

Water for Life - Providing safe drinking water for communities in Tanzania

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Oxford University Interns in Tanzania

Project Summary

We respectfully request funding to the amount of £15,000 from Kennington Overseas Aid to support the provision of clean drinking water to over 1000 people of Lemanda village, Oldonyosambu, Tanzania, East Africa. These people have been crippled by extreme levels of fluoride in their water supplies. Villagers draw their water from groundwater sources, which are heavily contaminated with fluoride due to the alkaline volcanic nature of the region.

Whilst low amounts of fluoride are beneficial for healthy teeth, high levels of fluoride can weaken bones, leading to skeletal fluorosis. This disease causes crippling deformities of the spine and joints, especially in children whose skeletons are still forming.

The Nasio Trust aims to combat this through the installation of 40 rainwater harvesting tanks, community engagement and training in water sanitation and hygiene. The collection of rain water will provide safe drinking water free from fluoride, reduce water-borne diseases improve the health and well-being, livelihoods and children's educational and professional aspirations.

The Nasio Trust has already installed twelve 3,000 L rainwater collection tanks and guttering in Lemanda village, giving more than two hundred people access to 3-5 L daily of fluoride free rainwater and would like to expand the project to more families.

Watch our latest Video for details: https://youtu.be/b9ru45QiFC4?list=UURJ4d3mIWxRJ_52ulprl7vQ

About the Nasio Trust

The Nasio Trust is a UK registered charity which feeds, educates and provides healthcare for orphaned and disadvantaged children in East Africa. Supporting children through to adulthood in their communities, rather than in an institution, they are enabled to reach their full potential and give something back to their community.

Over the last 15 years the scope of the charity has grown and now supports over 400 children and empowers local communities to set up and run their own sustainable income generating projects. This is all geared towards breaking the cycle of poverty and enabling the communities to be self-sufficient. Thanks to a generous grant from Kennington Overseas Aid, The Nasio Trust has constructed two Spirulina Production Greenhouses in Musanda, western Kenya producing protein-rich Spirulina currently used for the most malnourished and HIV+ children surplus sold to generate income.

The Nasio has now scaled their community projects to Tanzania working in partnership with Oxford and Bath University to support communities affected by fluoride in the water.

Over the last 10 years we have also run a unique programme (Exit 7) for UK young people, culminating in volunteering in Kenya. This life-changing programme has taken over 200 young people to Kenya, some of whom

were disadvantaged or otherwise vulnerable. To continue with this transformational Exit 7 programme we have partnered with a new Oxfordshire charity “Youth Challenge Oxfordshire” (YoCO) who now run the programme in partnership with the Nasio Trust.

Project Rationale Stage 1 – Safe Drinking Water

For decades, skeletal fluorosis has had a severe impact on the lives of people living in the Arusha region of Tanzania, where fluoride levels can reach over sixty times the US recommended level in local water sources. The detrimental effects of high fluoride levels in this part of Tanzania have been scientifically documented since 1967 and yet little has been done since to combat the problem. These effects include crippling skeletal fluorosis (an example is shown below), dental mottling (enamel loss), (enlarged thyroid gland) and fibrositis (chronic pain). High fluoride levels have also been linked to poor cognitive development in children.



Wilson (left) shaking hands with Jonathan (right), our Chairman

Project Rationale Stage 2 - Education - Oldonyo Sambu

Most of the children who do go to school in the Lemanda attend the Oldonyo Sambu primary school which is about a 30 minute walk from the village. Meaning that many of the children who live further away from the water source walk between 1 to 2 hours to get to school. The interns spoke to the head teacher who told them that there are 1,147 students, 9 classrooms, and 28 teachers. Even though the school is funded by the government, parents need to pay 125,000TSH per student per year equivalent to £43 if they want their children to have food. The head said only about half the students have paid to receive lunch. Meaning that many students are tired and not focused in class as they do not receive anything to eat. Some children live up to 2 hours walking away, they come to school hungry unable to concentrate. The school has 6 acres of land that is not being used for farming, but with proper irrigation could be turned into farmable land where food could be grown for the children.



Oldonvo Sambu primary school classroom

Children not being ready to learn at school due to a lack of food, school attendance is also very low. There is no motivation for students to come to school if they are not receiving food. In Tanzania, primary school consists of standard 1 to 7, 100 students start in standard 1 only about 60-70 of them will make it all the way up to standard 7. Some of them will get married and others are forced to work at home attending to animals. We are looking into the cost of providing an irrigation system in the school and seek funding to help produce food for the children.

Direct Beneficiaries

This project will directly benefit over 1000 local people and a further 5,233 people from the surrounding villages, the vast majority of whom are dependent on subsistence agriculture for their livelihoods and live on less than \$1 a day. Lemanda village is the worst affected community, comprising of approximately 1,000 people whose only accessible water source has over 16 mg/L of fluoride from groundwater sources, which are heavily contaminated with fluoride due to the alkaline volcanic nature of the region.

Project Activity and sustainability

1. To provide villages in Oldonyo Sambu ward with clean, fluoride-free drinking water to reduce the number of new-born children with skeletal deformities, due to reduced prenatal fluoride exposure, and reduce the rate of skeletal fluorosis in adults in the community.
2. To educate the community against the dangers of excess fluoride, and other water-borne diseases such as gastroenteritis, diarrhoea, amoebic dysentery and cholera. Up to one third of deaths in children under five years in Tanzania are related to poor sanitation and hygiene.

3. To improve the long-term health outcomes of the people living in Oldonyo Sambu and improve school attendance of children due to improved health.
4. Improve education standards by supporting the local primary school with clean water from rain water tanks and build an irrigation system to provide food for students, to help improve school attendance.

To achieve these objectives we will:

- A) Build 40 more rainwater harvesting tanks
- B) Run monthly hygiene and sanitation workshops
- C) Teach families and staff how to test the fluoride levels in water
- D) Build an irrigation system in the school using fluoride water to produce food

The 40 tanks will be placed next to houses with tin sheet roofs and at the local school. Families will be strictly advised to solely use this water for cooking and drinking, using the highly fluoride contaminated water for cleaning and washing instead. Posters will be put up in each house with tanks. The Nasio Trust will train 40 individuals, one from each household in the proper use of a fluoride colorimeter.



Hygiene and sanitation workshops will be run monthly by trained specialists. Those who take part in the workshops will be well trained and expected to manage and support community clean water initiatives. We will develop a structured support and monitoring system for the recipients of our training. Every community member that participates in the training will nominate one other family member to undertake our Clean Water Ambassador Training Scheme. Upon completion of this training, they will receive a certificate. Thereafter this Clean Water Ambassador will be an advocate for other family members, providing continuous support as well as liaising with the Nasio Trust volunteers / Team to monitor families' health and welfare.



Women of various bomas attending education session

By providing this training, our Clean Water Ambassador scheme will nurture a sense of ownership and responsibility among the community and families. Not only will this empower them, providing them with new skills and an additional sense of purpose within their community, but it will also improve the efficiency and outreach of our existing clean water programme. Ambassadors will also be able to provide more regular feedback on the water and hygiene issues through a structured feedback system provided by The Nasio Trust. The creation of a Clean Water Ambassador Training Scheme is therefore critical to the long-term empowerment of communities delivering sustainable improvements to this population well beyond the immediate parameters of this project.

Impact

1. This project will deliver an immediate and sustainable benefit to the communities in Oldonyo Sambu, by greatly reducing the fluoride content of the populace's drinking water, which will decrease the negative effects associated with high-fluoride intake. This is especially vital for pregnant women, as the lower fluoride intake will significantly reduce the amount of fluoride that crosses the placental barrier and therefore will reduce the chances of children developing pre-natal skeletal deformities.

- The long-term sustainability of this project will be bolstered by the education and training in safe water practice delivered by our skilled volunteers. This will lead to improved knowledge surrounding the problem of unsafe drinking water, both in terms of fluoride and microbe content.
- The overall health of the community will be improved through greater consumption of clean, microbe-free drinking water provided by the rainwater tanks.
- The economy of the region will benefit from the purchase of water tanks as materials will be bought locally.
- Children's education will be improved from reduced school absenteeism due to poor health from water borne diseases and high fluoride intake

Budget

Item	Unit	Unit Cost TSH	Number	Total (£)
Rainwater Harvesting tank	40	412000	16480000	5545
Rainwater collection installation (Labour costs and transport)	40	25000	1000000	336
Guttering (per meter)	80	150000	12000000	4037
Security- chains and padlocks to secure Tanks	50	21000	1050000	358
Monitoring test kits (Colorimeter)	40	420000	16800000	5653
Hygiene workshops (payment for facilitator)	12	162000	1944000	654
Stationery (notebooks, pens)	50	4330	216500	73
Blackboard	1	140000	140000	47
Media publicity for training Workshops	Monthly	500	3	1,500
Laptops	2	736000	1472000	495
Refreshments during Training (Food and drink)	600	649	389400	131
Monitoring Global Jamii Foundation, an NGO based in Arusha	1	3247781	3247781	1092
Project Total			59,133,860	19,921

Funds raised and sought

Project Total	£20,000
Kennington Overseas Aid funding (sought)	15,000
Crowd Funding	3,900
The Big Give – Christmas Appeal	2,500

Monitoring and Evaluation

Interns from Oxford University and researchers from Bath University will be overseeing the project from the UK and on the ground in Tanzania the Global Jamii Foundation, an NGO based in Arusha, will monitor rainfall levels and the use of the water tanks as well as fluoride concentration levels. The team will provide regular updates to Keith Budgen, the UK chairman of the trustees, the Nasio Trust, responsible for strategy and management. Director Nancy Hunt, will oversee progress in Tanzania and will drive forward change in the community. Regular project updates will be provided and detailed reports will be produced upon demand and at the end of each financial year.

Sustainability and Long-term solution – Water Filtration System

The sustainability of the project is imperative to The Nasio Trust. Once rainwater tanks and guttering have been installed, maintenance of the equipment is the only required activity, which is low-cost and does not require skilled labour. This will provide fluoride-free, clean and easily accessible water to the community. Harvesting of rainwater is not a long-term solution but a necessary step on the road to recovery in the long-term, we intend to seek partnership with water experts like Practical Action water Aid to set up a synthetic bone char manufacturing plant to provide clean water for over 10,000 people in the wider community around Oldonyosambu affected by excessive fluoride levels in their water. The use of bone char filters is the only effective method of removing fluoride from water. Synthetic bone char is four times as effective as conventional bone char at removing fluoride and unlike conventional bone char filters they do not need replacing and can be regenerated using sodium hydroxide. The cost of installation of a community based synthetic bone char filtration plant is estimated to be in the region of £50,000.