Labata Fantalle

Proposal for the Installation of a PROtector Water Treatment Plant

Karrayyu Oromo Community, Awash Valley, Ethiopia

LABATA FANTALLE

REVISION 2.3

CONTENTS

I. EXECUTIVE SUMMARY

Every day, the people of the Karrayyu Oromo community in the Awash Valley, Ethiopia are exposed to the risk of death and disease from drinking contaminated water. They have been denied access to the Awash River due to the establishment of irrigated agriculture (commercial sugar plantation and fruit plantation) and the Awash National Park. The water from the river is highly polluted with agricultural runoff containing fertiliser and pesticides, as well as worms and parasites from livestock. Those who still maintain pastoralism have been pushed to the driest areas of land and rely on boreholes and rain-fed ponds for their drinking water. However, there are very high levels of fluoride in the boreholes, well above the WHO recommended maximum concentration for drinking water. Furthermore, the safe use of open rain-fed ponds is threatened by the risk of cholera and typhoid. Consequently, there is an urgent need to purify the only readily available water source, which is directly from the local irrigation scheme – pumped from the polluted Awash River.

Labata Fantalle would like to install a PROtector water treatment system next to the polluted Galcha pond, which is fed by the irrigation scheme, enabling as many as 2,500 local residents to extract water directly from the pond and purify it to a safe and potable standard. The PROtector water treatment system is operated entirely manually, by means of pushing a rotational handle, and it is capable of removing silt, cysts, bacteria, viruses, chemicals and heavy metals from water. There is no need for electricity or fuel in its operation, and it can produce fresh, safe drinking water at a rate of up to 1,000 litres per hour. The PROtector is simple and robust enough to be operated and owned entirely by the community. The proposed Galcha PROtector installation will provide the following key benefits:

- **Water purified directly from Galcha Pond**
- **Treated water 100% safe & compliant with World Health Organization guidelines**
- **Enough water for 2,500 people per day**
- **Low Cost - USD $0.02 per 20 litres (5.28 gal)**
- **Green Tech - No power source required**
- **Community health and productivity greatly improved, saving 5% GDP per capita, per annum**
- **Ownership & operation by community**
- **In keeping with Karrayyu cultural practises**

Many children from the community are now receiving an education, since the introduction of the first and only school for local Karrayyu children in 1994. However, the children are affected by diarrhoeal illness and waterborne diseases which affects their attendance.

The cost of medical treatment is a serious hindrance to community members because getting cash for treatment entails the sale of animals upon which they depend. Sale of animals for medical treatment endangers the poorest and most vulnerable households. There is a lack of medical facilities in rural areas, and people have to travel to get treatment which further increases costs. This results in people delaying medical treatment until conditions are severe, which places them at serious risk.

The projected net benefit to the Karrayyu community in Galcha (based upon improved health and productivity) is estimated to be USD $158,000.00 over a period of five years. This equates to a return of USD $3.95 for every $1 invested in the project.

II. INTRODUCTION

Community Background

The Karrayyuu community reside in the Awash Valley of Ethiopia, which is located in the Fantalle District of the East Shoa Administration Zone in Oromia Regional State; a distance of about 200km from Addis Ababa, the capital city. Fantalle district is situated in the eastern part of the country along the main highway to Djibouti within the Great Rift Valley. In terms of geographical co-ordinates, Fantalle District lies approximately between 08° 40' 36" – 08° 57' 30" North Latitude and 39° 38' 36" - 40° 10' 49" East Longitude. The Karrayyu people are members of the Cushitic speaking Oromo ethnic group which make up a significant portion of the population occupying the Horn of Africa. The Oromo constitute an estimated 40% of the Ethiopian population.

The original homeland of the Oromo, including the Karrayyu, is said to be Madda Wallabu, a place located in Bale. It is believed that the Oromo moved from this place to different areas of Ethiopia starting from 15th century as part of a movement referred to as 'the great expansion'.

Oromo groups settled in different parts of Ethiopia, adapting to their local situation in different ways leading to cultural diversification. Despite local differences they still retain the same language, Afaan Oromo; the same religion, Waaqeffata; and the same governance system, Gada. However, these are no longer practised among many Oromo groups due to pressures from other religions and changes in livelihood. The Karrayyu are one of the last remaining Oromo groups to maintain the pastoralist way of life as well as the traditional Oromo culture, along with the Borana, Guji and Kamise Oromo. The Karrayyu are considered by many Oromo as guardians of the ancient Oromo culture.

The Karrayyu adhere to the Gada system, an ancient form of African democracy which is traditionally based on generation sets which alternate power every eight years. One full Gada cycle lasts 40 years. Gada is a uniquely democratic political as well as social institution which governs the life of individuals in Oromo society from birth to death. Currently the Karrayyu are struggling to maintain their traditional way of life against powerful forces. Land dispossession due to the establishment of national parks, irrigated farms and agribusiness is putting the traditional pastoral system under enormous pressure. Internally there is a steady shift towards crop cultivation as a result. Increasing human and livestock population puts additional pressure on the already degraded rangelands. Conflict over grazing and watering resources and boundary claims have become major livelihood challenges for the Karrayyu.

Conflict with neighbouring groups, namely the Afar and Argoba, has intensified in recent years. In some areas rangelands have been abandoned in fear of conflict, resulting in under-utilization of available resources.

Environmental degradation is becoming very serious as a result of overgrazing and loss of vegetative cover leading to bush encroachment and soil erosion. In some areas the land can no longer grow any vegetation even if it receives rainfall. The impact of land alientation and the resulting curtailment of mobility has had dramatic consequences, manifesting in the form of a loss of livestock assets and increasing vulnerability to food insecurity and famine. The majority of Karrayyu households face food insecurity throughout the year, relying on food aid to survive.

The Karrayyu are attempting to cope with the changing circumstances as a result of land dispossession and climate change by combining farming with livestock management, petty trading and wage employment. However, these responses at the moment are not adequate to cope with the pressures, as changes are taking place too quickly to allow for adequate adaptation. New approaches, particularly relating to natural resource management and livelihood diversification, need to be taken.

Infrastructure within the Fantalle District is poorly developed and there are limited basic facilities such as road networks, marketing facilities, schools, health care and other social amenities. Nationwide, the average life expectancy in Ethiopia is 41.2 years. Maternal mortality is 870 per 100,000 live births; infant mortality 103 per 1,000 live births; and under-five mortality 172 per 1,000 live births. Only 24 per cent of the population has regular access to safe drinking water.

Defining The Problem

The Karrayyuu community obtain drinking water from the Awash River, from government constructed ponds, from standing pools after it rains, from a number of boreholes or from Lake Basaka. However, sadly all of these water sources pose health risks which affect the quality of human and animal life.

The Awash River contains chemical pollutants from waste products which are discharged from the Matahara Sugar Factory and drainage from irrigated fields. 'Downstream of Koka High Dam, high pesticide, herbicide, and fertilizer use in two dozen commercial farms and agroindustries increasingly imperil the water resources of the Kereyu and Afar pastoralists, who use the irrigaton systems for domestic use and livestock watering' (Kloos, 2010: 261). The Awash National Park Management Plan also states: 'forms of water pollution which the state plantations and farms are currently responsible for include: excess nitrogen leaching into the Awash River and Lake Basaka, following the application of fertilisers to the sugar fields; the indirect contamination of the River and Lake Water following the application of insecticides, particularly DDT; and the dumping of factory waste water directly into the River' (1993: 62)

Those living in areas distant from the river do not have access to a reliable water supply for either human or livestock consumption. During the rainy season the community collects water from runoff accumulations in small natural ponds and gullies (where livestock also drink). A number of ponds were constructed by the government which the community are responsible for maintaining as part of a ‘Food for Work’ scheme. However, these ponds are seasonal and can only gather water when there is enough rain. There is a regular occurrence of typhoid and worms in the area particularly during the rainy season when people are consuming groundwater. Children frequently suffer from parasites and diarrhoea. The Awash Park Management Plan stated in 1993 that GOAL records indicate that unclean water sources are the number one cause of illnesses in their outreach clinics next to malaria, giardia and amoeba (1993: 75). GOAL has since phased out of the area.

Even when this water can be collected from the ponds, it still has to be transported over long distances. The time spent each day by women and children collecting water prevents them from doing beneficial activities such as selling fresh produce and attending school. As such, collecting water is detrimental to local economic development.

Irrigation Channel feeding Galcha Pond

Galcha pond (pictured below) is used by community members living close to the sugar plantation. However, this pond is also highly polluted as the irrigation water supplying it contains waste products from both the factory and the plantation area in general. The use of this water makes both humans and animals sick, thereby adding to their problems. But sadly this pond is the only source of water for the 2,500 community members living in this area.

Lake Basaka (pictured above and below), a large water body covering about 105Ha of land, is saline and polluted and therefore unsuitable for human or animal consumption. The natural expansion of the lake has resulted in a significant loss of dry season grazing land as well as access to traditional wells ('eela' in the Oromo language) which were previously dug on the edges of the lake. It faces additional problems due to contamination with waste engine oil from the washing and changing of oil in large trucks which pass through the area. Members of the community use Lake Basaka for washing and watering their animals.

In the rural kebeles there are a few boreholes which were sunk by the government and local NGO's, and they are maintained by the community at their own cost. Community members rely on these boreholes during the dry season as there are no other available 'fresh' water sources. Community members have become increasingly reliant on the boreholes due to the reduction in rainfall in recent years. The boreholes are used for both human and livestock. Each family pays for the water they use, and the cost varies depending on the number of animals the family own.

Unfortunately, the water from the boreholes has a natural fluoride concentration of up to **8.4mg/l** and is brackish due to high dissolved solids (TDS >1500mg/l). The fluoride content is much higher than the WHO guidelines for the maximum concentration of fluoride in drinking water (1.5 mg/l). This suggests that these boreholes, despite being the only reliable water source, present health risks to the community. The effects of this can be seen clearly in brown teeth which are increasingly prominent among people living in the area. Members of the Karrayyu community also complain of 'bone problems' which they attribute to the borehole water.

Providing a Solution

Access to clean water is of vital importance for Karrayyuu community members. They have lost access to many of their traditional water sources and are being forced to consume water which presents serious risks to the health of both themselves and their animals. Their dependence on boreholes and water containing high fluoride levels is likely to increase due to the reduction in rainfall and the fact that drought is now occurring more frequently. Their exposure to polluted water is also likely to get worse due to the expansion of irrigated agriculture and the widespread use of chemical pesticides and fertilisers in the area.

The Galcha pond provides a source of water throughout the year, right on the 'doorstep' of the local Karrayyu community. Although it is highly contaminated, it must be realised that it is community's only readily accessible source of water. Therefore, the treatment of this water for drinking purposes must be given some serious consideration. There are several available technologies pertaining to the treatment of contaminated surface water:

- The PUR Sachet
- Household Ceramic Filters
- The PROtector
- BioSand Filters

The PUR Sachet

The PUR "Purifier of Water" sachet contains a powder that is both a flocculant and disinfectant, which can separate particles and organisms from the water and kill microbes. After administering the powder, shaking and waiting 30mins, the water is then filtered through a cloth to remove the debris. PUR contains ferric sulphate and calcium hypochlorite. It is delivered in small sachets which are priced at USD $0.05 each. One sachet treats 10 litres of water.

Data source: http://www.safewaterintl.org/clearinghouse/chemical/pur/pur-purifier.html

Household Ceramic Filter

The 'FilterPure' household filter consists of a round-bottom ceramic pot, made from a mixture of clay, a combustible material (sawdust or rice husks) and colloidal silver. The colloidal silver is a naturally occurring anti-bacterial ingredient which improves the bacteria removal rate of the filter. During the kilning process the combustible material is transformed into a layer of activated carbon, providing millions of silver-impregnated micro-pores. The filter, which is designed with a rim, is placed onto a 20 litre (5 gallon) plastic storage bucket with a spigot at the bottom for dispensing. A lid is placed on the filter to prevent contamination. Safe drinking water is easily poured from the spigot by all members of the household.

The flow rate of the filter is 20 litres per day depending upon the turbidity and sediment content of the raw water. Filters are cleaned by lightly scrubbing the surface whenever the flow rate is reduced, and also by immersing the filter in boiling water every three months to ensure optimum effectiveness. The effective useful life of the filter is 5 years, and the cost is USD $30.00.

Data source: http://www.filterpurefilters.org/the_filter.htm http://warofillusions.wordpress.com/2009/03/08/pottery-teacher-creates-ceramic-water-filter-for africa-latin-america-and-asia/

The PROtector

The PROtector is a self-contained community scale water treatment plant, capable of producing 750 - 1000 litres of purified drinking water per hour. It is operated without the need for electricity or fuel, by means of turning a rotational handle. The handle converts manual energy into the torque required to draw in raw water and pass it through a series of proprietary prefilitration and membrane filtration stages. This treatment process is adequate to remove all contaminants from water to safe and acceptable levels. The capital cost is USD $24,900.00 with an annual maintenance cost of USD $2,500.00.

BioSand Filters

It should be noted that many communities and organisations have also considered the use of '**BioSand**' filters for the treatment of surface water for potable use. These systems are designed on a household scale, using a combination of biological digestion and physical filtration to remove particulate and organic substances from raw water: A 'biolayer' of bacteria forms on the surface of the sand, at the top of the filter, which actively digests dissolved organic matter as it passes through; and the sand bed beneath this layer filters out cysts, silt, dust and other colloidal matter. However, as the water produced by the BioSand filter requires post-disinfection with chlorine or by boiling, it cannot be compared with the aforementioned 'total' treatment technologies. In order to provide a fair comparison, only the technologies that operate without the need for pre or post treatment have been considered.

Comparison of Treatment Technologies

The main consideration when comparing the appropriateness of water treatment technologies is that of cost. This includes the capital cost associated with the purchase of any equipment and/or infrastructure, and also the ongoing cost associated with operation and maintenance.

In order to take into account the long term implications of employing these technologies, their cost of ownership should be projected and compared over a time span of ten years. This can be done using the following methods:

1. By calculating the 'cost of treated water', per 20 litre (5 gallon) jerry can, based upon the overall capital cost plus the cost of maintenance over ten years
2. By projecting the total 'cumulative cost' as a graph of cost vs. time over a period of ten years

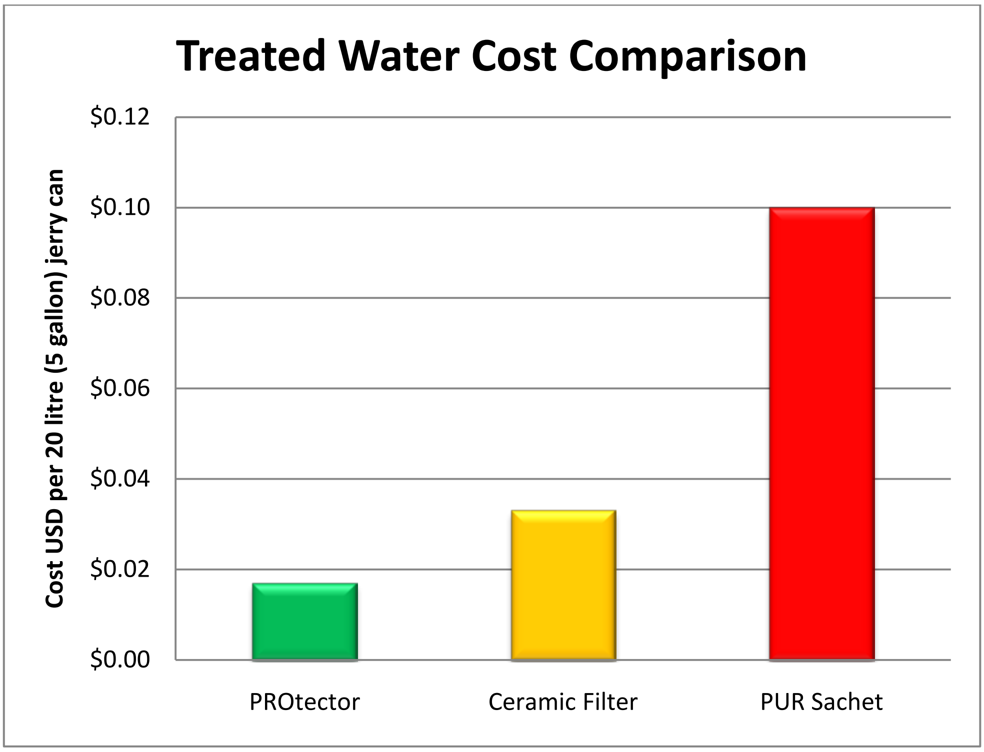
These methods will provide a clear graphical comparison between the relative costs of ownership of each of the three treatment technologies.

Cost of Treated Water

The cost to treat or produce drinking water, in terms of US dollars per 20 litre (5 gallon) jerry can, is widely recognised as the benchmark for the efficiency of a water supply scheme. Using the information from the previous pages, it is possible to calculate and tabulate the efficiency of the three water treatment technologies over a ten year period:

Treatment Technology	***Initial Capital Cost USD***[1]	***Annual Cost of Maintenance USD***[2]	***Total Cost for 10 Years USD***[3]	***Cost per 20 litre (5 gallon) jerry can USD***[4]
PUR Sachet	-	-	*$273,750.00*	*$0.100*
Ceramic Filter	*$22,500.00*	*$2,500.00*	*$90,000.00*	*$0.033*
PROtector	*$24,900.00*	*$2,500.00*	*$47,400.00*	*$0.017*

The following chart has been made using the results from the table above:



[1]This is the cost to buy enough equipment to provide an output of 15,000 litres per day. This amount is sufficient to supply a community of 3000 people at a rate of 5 litres per capita, per day.

[2]For the ceramic filter, which requires complete replacement every five years, the cost of annual maintenance has been calculated by dividing the cost of one set of replacement filters by nine years ($22,500.00 / 9 = $2,500.00).

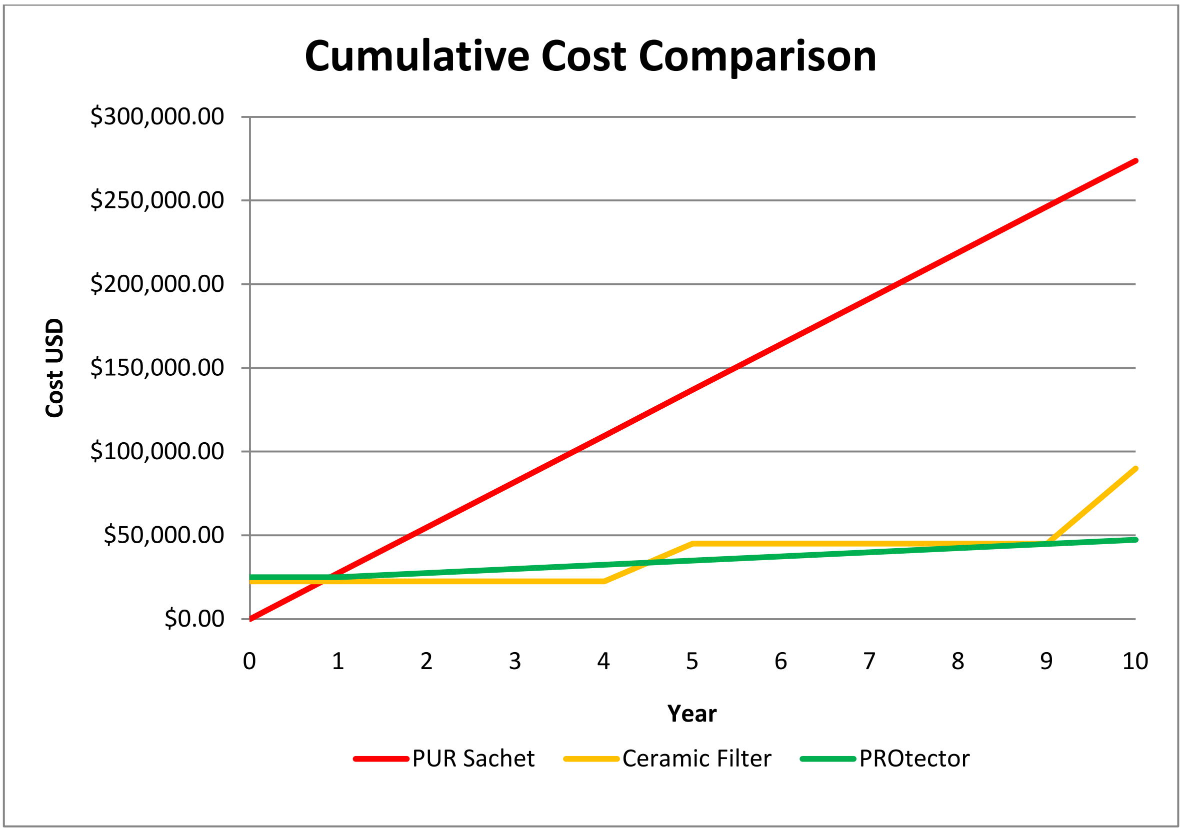
[3]Total cost for 10 years = Initial capital cost + cost of maintenance for nine years. For PUR Sachet, total cost for 10 years = total number of sachets required throughout the whole period.

[4]Cost per 20 litre (5 gallon) jerry can = (total cost for 10 years / total litres produced for 10 years) x 20. Total litres produced for 10 years = 15,000 x 365 x 10 = 54,750,000

Cumulative Cost

The following table and corresponding graph show the differences in 'cumulative cost' between the three treatment technologies.

Year	***PUR Sachet***	***Ceramic Filter***	***PROtector***
0	$0.00	$22,500.00	$24,900.00
1	$27,375.00	$22,500.00	$24,900.00
2	$54,750.00	$22,500.00	$27,400.00
3	$82,125.00	$22,500.00	$29,900.00
4	$109,500.00	$22,500.00	$32,400.00
5	$136,875.00	$45,000.00	$34,900.00
6	$164,250.00	$45,000.00	$37,400.00
7	$191,625.00	$45,000.00	$39,900.00
8	$219,000.00	$45,000.00	$42,400.00
9	$246,375.00	$45,000.00	$44,900.00
10	$273,750.00	$90,000.00	$47,400.00



Please note that the data used was derived from the information on the previous page.

Practicality & Durability

The true comparison between the three technologies is not just down to cost. Practicality and durability must also be considered when gauging their appropriateness. The logistics of training an entire community on the correct procedure to use the PUR sachet could pose quite a challenge, and allowances must be made for 'user error' in future. The same may also be said for the household ceramic filter, with regards to the correct maintenance procedure. Furthermore, the ceramic filter is quite fragile and there is a high risk of breakage during routine maintenance. The River PROtector has been designed to operate consistently in harsh, tropical environments, and it features its own self-priming pump to draw raw water directly from the river. This means that users do not need to have any physical contact with the raw, dirty water, as they would when using PUR or the ceramic.

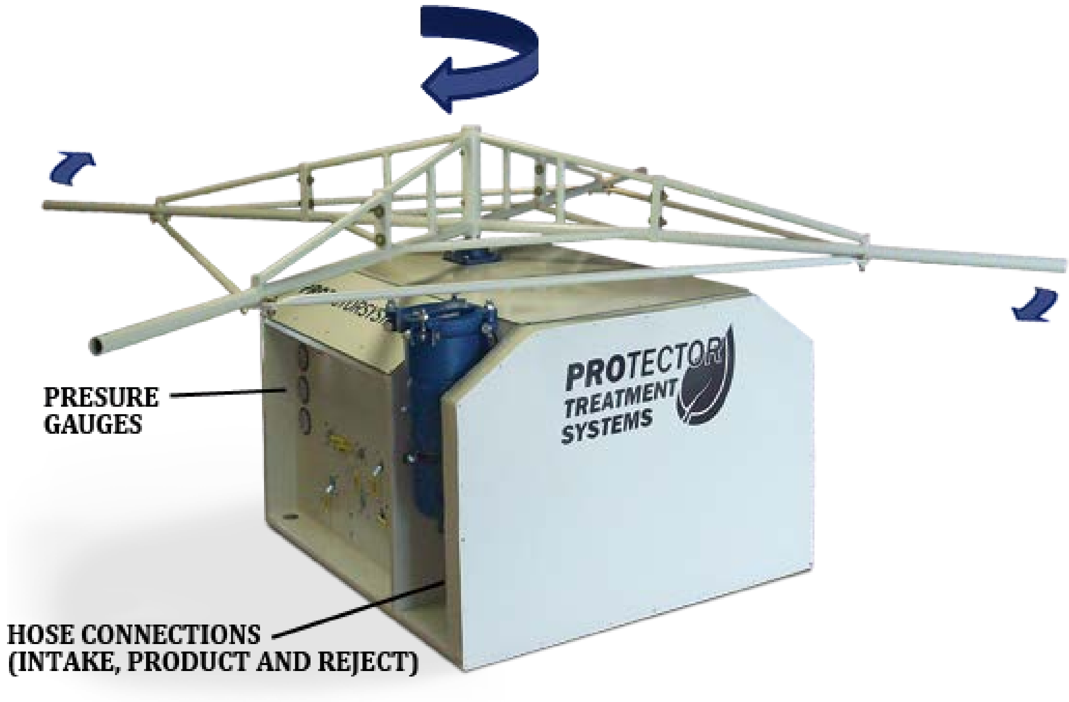
Conclusion

The graphs on the previous pages show that the PROtector is the most cost effective treatment technology, albeit by a narrow margin when compared to the ceramic filter. However, the PROtector has some clear advantages over the ceramic filter in terms of practicality and durability. The following table summarises the advantages and disadvantages of all three technologies:

Treatment Technology	***Advantages***	***Disadvantages***
PUR Sachet	• *No infrastructure required other than cloth and jerry can* • *'Point of use' treatment for freshness*	• *Very high cost per capita* • *All users must be trained on the correct procedure* • *All users have to handle raw contaminated water when collecting from the river*
Household Ceramic Filter	• *No infrastructure required other than jerry can with spigot* • *Low cost per capita* • *'Point of use' treatment for freshness*	• *Fragile and easily breakable* • *All users must be trained on the correct maintenance* • *All users have to handle raw contaminated water when collecting from the river*
PROtector	• *Operation and maintenance can be carried out by a select few, rather than having to train the whole community* • *Low cost per capita* • *Strong and durable construction* • *Also removes dyes, proteins, surfactants and agro-chemicals* • *Pumps and treats raw water directly from river, preventing users from handling contaminated water*	• *Requires some infrastructure for installation (soakaway and concrete platform)* • *Requires manual effort in operation*

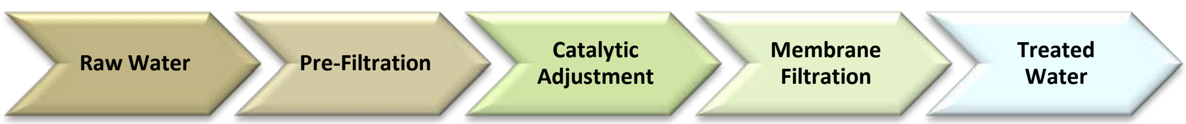
III. PROGRAM DETAILS

Having determined the PROtector to be the most appropriate treatment technology for the purification of the Galcha pond, the details of the design, installation and maintenance of the machine need to be established. The cost-benefit analysis of the proposed project investment will also be outlined. The following annotated picture shows the operation of the machine and the position of the controls, gauges, intake and outlets:



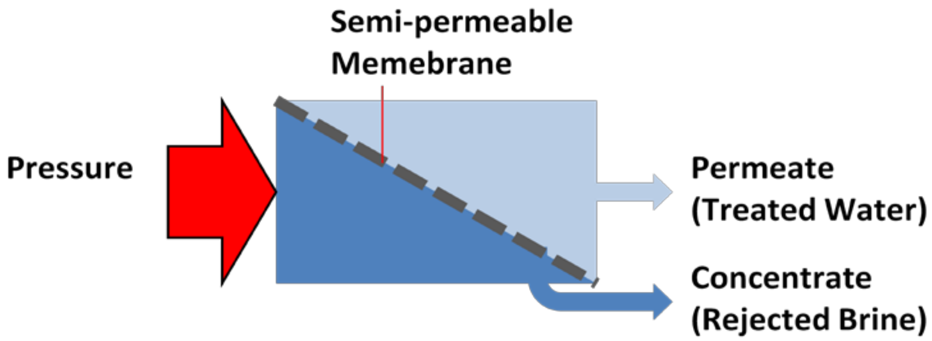
Design & Construction of the PROtector

The self priming PROtector draws in raw water and passes it through several stages of proprietary pre-filtration and pressure regulation, before entering a membrane filtration stage. By the time the water enters the membrane filtration stage, it meets all the criteria necessary for optimal filtration. The unit features a rotational drive mechanism, transforming manual effort into the torque required to drive the system. The PROtector can raise water from as deep as 8.5m (28ft). The following flow diagram shows the treatment process contained within the PROtector:



What is Membrane Filtration?

Membrane filtration is a treatment process that separates many types of large molecules and ions (associated with salts and dissolved contaminants) from pure water. The process works by applying pressure to the contaminated water on one side of a semi-permeable membrane. The result is that a brine containing the dissolved contaminants (known as 'concentrate') is retained on the pressurized side of the membrane, and the purer water (known as 'permeate') is allowed to pass through to the other side. The diagram below shows the membrane separation process:



In membrane filtration, pore sizes can vary from 0.1 to 5,000 nanometres (nm) depending on the filter type. ‘Particle filtration’ removes particles of 1,000nm or larger. Microfiltration removes particles of 50nm or larger. ‘Ultrafiltration’ removes particles of roughly 3nm or larger. ‘Nanofiltration’ removes particles of 1 nm or larger. Reverse osmosis is in the final category of membrane filtration, ‘hyperfiltration’, and it removes particles larger than 0.1nm. This level of filtration is adequate to remove salts, metals and other dissolved contaminants such as fluoride and arsenic.

The membranes used in the PROtector are selected according to the quality of the raw water to be treated, and the nature of the contaminants that need to be removed. For brackish water applications, or where fluoride is excessive, RO membranes rated for brackish water treatment (BWRO) are used. For turbid surface water applications where industrial / agricultural run-off is an issue, or where organic waste may be present, Nanofiltration (NF) membranes are selected. Both RO and NF membranes are able to remove bacteria, viruses and protozoa from water. However, only RO is able to treat water with an excessive salt and/or fluoride content to a safe and acceptable standard.

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General Specification of PROtector

Treated water output:	750 – 1,000 litres per hour (3 – 4.4gpm)*
Permeate recovery rate:	50 – 75%
Salt & mineral rejection rate:	50 - 99% (according to level of treatment required)
Maximum suction depth:	8.5m (28ft)

Rotational Drive System

As maintenance may not take place on a regular basis, all drive components are industrially coated, and/or designed to meet Marine Quality standards. This also allows the systems to be installed in the harshest of environments, where conditions such as high humidity and even salt spray will not pose a problem.

Membranes Elements

- The RO and NF membrane elements are of a spiral wound design and are manufactured of the highest quality materials.
- High quality reinforced membrane housings withstand extremely high pressure.

Installation of the PROtector

The PROtector is installed onto a circular concrete pad, 7m (23ft) in diameter, close to the riverbank. This is large enough to accommodate both the machine and the circular path around it, used by those operating the rotational handle. The intake hose with protecting 'basket' screen is lowered into the river, secured inside a length of PVC or concrete pipe which is firmly anchored to the riverbank.

The waste concentrate hose is directed to a soakaway situated along the riverbank, downstream of the intake, and freshly treated 'product' water is dispensed on a small concrete platform adjacent to the circular pad. Please refer to the appendix for detailed installation diagrams.

Maintenance of the PROtector

Maintenance of the PROtector essentially consists of 'chemical flushing' the RO or NF membranes. Every few weeks, the membranes are flushed through with a citric acid solution, to ensure that any mineral deposits or bacterial growth that may accumulate on the surface of the membranes are safely broken down and flushed away, in order to prevent 'fouling'. The cost of replacement membranes and other components works out at approximately USD $2,500 per annum.

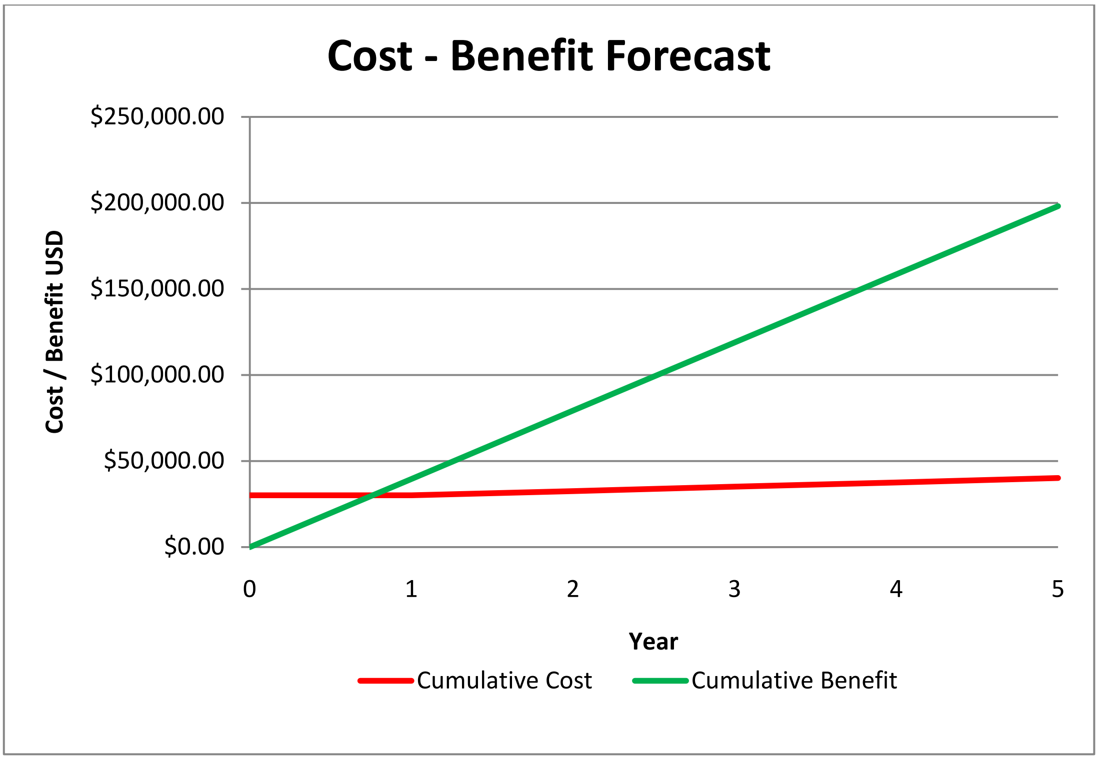
Cost – Benefit Analysis

In addition to the immediate 'human' costs of a lack of access to clean water and sanitation, there is also a wider economic cost to consider. The costs associated with medical bills, loss of productivity and labour diversions are greatest in some of the poorest countries.

It has been estimated that Sub-Saharan Africa loses about 5% of GDP, or approx. USD $28.4 billion annually – a figure that exceeds the total aid flows and debt relief to the region in 2003 (United Nations Human Development Report 2006). It therefore follows that any scheme that physically improves sustainable access to water or sanitation for a community or communities will have a quantifiable economic value.

The information on the previous page can be used to formulate a 'cost-benefit forecast' for the project, which will graphically compare the projected 'cumulative cost' with the 'cumulative benefit' over a period of five years:

Project Details	***Ethiopia***
Country GDP (USD)	$25,580,000,000.00
Country Population	80,713,434
GDP / Capita (USD)	$316.92
Loss of Productivity @ 5% GDP / Capita	$15.85
Population Served	2,500
Annual Benefit = Loss of Productivity x Population Served	$39,615.46
Total Cost of Project Implementation	$30,000.00
Annual Benefit x 5 Years (USD)	$198,077.31
Total Project Cost for 5 Years (USD)	$40,000.00
Net Benefit over 5 Years (USD)	**$158,077.31**



The graph shows that the project will 'pay for itself' in under 12 months, as indicated by the point at which the cost and benefit lines cross.

IV. TERMS OF REFERENCE

Project Objectives

1. To provide the Galcha community with sustainable access to clean, safe drinking water

2. To improve the health and productivity of the Galcha community, by preventing diarrhoeal sickness and waterborne disease

3. To contribute towards the achievement of Millennium Development Goal (MDG) Target 7c "To reduce by half the proportion of people without access to safe drinking water and basic sanitation".

Schedule of Activities & Timescale

Project Stage	***Action Required***	***Time & Duration***
Funding & Purchasing	*Once all funds have been raised, the purchase order is made for the supply and installation of a PROtector water treatment system*	*Week 1 (2 weeks)*
Fabrication & Shipping	*Construction and factory testing of PROtector* *Shipping, clearing and forwarding of equipment to site* *Site preparation**	*Week 3 (6 weeks)* *Week 9 (8 weeks)* *Week 17 (1 week)*
Installation & Commissioning	*Installation of unit and connection of all hoses* *Operational training for community stewards and any personnel from Labata Fantalle*	*Week 18 (1 day)* *Week 18 (1 week)*

V. QUALIFICATION & EXPERIENCE OF PROGRAM FACILITATOR

Labata Fantalle

Labata Fantalle is a newly established organisation aiming to work mainly with the Karrayyu Oromo people of Fantalle Woreda, East Shewa, Oromiya Region, Ethiopia. The emergence of the first Karrayyu university graduates within the last few years has enabled members of the community to establish an organisation for the first time, which is not reliant on outside support.

A committed group of community members have combined forces and this has resulted in the establishment of 'Labata Fantalle'. As such, the need for an indigenous organisation has been realised. Because the members of Labata Fantalle are Karrayyu people, they have a unique insight into the issues facing the community. No one understands the problems faced by the community more deeply than community members themselves.

The main objective of this organisation is to serve the underprivileged and marginalised community living in Fantalle Woreda. The organisation is run by the community for the community and aims to empower community members so that together they can alleviate the socio-economic and environmental problems of the area. Their objectives are to see that the community has access to basic social services and to work on innovative ways to improve standards of living and the local environment. They also aim to help the community, both young and old, to become educated, knowledgeable and self sufficient through using a combination of modern and traditional knowledge and approaches. Labata Fantalle is a non-profit, non-political, non-religious, grassroots, participatory development organisation.

The main areas of intervention of Labata Fantalle are: economic and social development; relief of poverty; environmental protection and improvement; advancement of education (both traditional and modern); advancement of health; advancement of arts, culture, heritage and traditional knowledge; relief of those in need by reason of age, disability, financial hardship, or other disadvantage.

Labata Fantalle’s Natural Resource Management and Livelihoods Project focuses on natural resource management and improving local livelihoods. The natural resources of Fantalle area are under threat from a variety of forces: loss of land resulting in overgrazing and degradation, population increases (partly due to migration of other ethnic groups to the area), and climate change. Addressing natural resource management and protection is of critical importance for countries like Ethiopia as the majority of people survive through the availability of natural resources. Loss of natural resources is not just a local problem, but a global one. The main objectives of the project are to develop community understanding of and resilience to natural resource degradation and climate change and to improve livelihood security through managing and conserving natural resource bases sustainably.

Website: www.labatafantalle.org

Labata Fantalle Mission

Our mission is to support Karrayyu Oromo pastoralists during a time of rapid change, using sustainable approaches that are friendly for both people and environment.

Our aims are to:

- Improve the local environment through sustainable natural resource management techniques
- Improve livelihoods through the introduction of new and innovative income generating activities
- Improve educational levels through training provisions and encourage both modern and indigenous knowledge and approaches
- Encourage and support local culture and traditions through heritage work, local craft production and community tourism activities
- Improve health and work to improve health-care facilities
- Facilitate sustainable, participatory community-led development

Status of Labata Fantalle

Labata Fantalle was registered on 19th April 2010 with the Federal Democratic Republic of Ethiopia Ministry of Justice Charities and Societies Agency, in accordance with Proclamation No. 621/2009, under certificate number 1771.

Labata Fantalle is a non-profit, non-political, non-religious, grassroots, participatory development organisation.

Labata Fantalle Organisational Structure

Labata Fantalle is run by a General Assembly of community members (25 founding members), 7 Board Members who are democratically elected by the General Assembly. The organisation is managed by two joint Directors appointed by the General Assembly and Board of Directors. Project Staff and Auditor are answerable to the Directors.

Board of Directors *Haji Kaseru Jilo* *Haji Musa Gurro* *Suali Boru,* *Boru Jilo* *Waday Bultum* *Kedir Roba* *Boru Haro*	*Directors* *Roba Fantalle* *Auditor* *Mamo Boru* *Project Staff* *Aliyyi Kasaru* *Boru Bosat* *Fantalle Gile*

PROtector Project Organisation

The Directors and Board will be responsible for overseeing the implementing the PROtector project, the General Assembly have been consulted and they have decided on Galcha location for the installation based on community needs. Labata Fantalle has a Community Garden Project which is in the early stages of development, the project site is at Galcha near to the Galcha pond. We will therefore be able to incorporate the management of the PROtector with our other project activities. Aliyyi Kasaru has been coordinating project activities at the Galcha site and has been liaising with community members.

Name: Aliyi Kasaru

Project Role: Community Liaison and Founding Member of Labata Fantalle

Nationality: Ethiopian (Karrayyu)

Place of Residence: Matahara, Ethiopia

Bio: Aliyi Kasaru has a degree in International Trade and Investment Management from Adama University. He is a founding member of Labata Fantalle, and is from Galcha area. He currently oversees the running of project activities at our community garden site and has been liaising with community members regarding the installation of the PRO-tector system at Galcha pond.

VI. BUDGET

Project Funding	***Amount (USD)***
Labata Fantalle (through fundraising)	*$5,000.00*
Galcha Community	*$1,000.00*
Sugar Plantation	*$5,000.00*
Total Funding	*$11,000.00*
Project Expenses (Over 5 Years)	
Purchase of River PROtector M2-N Water Purification Plant	*-$24,900.00*
Shipping of Equipment from MN, USA	*-$2,000.00*
Customs Clearing of Shipment	*-$600.00*
Installation & Commissioning of Plant (Including O&M Training)	*-$2,600.00*
Cost of Groundworks & Community Preparation	*-$1000.00*
Total Expenses	*-$31,100.00*
Balance Sought From Donors (Expenses less income)	***$20,100.00***

Labata Fantalle is able to commit to fundraising towards the Karrayyu PROtector program, as it falls in line with the objectives of the organisation. There is also one other organisation operational in the area which is local, and has the ability to raise funds. Ideally, funding from a larger donor organisation with in kind contributions from community members would be the most feasible way forward. It may be that local businesses such as the Sugar Plantation could contribute funds as part of compensation to the Karrayyu community.

VII. SUSTAINABILITY

Community Participation

The Galcha residents will be duly consulted and represented throughout the development and implementation of the PROtector program. This will be done by holding a series of meetings and electing a water council or similar that will be responsible for the implementation of the project at community level. Minutes of the meetings will be recorded as evidence of the process.

Ownership of the PROtector

Although the PROtector will be initially purchased on behalf of Labata Fantalle, it will be the property of the Galcha residents. As such, it should be considered to be a valuable and essential piece of infrastructure, an asset to be looked after. If the community accepts this, then they will ensure that it is well looked after for a very long time.

Operation of the PROtector

Operation of the machine will be conducted by the members of the community themselves, and/or by persons duly elected by the community to operate it on their behalf. Ideally, the water produced by the machine will be vended to the members of the community at an agreed price; with the revenue collected used to raise funds for any employment of those persons operating the machine, and also to purchase replacement filters and membranes as and when required.

Training

Training of the elected persons on the operation and maintenance of the machine will be conducted by personnel from PROtector Treatment Systems, as part of the installation and commissioning procedure. The training will include instruction on routine maintenance, as well as troubleshooting.

Maintenance of the PROtector

Maintenance of the machine will be carried out by the elected persons from the community, who will utilise funds from the revenue raised in water vending to afford the replacement filters and membranes. The elected persons will be equipped with all tools and materials required to conduct maintenance activities.

Availability of Spare Parts

As part of the installation and commissioning process, personnel from PROtector Treatment Systems will help to set up a local supply chain for the purchase of replacement filters and membranes. As there are no 'proprietary' replacement parts or components used inside the machine, the sourcing of replacement items is straightforward. All of the filters and membranes are of standard specification, available from a number of manufacturers worldwide.

Technical Support

Personnel from PROtector Treatment Systems will offer technical support to members of the community and the applicant organisation by telephone and email. Any 'non-routine' repairs or alterations will be organised by PROtector Treatment Systems directly.

VIII. CONTACT DETAILS

Program Manager / Co-ordinator

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PROtector Treatment Systems

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