



Participants of the solar energy workshop holding the solar lamps made using available local materials © Hong Kyu Choi

CASE STUDY



Tanzania

SOLAR DEVICES TRAINING EMPOWERS RURAL COMMUNITIES IN TANZANIA

The EcoACT project seeks to increase access to renewable energy sources at a local level in Tanzania, to boost villagers' resilience to climate change.

PROJECT NAME

Eco-village Adaptation to Climate Change in Central Tanzania (EcoACT)

PERIOD

2015-2019

TOTAL COST

- € 1 999 802
- 2017 Budget for solar component: € 10 000

BENEFITING ZONE

Central Tanzania

BENEFICIARIES

50 young people

PARTNERS

- European Union
- GCCA+
- Tanzania Organic Agriculture Movement (TOAM)

CONTEXT

About 70 % of Tanzania's population of 50 million lives in rural areas, most without access to electricity. The Rural Energy Agency (REA), established to accelerate the pace of rural electrification in the country, has increased rural electrification from 2 % in 2007 to 11 % in 2015. The scattered nature of rural settlements makes it difficult to increase access to electricity in the countryside due to the requirement of long power transmission lines.

However, Tanzania has abundant solar irradiance, amounting to 200 watt peak capacity per square meter (Wp/m²). It is thus considered a cost-effective measure for rural electrification.

OBJECTIVES

The EcoACT project intervenes to both reduce poverty of vulnerable semi-arid rural Tanzanian communities and strengthen their capacity to adapt to the adverse effects of climate change. As part of the Ecovillage* strategy, the project seeks to increase access and use of efficient energy sources, to enhance resilience to climate change.

More specifically, the project aims to engage young people from Chamwino and Dodoma Municipal Council Districts (Idifu and Kikombo wards) in workshops on solar appropriate technology (SAT). Pioneered in Tanzania by Dr. Hong Kyu Choi, SAT is defined as affordable solar technology that meets the needs of rural people while protecting the environment; employing devices made and repaired using mostly local skills and materials; and helping people earn a living.

* An Ecovillage is defined by the Global Ecovillage Network (GEN) as an intentional, traditional or urban community that is consciously designed through locally owned, participatory processes in all four dimensions of sustainability (social, culture, ecology and economy) to regenerate its social and natural environments.



- ▶ Institute of Rural Development Planning
- ▶ Dodoma Municipal Council

FACTS AND FIGURES

- ▶ The SAT solar phone chargers use 10 solar cells.
- ▶ Each cell generates 0.52V and 480mA in Dodoma at noon.
- ▶ Each unit generates 2.5W of power and can charge a phone in two hours.
- ▶ Multipin phone chargers enable the units to charge all kinds of phones.
- ▶ The SAT lamp has eight solar cells and a 3.7 volt lithium-ion rechargeable battery.
- ▶ It generates 2W of power.
- ▶ By charging the battery during the day, users can keep the lamp on for four hours at night.

IMPACT

The EcoACT project provides an example of successful integration of environmental and climate change concerns into a rural energy project. It has addressed poverty-environment-climate change linkages through the implementation of the following objectives:

- ▶ ensuring universal access to affordable, reliable, sustainable and modern energy;
- ▶ using local skills and materials in a sustainable manner;
- ▶ protecting human and environmental health through the introduction of alternative energy and energy-efficient innovations, which reduce reliance on fuelwood and charcoal, deforestation and greenhouse gas emissions;
- ▶ enhancing capacities to adapt to climate change;
- ▶ alleviating poverty by enhancing access to technology and generating an inclusive green economy.

Two vocational training workshops equipped 50 participants with skills to make solar units (solar lamp and solar mobile phone chargers) to sell at an affordable price for daily use; simultaneously increasing access to electricity and providing jobs.

Participants learned how to solder, fit LED lights onto a circuit board, connect solar cells, and wire an electrical circuit. It was vital for them to work as a team because several steps require cooperation.

For the young people who received the training, the skills they learnt have sparked hope. When asked about their objectives after completing the training, three recurring themes were: (1) to study further and gain more expertise in solar engineering; (2) to continue working with fellow students to scale-up production of solar units, and (3) to launch small enterprises.

TESTIMONY: SAT SPARKS HOPE

"One of the key benefits of solar appropriate technology is that materials are sourced locally. This means that manufacture can be cheap and simple, and the solar units can be repaired when damaged. Currently, the overwhelming majority of solar units in Tanzania are manufactured in China. When they cease to function, they are scrapped due to the lack of technical expertise in solar engineering and access to spare parts. By training solar manufacturers at village level, we hope to make solar technology even more sustainable, as units can be fixed locally and continually used. Another advantage of the model is that the materials are sourced sustainably. For instance, the base of the solar mobile phone charger and lamp is made of scrap wood procured from local carpenters."

Dr. Hong Kyu Choi

More information:

The solar component of the EcoACT project is implemented by the [Tanzania Organic Agriculture Movement \(TOAM\)](#).

EcoACT project web: <https://chololo2.wordpress.com>.

Greening EU COOPERATION

Integrating environment & climate change

Environment and climate change mainstreaming is a legal EU requirement, reaffirmed in the New European Consensus on Development, and essential to meeting international and internal commitments.

For advice and training on environment and climate change mainstreaming, contact:

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Students in Idifu ward, Chamwino district, manufacture solar lamps and phone chargers. © Hong Kyu Choi