PROJECT TITLE	**Efficient Combustion Technologies in Tanzania and Vietnam —** Introduction and dissemination of efficient energy technologies in Tanzania and Vietnam to improve the lives of local communities dependent on forest resources
DURATION	**2015 – 2017**
AREA OF INTERVENTION	**Southern Tanzania —** District of Ifakara (Morogoro Region)
PROJECT LEADER	**Mazingira Association**
PARTNER	**GTV – Gruppo Trentino Volontariato, MUSE – Science Museum of Trento, Department of Environmental Engineering of the University of Trento, CISMA, UEMC – Udzungwa Ecological Monitoring Centre**
BACKER	**Waldesian Church**

BACKGROUND

The project involved the exchange of experiences and technologies between Tanzania and Vietnam, with the identification of sustainable energy systems best suited to the two contexts.
In particular, in Tanzania the aim was to strengthen and continue the campaign to promote and disseminate efficient energy technologies started in 2012.

To achieve this, the project involved the construction and testing of low-cost self-built sensors based on open source technologies to measure CO_2 and the actual performance of different technologies, traditional and improved, used in domestic cooking. Measurements were accompanied by socio-economic interviews to get a deeper picture of the context.

Three Environmental Engineering students from Trento were involved in the measurements in Tanzania and Vietnam.

BENEFICIARIES

Direct beneficiaries in Tanzania

Awareness-raising in the villages: about 5000 people
Female Groups: 14 female groups of 5 people each
Carpenters: 2 per village = 28 men

Indirect beneficiaries in Tanzania

The entire population of the 14 villages bordering the eastern side of the Park (about 100,000 people).

OBJECTIVES

1. Spreading efficient energy technologies among the local population (Mayon Turbo Stove, non-woody biomass briquettes, insulated baskets, mud stoves)

2. Raise awareness among local communities of the dangers of three-stone fire for mothers and children's health and the environment, the benefits of using efficient energy technologies and how to use them.

3. Test some of the proposed technologies (Mayon Turbo Stove, non-woody biomass briquettes) **in the field and in the laboratory to measure emissions and real efficiency,** in a parallel pilot research study in Tanzania and Vietnam.

IMPLEMENTED ACTIVITIES

The activities were divided into two macro-areas of intervention:

1. Efficient Energy Systems and Good Practices

2. Awarness-raising events and activities in the villages

In addition, a mission of exchange between Tanzania and Vietnam took place in May 2017 and involved two Mazingira coordinators (Silvia Ricci and Pima Nyenga).

METHODOLOGY OF MONITORING

The results of the project were monitored and evaluated throughout the project with quantitative and qualitative methods, through the work of local staff with the control and validation of the project coordinator.
Moreover, the constant presence on the territory of the local staff allowed to immediately understand the impact of the activities on the population and monitor the behaviors and moods of the beneficiaries involved. The evaluation tools were multiple-choice and open-ended questionnaires, appreciation questionnaires, interviews, meetings and meetings and evaluation sheets of activities and interventions.

RESULTS

1. Efficient Energy Systems and Good Practices
Two Environmental Engineering students from Trento (Martina Costi and Tommaso Tosi) have carried out their research in the villages of Mang'ula B, Mwaya and Mgudeni.
The thesis written by Martina Costi presented the data related to the testing of sensors in 80 Tanzanian families. The sensors were designed to measure CO_2 and fine dust emissions and the actual performance of various traditional and improved home cooking technologies used in the project villages. The analysis of the data showed that efficient energy technologies are actually better than traditional cooking methods, as they are cleaner and less polluting.

2. Awarness-raising events and activities in the villages
From the socio-economic questionnaires given to families, it was found that the local perception in Tanzania is that traditional methods are faster and more efficient, although sometimes harmful to health. Working on this, the work of raising awareness and increasing awareness in the project villages, through radio campaigns, English and Swahili manuals, posters and night screenings in villages, interrupted during the rainy season.

2. Cultural exchange Tanzania – Vietnam For the Tanzanian coordinator (Pima Nyenga), the cultural exchange in Vietnam represented a great opportunity to compare the activities that are promoted and implemented in Tanzania. The possibility to visit a country characterized by problems in some ways similar to those found in the Udzungwa area allowed him to take a new point of view and learn new strategies for solving common problems. Pima Nyenga returned to Tanzania enthusiastic about the experience and with a strongly enriched cultural background. Moreover, from the confrontation with the local reality, new ideas and strategies were born to implement interventions in Tanzania.