

## ENERGY FOR LIFE - BEST PRACTICE AWARD 2011

**System / Location**

**Fabrication & implementation of a small hydroturbine / Tanzania**



I started generating electricity using a small run of water with turbine that was not so good. The turbine used here was able to produce a small amount of power enough for only 4 houses with about 5 people each. I went on improving the turbine in order to have more power for more people.

One day in my workshop I met Mr LEO from OIKOS EAST AFRICA whom together with me came up with a new design of a powerful and efficient turbine. From then, and in collaboration with myself, the Justine Mungure, Leo – from OIKOS EAST AFRICA and Arusha Technical College Technicians, have been able to manufacture a new and efficient hydro Turbine for which the performance seems very efficient. By using this new Turbine 20 houses of more than 120 people have benefited from the power generated by this turbine.

**Planning/Installation**

JUSTINE MUNGURE

**Donation/Support**

OIKOS & ARUSHA TECH. COLLEGE

**Operator**

JUSTINE MUNGURE

### PROJECT DATA SHEET

Year the installation started operating	May 2011
Type of system	Small hydropower generating system
Type of energy produced	Electricity
Location	Village
Geographical position	Small hills surrounding area.
Size of installation	3.5m <sup>2</sup>
Thermal Power of installation	2.5 kW
Use of energy produced	Lighting, tvs and radios
Quantity of energy produced per day	60 kWh
Type of financing	Grant
Source of financing	Oikos east africa & arusha technical college
system investment cost	6,500,000 TSH (USD 4,028)
System cost per watt	550 TSH (USD 0.34)/w
Income generated from installation	No income, since the power generated is not for business
Maintenance cost per year	US-\$ 170
Fossil fuel savings per year	150 litres of kerosene per house and US-\$ 110 for purchasing dry batteries.
CO <sub>2</sub> reduction per year	About 180 m <sup>3</sup> of CO <sub>2</sub>
Number of beneficiaries	Before installing new turbine, beneficiaries were four houses with total of 20 people. Now beneficiaries are 20 houses of about 6 people per house, therefore 120 people.



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### LEGAL FRAMEWORK

SUPPORTERS: ARUSHA TECHNICAL COLLEGE and OIKOS EAST AFRICA.

All fabrication and manufacturing job of the turbine was done at Arusha Technical College Workshops.

### FEASIBILITY, SUSTAINABILITY AND REPLICABILITY

The project will have a good impact on the needing and targeted groups because it will save the costs of kerosene, dry batteries, etc. A good number of people are going to benefit on the project especially women who have many responsibilities according to culture. Moreover, the project will have a positive impact on the students' performance due to group discussions in evenings and nights with the availability of light during the night at all time.

### SOCIAL IMPACTS

Income generation or input in terms of money for the targeted group will increase because the project will reduce the costs of buying kerosene, dry batteries, etc.

Before the installation of the system, people were idle especially during nights because there was no light in the area. Additionally, there was no entertainments such as music, grocery stores, etc. Today students and pupils are enjoying their life as there are now groups of studies for students during the night. In the church there is now music including instruments such as guitars for the choir.

### FINANCING AND FINANCIAL IMPACT

Suitability: Transport to and from Arusha Technical College Workshops. Transport was always available. Tea and Lunch also was provided. Labour cost and purchase of materials was done by OIKOS and ARUSHA TECHNICAL COLLEGE.

No beneficiaries were involved in the financing the project.

No beneficiaries have been involved in the financial manage-ment of the operation of the project.

Moderate: The ratio between the investment cost and results of the project is not good or bad.

### ADDED VALUE

The project has added values because by now there is no burning of fuels such as kerosene for providing light as it used to be using traditional burners (Koroboi – in Kiswahili language). By avoiding these types of lights the production affect-ing gases such as CO<sub>2</sub>, CO and others have been reduced. By watching TVs and listening to the radio, many people will be aware of their rights especially for women in rural areas. Grade school pupils and secondary school students from poor families have been using this project for efficient studying during evenings and nights taking advantage of the availability of light.

