



Electricity from shared solar PV towers

KEY CONCEPTS

ELECTRICITY, SOLAR PHOTOVOLTAICS, RENEWABLE ENERGY, ENERGY COMMUNITIES

Despite the South African government's efforts to provide electricity to all of its citizens, numerous communities in townships and informal settlements remain underserved or lack access to electricity. While national policy dictates that certain households can qualify for free basic electricity, this programme is not extended to informal settlements, where much of the need for electricity exists. In response, DC Go was established in 2017 to facilitate access to affordable solar energy solutions through flexible pay-as-you-go packages.

COMMUNITIES
Diepsloot

POPULATION
140 000

DENSITY
11 532 inhabitants per km²

INFRASTRUCTURE DEFICITS
Lack of electricity

CLIMATE
Mild, and generally warm and temperate

RISKS
Fire outbreaks, deforestation

Introduction

Over 640 million Africans have no access to energy. Households without electricity spend some \$18 billion annually on kerosene and other products that substitute for electricity, despite being known to result in poisoning, fires, and pollution. Nine out of ten of those households could save on kerosene and other products (which are estimated to consume 30% or more of a family's monthly income) by using off-grid electricity, if it were available. DC Go provides pay-as-you-go electricity via a shared 'solar tower' micro-grid system within informal settlements. The 5m high towers are designed to minimise tampering, and can supply direct current (DC) to up to 16 surrounding homes. Currently, the company operates out of Johannesburg and Gauteng, its biggest customer base being in Diepsloot, where 356 DC Go towers have been installed.

Approach

A home-grown company developed in Africa, DC Go provides off-grid electrification with localised generation and distribution systems designed to supply a group of customers in underserved areas. Beginning with a feasibility study to assess the suitability of the project within a particular area, the company also engages the community through local governance structures before commencing implementation.

Because most households in targeted areas have low and variable incomes, flexible payment models are critical in making off-grid energy services accessible and user-friendly. Offering a range of pay-as-you-go packages via the micro-grids, DC Go suits different budgets and needs, ranging from basic lighting to a full suite of low-energy, 12V DC appliances (such as USB charging sockets and refrigerators). The payment packages allow customers to upgrade or downgrade their appliance packages based on their financial circumstances. DC Go uses DC power because it is significantly more energy efficient than AC power, maximising the solar panels' utility, and reducing energy costs in the long term. DC also allows adequate power delivery at lower currents, thus reducing cabling and connector losses, as well as chances of electric shocks and fires. While customers purchase their own appliances and are responsible for their maintenance, the company maintains the broader system (the solar towers, cabling, etc.).

WRITTEN BY:
TINASHE KANOSVAMHIRA

Institutions, Governance, and Finance

DC Go is a for-profit company relying primarily on private investment. Its three major shareholders are Specialised Solar Systems, Cresco Offgrid, and Old Mutual Life Assurance Company South Africa. Government support takes the forms of laws and regulations facilitating the company's provision of solar energy to communities in need. For example, the current legislative framework allows for private companies to establish energy-generating projects without municipal approval if customers are not connected to the grid.

The impact

IMPACT	SOCIAL	ENVIRONMENTAL	ECONOMIC
Environmentally friendly electrification services		X	
Improved access to electric appliances	X		X
Job creation (i.e., through sales agents, vendors)	X		X
Reduction of CO2 emissions compared to kerosene and other products that substitute for electricity		X	
Reduced fire risk when compared to non-electrical lighting	X	X	X
Community safety with interior and exterior lighting (each solar tower has a light)	X		
Skills development	X		

Looking Ahead

With plans to expand from Johannesburg into the rest of South Africa and Africa at large, DC Go is raising capital to fund its current rollout to 300 000 customers over the next five years. The company is also engaging the Department of Human Settlements in Gauteng to collaborate on electricity provision under the Informal Settlement Upgrading Strategy, as well as with several municipalities (e.g., Tshwane and Johannesburg) to tap into the free electricity subsidy in upcoming projects.

Learn More

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