours : 24 hours
Type of fuel used : Firewood
Source of fuel supply : No specific suppliers
Summary of cooking facilities
<ul style="list-style-type: none">- Triple rocket stove of 50 litres each- One sufuria leaking- One middle chimney pipe cracked
Recommendations
<ol style="list-style-type: none">1. Replacement of the middle chimney needed2. Sufuria repair also needed
Summary of lighting system
<ul style="list-style-type: none">- Solar used- 10 panels and 11 bulbs- Used for lighting and charging- Battery problem hence an outage is experienced approximately 3 times per week
Recommendations
<ul style="list-style-type: none">- 10 batteries of 24V should be replaced

50. JRS Center 5

Name of Institution : JRS Center 5
Contact person : Zidi Ramadhan
Contact phone number : 0705415891
Location : Center 5
Population : 76
Boarding status : Boarding
Functional hours : 24 hours
Type of fuel used : Firewood
Source of fuel supply : No specific suppliers
Summary of cooking facilities
- Triplet rocket stove of 50, 30 and 20 litres
Recommendations
1. Stove is well maintained and in good condition
Summary of lighting system
- No power yet
Recommendations
- Requires solar system for lighting and use in other appliances

51. Kakuma Missions Hospital

Name of Institution : Kakuma Missions Hospital
Contact person : Sister Anastacia
Contact phone number :
Location : Kakuma Town
Population : 69
Boarding status : Boarding
Functional hours : 24 hours
Type of fuel used : Firewood
Source of fuel supply : School local purchase
Summary of cooking facilities
- Have 2 stoves of 50 litres each with the poor inner body, no grill and fair chimney
Recommendations
1. Needs repairs worth Ksh 10,000 each
Summary of lighting system
- Solar and electricity used
- Has 59 solar panels but not working due to battery failure
- Used for lighting, running biometric equipment and incubations
Recommendations
1. Battery needs replacement
2. Qualified technicians needed for frequent maintenance

Annex

I. Rocket stove costs as per capacity

Stove size in Litres	Total cost (Ksh)
30	59,500
50	70,500
100	87,500
150	110,000
200	125,000
250	155,000
300	185,500
350	205,500
400	225,000
450	235,000
500	255,000
550	275,000
600	295,000

N/B: An installed portable double stove of 15 and 20 litres can be done @ Ksh 85,000 (including stainless sufurias).

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