



PROJECT:

Showing the sustainable lifestyle behaviour and technologies for energy efficient households in **Zambia**



Implementing entity:
VTT Technical Research Centre of Finland



Project partners:
The Copperbelt University, Zambia (CBU)



Amount:
Budgeted: USD200,000
Spent: USD175,542.48



Duration:
10.03.2017 – 31.12.2018



Project objective:

The objective of the project was to show influence of lifestyle, behaviour and technology on household energy performance and demonstrate possibilities of energy efficient technologies for the public at large. Lifestyle scenarios were studied using participatory approaches and social innovations. The behaviour influencing household energy use were researched through case study simulations. The holistic performance combining lifestyle and technology scenarios is shown by building energy simulations and web-based tools.

Project status: Completed

01

A report on the state of the art of the energy consumption and production in Zambia has been developed.

02

The user study in three provinces in Zambia has been developed and focused on the technologies in Zambian households. The study results show that around 70% of the households were willing to buy energy efficient appliances, including about 50% that were willing to pay 20% more to buy energy efficient appliances.

03

Two series of simulation courses took place for the students of Copperbelt University. The courses focused on the evaluation of influence of user behaviour and technologies on energy consumption and production. A simulation course was also organized for lecturers so that they can include it in the curriculum they teach. The University has now incorporated energy consumption simulation into the curriculum of the ESA330 course at third year level on the Bachelor of Architecture programme.

04

Simulation exercises of case studies showing the scenarios of the energy use in households in Zambia were undertaken. The purpose of the case studies was to show the energy efficiency of household cases and impact of these cases and scenarios on energy consumption at Zambia level.

05

The CO₂ emission model was done using simple emission factor method, in which the factor depends on the share of different type of electricity production typologies. The analyses with the case households showed that energy consumption of lighting can be decreased 20-43%, decreasing the CO₂ emissions due to household electricity use by 39,000-81,000 tCO₂eq (2017 emission factors) in case the improvements would be done in all the households. If the appliance groups of lighting, refrigerators and TVs become energy efficient this would decrease the electricity consumption by 74 % of the base case situation. This would decrease CO₂ emissions by 141,000 tCO₂eq per year.