

INTEGRAL ENERGY SYSTEMS FOR OFF-GRID HOUSEHOLDS MADE IN LESOTHO



A locally produced, innovative energy system, combining biomass, photovoltaics and „smart“ technology

The Project

African Clean Energy (ACE) is a Dutch-South African social enterprise that focuses on decentralized clean energy access for rural customers in Sub-Saharan Africa and Southeast Asia. At its flagship factory in Maseru, Lesotho, the company manufactures the ACE 1 Energy System, a highly efficient cookstove combined with a solar home system. It pairs thermal and electric generation to provide low-income households with a clean, smokeless cooking opportunity, while also offering access to electricity for charging and lighting. The appliance uses 50-85% less fuel than conventional cooking stoves, runs on any available biomass (including crop residue, animal waste or wooden sticks) and comes with a 12V/10W solar panel and a battery to supply the built-in forced draft fan, an included LED lamp as well as other devices such as mobile phones.

Local retail kiosks and in-house sales teams distribute directly to customers (in cooperation with village chiefs, women's groups etc.), thereby building last-mile distribution channels in the developing world which can facilitate remote households to gain access not only to the ACE 1, but also to maintenance services, financial support and clean fuels. The device can be purchased on a pay-as-you-save (PAYS) basis allowing customers to pay back a 6-9 month micro-loan using the average savings of more than 80% made on their monthly energy costs.



Impacts & Benefits

The ACE 1 is a high-quality product made in Africa with a life expectancy of 8-12 years. According to scientific studies and field tests, each device averts the emission of 2.5 tons of CO₂ per year due to woodfuel use reduction. In addition, 95% of customers interviewed had completely stopped buying paraffin; 63% now rely exclusively on clean energy for cooking. It is estimated that the 55,000 units sold by the end of 2018 altogether avert 2,850 disability life years (aDALY) and 90 deaths from reduced cooking-smoke exposure.

Apart from its positive impacts on climate, local ecosystems and health, ACE with its factory in Lesotho also contributes to local employment and training. There are currently 35 staff on the production line, and an additional 30 in admin and sales roles. As a certified Benefit Corporation the company maintains a 50% gender split in all its operations, while more than 10% of factory positions are occupied by individuals with disabilities.

STAGE 1: Concept Development, Site Identification

STAGE 2: Pre-Feasibility Studies

STAGE 3: Feasibility Studies

STAGE 4: Permitting, Financing, Contracts

STAGE 5: Engineering, Construction, Operation

Financing

ACE is a privately-owned for-profit company which, apart from external private investors, foundations and bank loans, has been able to attract grant funding for its projects in Lesotho, Uganda and Cambodia from several institutions such as the Energy and Environment Partnership Trust Fund (EEP), the European Union, and – with support from EnTri Consulting – the Austrian Development Agency (ADA). The company does not see donor funding as a long-term business solution, but as an opportunity to attract and leverage new private capital for its operations in regions considered high-risk and thereby to accelerate scaling. To complement this, ACE is currently in the final stages of closing a convertible debt round.

As the ACE 1 device constitutes a major investment for households in the target markets of the developing world, providing microfinancing to customers has been a key success factor for the project (see below). In order to offer the product more widely to people with low and varying incomes in the future, the newest model has been equipped with „smart“ technology enabling customers to activate the system's functions via mobile phone for certain time periods. This allows for more flexible and reliable loan repayment and at the same time offers new opportunities to e.g. monitor and quantify fuel use and emissions savings that may be monetized. A blockchain-based loyalty program called Actual Impact Rewards (AIR) is already being tested.



AFRICAN CLEAN ENERGY

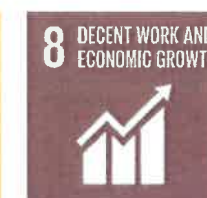


Submitter: African Clean Energy (Pty) Ltd

Location: Maseru, Lesotho

Website: www.africancleanenergy.com

Contact: Ruben Walker, ruben@ace.co.ls



Microfinancing

The provision of affordable financial products and services to unbanked individuals or groups at the bottom of the pyramid has become a relevant tool in development cooperation and for private business operations in developing countries. Microfinance includes above all small loans, but also micro savings, payment services, insurance etc.

Microloans may be provided by cooperative banks and development institutions or peer-to-peer via crowdfunding. Since ACE experienced complications with crowdlending platforms focused on productive loans for small businesses rather than for end-consumers, the company decided to set up its own financial vehicle operating on a non-profit basis separately from the corporate entity: The SDG ACE Foundation is financed with a blend of philanthropic funding and debt. Possible capital losses from defaulting loans are covered through agreed risk profiles with the donors.