

Kenya Venture Proposal

FOR JUNE 2017

YIMING XU

1 TABLE OF CONTENTS

2 3

3 4

4 5

5 6

5.1 6

6 7

7 Error! Bookmark not defined.

8 Error! Bookmark not defined.

9 Error! Bookmark not defined.

10 8

11 8

12 8

12.1 Error! Bookmark not defined.

12.2 Error! Bookmark not defined.

12.3 Error! Bookmark not defined.

12.4 Error! Bookmark not defined.

12.5 Error! Bookmark not defined.

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13 Error! Bookmark not defined.

13.1 Error! Bookmark not defined.

13.2 Error! Bookmark not defined.

13.3 Error! Bookmark not defined.

13.4 Error! Bookmark not defined.

13.5 Error! Bookmark not defined.

13.6 Error! Bookmark not defined.

13.7 Error! Bookmark not defined.

14 Error! Bookmark not defined.

2 AIMS

1. To review the progress of the Jiko stoves project
 - To educate the residents of Gaichanjiru about the benefits of using Jiko stoves
 - To conduct workshops for the residents of Gaichanjiru on how to build Jiko stoves and run the relevant businesses
 - To conduct further needs assessments and gauge the impact of the Jiko stoves on the living standards of the residents of Gaichanjiru
 - To further develop and fine tune the business model to ensure the sustainability and scalability of the project
2. To investigate the possibility of partnership with local community development groups/self-help groups
3. To develop relationships with the residents of Gaichanjiru and the chosen NGO for future projects

These aims will be achieved in collaboration with our local NGO partner, The Mash Foundation Trust. See Partner NGOs for more information.

3 BACKGROUND

Kenya Jiko Stoves was launched in June 2016. After speaking to the MASH Foundation (our project partner), we discovered that 90% of the villagers in Gaichanjiru are living below the poverty line. Over the following months from September to December 2016, a thorough needs assessment was conducted in the community to understand the problems faced by the community, and their root causes. We identified that the endemic poverty was the major problem in the community which led to further problems, out of which, poor health conditions from firewood smoke was the side effect. Utilising the scientific knowledge available to us, our Enactus members worked on an improved method for cooking, to replace the use of traditional 3 stone stove. In January, we launched our 3 first prototypes of the Jiko Stove with the help of the MASH Foundation. The project has been funded by the Imperial College Union annual charity fund. A sum of £800 was provided to Enactus, out of which, we allocated £300 for the jiko stove project. Our project partner from Engineering without borders also contributed 1/5 of the capital cost during our pilot trip in January 2017. We also have a commercial team which generated £600 over September to December term to secure enough funding for our project. The funding provided enough capital for us to buy the local materials to train the villagers on how to make the jiko stoves. This enabled us to make our first 3 prototypes for 3 villagers who are currently using the stove on a daily basis and are saving approximately 50-66% of firewood purchase per day. It also enabled us to subsidise our volunteer's travel expenses to Kenya in January. Further funding will enable us to scale the project and mass produce the stoves in Gaichanjiru, Kenya.

4 PARTICIPANTS

A group of 6 undergraduate and postgraduate students travelled to Gaichanjiru in the last week of June. These students were chosen based on their demonstration of a strong commitment to the project, and a keen interest in or knowledge of international development and sustainability. Efforts were also made to ensure a good balance of team members with relevant experience in both engineering and business, so that all bases are covered.

Students were from Enactus Imperial (2) and Raincatcher (2).

Summer Team

Jeremy Tan

jeremy.tan14@imperial.ac.uk

President of Enactus Imperial (2016/2017)

22

Materials Science & Engineering (MEng 4YFT) – 3rd Year

Jeremy was familiar with the requirements of the trip and showed competency in planning and execution for the trip. As he has been communicating with the project partner remotely over the past year, he was the best person able to work with him locally. In addition, his experience leading Enactus provided him with greater mental maturity, and being able to stay calm under potential stressful situations in the trip. He also attended first aid training.

Iza Velišček

iza.veliscek15@imperial.ac.uk

Project Leader, Enactus Imperial (Technopreneurship) (2016/2017)

01071990

21

Physics (MSci 4YFT) – 2nd Year

In her capacity as a project leader, Iza had shown her abilities to plan workshops effectively, and helped out with the business workshops that the team conducted for the villagers. Her experience in Enactus also made her an asset to the team.

Kaifeng Wei

kaifeng.wei15@imperial.ac.uk

Raincatcher Imperial

01105764

21

Physics with Theoretical Physics (MSci 4YFT) – 2nd Year

Daryl Jude Lawrence

daryl.lawrence15@imperial.ac.uk

Raincatcher Imperial

01044942

22

Materials Science & Engineering (MEng 4YFT) – 1st Year

Daryl and Kaifeng are members of Raincatcher who will be helping with the workshops and the building of stoves.

We were also joined by a student from Queen Mary University of London, Tina Tian, who has first aid experience.

Support Team

There was also a team in London supporting the Kenya team. The role of support network was to offer advice, answer questions and undertake research as and when it was needed by the team in Kenya.

Yiming Xu

yiming.xu15@imperial.ac.uk

Vice President of Enactus Imperial (2016/2017); Project Leader (Technopreneurship) (2017/2018)

23

Chemistry with Molecular Physics (MSci 4YFT)

Aaheli Tarafdar

aaheli.tarafdar15@imperial.ac.uk

President of Enactus Imperial (2017/2018)

20

Chemical Engineering with Fine Chemicals Processing (MEng 4YFT)

5 DETAILS OF PROGRAMMES

Enactus Imperial had previously conducted a one-week programme in Gaichanjiru, Kenya, in January 2017. This programme will review the progress made and conduct the necessary groundwork for the rest of the project to come to fruition.

The Jiko Stoves project aims to introduce Jiko stoves, which are more efficient energy production units, to the community in Kenya as an alternative to the traditional method of burning firewood. Currently, the Jiko stoves available in Kenya are too expensive for the residents of Gaichanjiru, who do not have stable sources of income within their village and are plagued with financial difficulties. The villagers thus use firewood to directly heat their food. Firewood is also getting more expensive.

This calls for a solution which tackles both these problems. We are proposing to teach the villagers the necessary skills to produce a cheaper Jiko stove using locally sourced materials, so that they can not only use these stoves, thus reducing their costs and improving environmental conditions, but also sell them to neighbouring villages to earn a living for themselves.

From both out trips in January and June, it was found that the local villagers are very enthusiastic about the stoves. We aim to establish our presence in the village as a partner

that is genuinely concerned with helping the villagers, and to explore ways and means to further fine-tune the business and the stove, in an effort to enable expansion and mass production. This can be achieved by visiting various local markets and retail points, as well as contacting and communicating with different suppliers.

We also hope to teach the villagers the skills required to build the stoves, and some rudimentary business skills so that they can, in the future, run the business themselves, and improve their employability.

6 LOGISTICS

6.1 ITINERARY

Programme Dates: 20 June - 27 June 2017

Date	Activity
20 th June Tuesday Day 1	<ul style="list-style-type: none"> • Arrival at Nairobi • Learning about local customs, dos and do-nots • Familiarization with the local area • Set up of communication tools (SIM cards)
21 st June Wednesday Day 2	<ul style="list-style-type: none"> • Debrief and leave for Village in the morning • Learning about local customs, dos and do-nots • Visiting existing Jiko stoves and interviewing the homes
22 nd June Thursday Day 3	<ul style="list-style-type: none"> • Testing of new and improved Jiko stoves • Interviewing existing Jiko stoves builders • Reviewing the progress of the Jiko business <ul style="list-style-type: none"> ◦ Numbers built, revenue, etc.
23 rd June Friday Day 4	<ul style="list-style-type: none"> • Visit Yogurt making group and table banking self-help group • Getting to know the self-help group and its projects. (micro finance, table banking and others) • Introduce ENACTUS and build rapport • Demonstrate how to make new energy saving Jiko and its importance as well as hear feedback from community. • Propose and consider potential help for their projects • Conducting workshops (Content TBD)
24 th June Saturday Day 5	<ul style="list-style-type: none"> • Visit another self-help group and its projects • Getting to know the self-help group and its projects. (micro finance, table banking and others) • Introduce ENACTUS and build rapport • Demonstrate how to make new energy saving Jiko and its importance as well as hear feedback from community. • Propose and consider potential help for their projects

	<ul style="list-style-type: none"> Conducting workshops (Content TBD)
25 th June Sunday Day 6	<ul style="list-style-type: none"> Visit Youth and motor bike operators SACCO. Getting to know the self-help group and its projects. (micro finance, table banking and others) Introduce ENACTUS and build rapport Demonstrate how to make new energy saving Jiko and its importance as well as hear feedback from community. Propose and consider potential help for their projects Conducting workshops (Content TBD)
26 th June Monday Day 7	<ul style="list-style-type: none"> Check how well the improved stoves that we built functions, and make comparison if possible Visit 2 schools to investigate potential ways that we can provide support <ul style="list-style-type: none"> Water conservation projects Microfinancing project Exploring other potential projects to assist the community
27 th June Tuesday Day 8	<ul style="list-style-type: none"> Buffer and Return

7 PARTNER NGOS

The Mash Foundation Trust
P.O. Box. 105381 – 00101
Nairobi, Kenya
Tel.: +254 723 489 181
E-mail: charles.macharia@mashfoundationtrust.org

The Mash Foundation Trust programs seek to empower, educate and support communities, orphans and vulnerable children in Africa. The foundation works from grassroots scheme and strives for social improvement through bottom up development.

The MASH Foundation trust also links overseas volunteer students to participate in Community projects both in Kenya and Tanzania, including connecting students from Imperial College School of Medicine in United Kingdom to local hospitals in Kenya to experience how medical systems work in Africa. The Foundation's mission is to facilitate provision of basic education to all orphans and needy children in Kenya, Tanzania and Uganda as well as give social help, health related information and financial support to eradicating poverty and improve living conditions of communities

in Africa.

8 TRAINING

All team members attended a 'Know Before You Go' pre-departure course run by Enactus Imperial to prepare them for the project. The course offers comprehensive training for undertaking international development projects overseas. Sessions would cover include:

- Examining motivations for work in this area
- Learning about International Development
- Conflict Resolution
- Engaging well with people
- Community Participation
- Personal Security and Health
- Living and Working Abroad

Participants were also given basic first aid training, and a first aid kit was included in packing.

9 BUDGET

Expenditure					
Item	Unit Cost (£)	Unit	No.	Total /£	Total /KSh
Flight Tickets (Return)	400		5	2,000.00	260,000.00
Transportation (daily)	20	day	7	140	18,200.00
Transportation (airport)	100	trip	2	200	28,000.00
Stoves	500			500	65,000.00
Food/ Water/ Security*	45	day	7	315	40,950
BUFFER	100		1	100	13,000.00
TOTAL Expenditure				3,255.00	425,150.00
EXPENDITURE PP				651	85,030.00

10 EXPEDITION

10.1 DAY 1 – 20TH JUNE

Jeremy, Tina, Kaifeng and Iza departed from Heathrow Airport on the previous day and after catching three different flights, finally arrived in Nairobi where they were awaited by Charles Macharia from the MASH Foundation and Daryl (who already arrived on the previous day). Charles arranged for the transportation to Gaichanjiru. Before heading to the village we stopped at a shopping mall in Nairobi, where SIM cards and other supplies such as drinkable water were bought. We also met Charles' wife Tina. Tina is also an active member of MASH Foundation and was going to help with the project. The team arrived at the accommodation provided for the next ten days just about lunch time. After settling in the team was familiarized with the local area. Charles and Tina took us for a walk in the village, explained the main struggles of the community and showed us where the hospital, school and police station were located. They also introduced us to a local policeman. Tired from the long flight, we discussed the objectives for the following day and called it a day.



Group photo. From left to right, Tina, Kaifeng, Tina, Charles, Jerney and Iza.

10.2 DAY 2 – 21ST JUNE

With renewed powers from a good night's sleep, the team started the day rehearsing the business workshops, first among ourselves, and afterwards in front of Tina and Charles who provided constructive feedback on how to modify the examples given. The examples were changed so that they related to farming or motorbike transportation, activities that are familiar to the community.



Jiko Stove made in January 2017

After lunch, the day was spent working on the Jiko Stove project. Firstly, the first stove built during the January expedition was visited. The owner, who is also the head of the Boda Boda self-help group, informed us that it is the most efficient stove out of all the ones built, so the details of the stove were recorded. On the same afternoon another Jiko Stove was being made, we also visited that household. Most members from the Boda Boda self-help group were present there, which provided the opportunity to conduct the impact measurement from the previous set of stoves built.

Later, analysis of the survey confirmed that the Jiko Stove has had a positive impact on the community. All members of the group surveyed reported a fifty per cent reduction in the usage of firewood, less time needed for cooking as well as improved in their health due to the lesser amount of smoke produced.

In the late afternoon work on a portable prototype of the Jiko Stove was started (following the instructions provided by Engineers without Borders).

10.3 DAY 3 – 22ND JUNE

The first lesson of the day learned was that "time in Africa does not run linearly", as the local priest put it. In other words, even though the team was running late with the start of the very first business workshops conducted at the local ACK church in the neighbouring village, it wasn't a problem as most of the participants arrived an hour late.

Jeremy, Iza and Tina were presenting business canvas, SWOT Analysis and bookkeeping respectively with the help of Tina who was energetically translating into the local dialect, while Kaifeng captured everything on camera.



Business workshop on bookkeeping.

The members of the community actively participated in the workshops. There were several questions posed, people were happy to expand on the examples provided as well as share their own struggles and discuss how they could apply the knowledge gained to the small business they run.

The feedback on the workshops was better than expected and the participants were eager to gather more about the Jiko Stove. At the end, certificates were awarded to all of the twenty-five participants.

The priest invited us afterwards to have a snack - eggs, bananas and delicious African tea. While he expressed his thanks for the work done with the community he also shared his disappointment with the younger part of the community who did not show up at the workshop despite his several recommendations and encouragement. He highlighted that they want only to escape the rural area without trying to improve their living conditions in the village.

Quite exhausted from the work the rest of the evening was spent relaxing. After dinner the team discussed the success of the workshops and started preparing for the motivational talks to be held at schools in the local area.

10.4 DAY 4 - 23RD JUNE

The day was dedicated to making connections with another self-help group practicing Table Baking for the past twelve years. The discussion revealed that their table baking had been very successful and that the level of trust built in the community was very high as in all of the years of the table baking no one ever failed to repay his/her loan. Furthermore, they successfully purchased a number of water tanks and animals. However, the struggle due to the lack of water is getting worse and worse due to climate change in the past year. The group has just about enough water for cooking and drinking, which limits their farming activities.

A needs assessment was conducted and the possibility of Enactus giving them a loan was discussed before the biogas station and the farm animals were shown to the team. The self-group wished to get a loan from Enactus so they can future improve their living conditions and the team discussed with them the possibility of that clarifying the terms and condition set by Enactus.



One of the water tanks bought by the self-help group through their table baking activity.

In the evening, the prototype for the portable stove was tested and appeared to produce approximately the same amount of smoke as the three stone stove. Therefore, after reporting the problems to the EWB some more adjustments were made and the dimensions of the prototype were compared with the commercial Jiko.

10.5 DAY 5 – 24TH JUNE

The day was fully dedicated to business workshops, a morning and evening session. Unfortunately, the turnout was not as big as expected, in the morning there were six participants and in the afternoon two. Yet, as on the first workshops the attitude was positive and people that turned up were eager to learn as much as possible on how they could apply the knowledge gained and improve their life. One of the participants was a member from the Table baking self-help group visited the previous day and was happy to analyze the “egg selling” business of the group bringing the gained knowledge back.

As the group was smaller, the group activities could be done on a more individual basis and everyone participating was doing SWOT Analysis with a team member of their own business.

The conducted needs assessment showed that lot of them had not heard about the Jiko Stove before but were more than happy to learn more about it and if possible get one built for themselves.



Group photo with the participants of the morning workshop.

10.6 DAY 6 - 25TH JUNE

Sunday was our free day with no activities planned, so we spent the day with Linet, who took over the household while the team stayed in the village, and others staying with us in the house getting to know their lifestyle. After breakfast, everyone got dressed up a little and went to the church, where everyone sang and clapped along. Afterwards we all prepared lunch together, pick up sugar canes and learned how to cane them. Iza even decided to get her hair braided, which took a few hours. Overall the day was relaxing and ended in everyone playing games.



A relaxing Sunday spend connecting with the villagers.

10.7 DAY 7 - 26TH JUNE

This was a rather eventful day full of activities and on the side the discovery of a heavenly tasting “Kenyan fruit salad” a combination of avocados and bananas.

The first activity of the day was the last business workshop of the expedition with the Boda Boda self-help group. The turnout was amazing, eventually nearly every member turned up and they all were open to discussing how to improve their business as well as how to handle the struggles there are facing.

At the end of the workshop the group asked for the possibility of getting a loan in order to purchase pigs and make a business out of it upon which it was explained to them that firstly we need to build trust through the Jiko Stove business and work on that before rushing into another project.

After lunch the second prototype of the portable Jiko Stove was tested, which efficiency did not seem to have improved significantly but it produced less smoke. In the late afternoon a second self-help group, Kagundu-in Boda Boda, which members were empowered to build Jiko Stoves for the local community as well, was visited. The head of the group claimed that they have built more than ten Jiko Stove in the past few months at the price of approximately 5000 Kenya shillings which is nearly as much as the commercial stove. The successes of the business seemed exaggerated and the omitting of telling the exact locations where the stoves were built raised suspicions that the group might not be telling the truth.



From left to right. Portable Jiko Stove prototype in the testing, commercial Jiko Stove, mould for the portable Jiko Stove.

During the briefing at the end of the day trust issues have been identified as the main problem of the project, as some local entrepreneurs are assumed of taking advantage of MASH foundation and Enactus, who generously providing the capital to buy vermiculite. Local entrepreneurs might not be honest with materials used and may take advantage by overcharging the Jiko Stove for the villagers.

10.8 DAY 8 – 27TH JUNE

As mentioned “African time is not linear” and the team ended up having a free morning of relaxing and reading book with an eventful afternoon to follow. A private school was visited where Jermeiy and Darly gave a motivational speech to the class, which was about to take the national exams in few weeks’ time. Afterwards the schools Jiko Stoves were visited and their efficiency discussed with the headmaster.

Next followed the making of a Jiko Stove for one of the farmers that participated on one of the workshops and was eager not only to get one but also to learn how to make it. He decided that he is ready to provide the Jiko Stove for his friends with the price of “a tea bag”, which means that besides paying for the material needed everyone pays for labor the amount he is able to.



Jeremy sharing his story with the students.

10.9 DAY 9 - 28TH JUNE

All of the three hundred students attending Wangai Secondary School was fitted into one small hall listening to Jeremy’s and Kaifeing’s touching personal stories on how they successfully overcame all the struggles faced in school and Darly’s motivational speech, leaving everyone speechless for a second. The set of motivational speeches

was followed by a more relaxed and open discussion with the oldest student in their last year of high school on university, how to stay focused and what the team personally experienced in high school and is now facing at university. After the session finished a few students came individually seeking advice from the team members. Two students for example came to the team members studying physics asking about radioactive decay.

The team had the luck to meet the two students that have been sponsored by Techno and are in the top of their class with high scores.

Another Ilko Stove was assessed right before returning to the accommodation.

10.10 DAY 10 - 29th JUNE

The day was fully dedicated to visiting schools, primary and secondary school.

The morning was reserved for the primary school where the team lead two exhausting, yet energetic and fun hours of aerobic with the younger pupils. The highest class however attended the motivational speech session that followed.

After lunch the Gaichanjiru Secondary School was visited and the motivational speech session was conducted here as well with the addition on a talk on finding your passion, driving force in life and how to handle life changes at university. Three students that have been sponsored by Techno were interviewed, telling that the scholarship enabled them not to miss out school, increased their grades and sharing their future plans.



Gym session.



Sponsored students from Gaichanjiru Secondary School

10.11 DAY 11 - 30TH JUNE

On the very last day in the village the team visited the newly build Jiko Stove for the farmer, which turned out to work properly. Furthermore, the second prototype of the portable Stove was donated to an older member of the village that is struggling with poverty. She is going to pay in the form of noting down how much firewood she uses per day so that the efficiency can be assessed.

Group pictures, capturing statements from everyone on video, reflecting on the work done in the past ten days and discussing the future development of the project in the following months is what the rest of the day was spend on ending with a warm and long goodbye.

11 ACHIEVED AIMS

The following aims were successfully achieved:

- Overseeing of the project via visiting the newly built Jiko Stove and gathering data from the owners
- Raising awareness of the Jiko Stove,
- Carrying out needs assessments in the community,
- Providing business workshops for the members of the community and self-help groups.

11.1 IMPACT MADE

Since the training provided in January 2017 for the members of the self-help groups, between 15-20 stoves households have been provided with Jiko Stoves. The impact on the individual households as well as on the members of the self help groups is as follows:

- Financial:

Increasing the number of sources of income for members of the community via saving money spent on firewood (by making more efficient stoves which require less firewood). For example the impact measurement survey carried out in June 2017 has show that the efficiency of the stove has increased for approximately 50%, so households of four people who used to spend 200 KS for firewood now spend 100 KS for the same duration. The individuals trained to built the stove from the self-help groups have an additional income provided from Jiko Stove manufacturing business, which pays off as most of the materials can be found locally and the vermiculite is provided by Enactus. The vermiculite is repaid via social action so for every 13 Jiko Stoves made 2 are made for free for the members of the community that cannot afford it otherwise.

- Social:

Reduced unemployment and hence drug use, development of more local businesses as self-help groups can fund more people to start their own businesses, more children able to continue with their education

- Physical:

Less smoke generated from stoves leads to improvement of respiratory issues as well as more water can be boiled, as the stove is more efficient and so more drinkable water is made available.

12 PLANS FOR NEXT YEAR

12.1 DELIVERABLES FOR JULY TO DECEMBER

In the upcoming months the objectives of the project are to create a micro financing scheme for the local entrepreneurs and ensure that the quality of the built Jiko Stove is consistent. Hence, a registration system for is going to be created for those who were taught how to build the stove directly/indirectly from MASH & Enactus with a given "certificate/license" as a means to ensure the legitimacy of the MASH trainers

that meets the required builder's standard and to keep track of the impact/empowerment measurement (the NGO is implementing the changes at the moment). Additionally, each entrepreneur directly empowered by Enactus and MASH will have to sign a form of agreement to be accountable to MASH foundation to ensure the quality of the stoves and the customer's satisfaction.

It has been decided that from each bag of vermiculite given to the entrepreneurs is going to be repaid bag in the form of social work. More specifically two Jiko Stove have to be built for the members of the community that cannot afford it for free upon which the entrepreneurs must agree. Furthermore, an evaluation form for people who cannot afford a Jiko Stove has to be made, so a donation scheme for these people via an online donation platform and multiple revenue streams can be opened in London.

12.2 IMPACT PROJECTIONS FOR 2017/2018.

Once the deliverables above have been completed/executed, we (Enactus Imperial) are confident to be able to empower more than 20 entrepreneurs and impact more than 30 households, if all goes as plan.

12.3 LONG TERM PLANS

From the data gathered on the trip the future goals of the project have been established. The lack of drinkable water was identified as one of the main struggles in the community, as there is no water distribution system. Once the rainwater runs out the water from the river has to be used, which due to the lack of firewood, cannot be boiled causing health problems. Hence, the objective of the second stage of the project is to provide a water boiler that uses solar power for boiling water instead of firewood future improving the life in the community. Once the Jiko Stove business is established and have generated sufficient revenue to breakeven and to be self-sustaining, we will initiate the second phase of the project, which is to create a portable water boiler, empowering the same group of entrepreneurs in making and selling them.