

# Engineering Brighter Tomorrows

An Engineers Without Borders Canada Project

## ABOUT THE PROJECT

Engineering Brighter Tomorrows (EBT) is dedicated to addressing energy access gaps in schools and health centers in Zambia and Malawi. Our mission is to bring electricity to these facilities through thoughtfully designed solar systems that meet their critical needs holistically. Ensuring a steady, cost-effective electricity supply will transform schools and healthcare centers, enhancing educational and health outcomes and attracting and retaining skilled staff. EBT collaborates with local organizations to align projects with government plans and community needs. By promoting sustainable environments, we aim to improve learning, healthcare services, and overall development. Reliable electricity is crucial for enhancing and preserving lives.

## OBJECTIVES

### 1. Improve Education Outcomes. For example:

- Through the provision of lighting for evening classes and internet access for educational technology, teachers can effectively educate students, who also learn better, leading to improved test results and increased lifetime earnings.

### 2. Enhance Healthcare Services and Save Lives:

- Supplying stable power to vital medical equipment, including refrigeration of vaccines and crucial medications, and enabling electricity supply to healthcare staff living quarters, greatly enhances overall performance and quality of care. This, in turn, enables more patients to receive higher quality care and helps mothers and children thrive.

### 3. Sustainability:

- By sourcing high-quality components and establishing strong partnerships with community stakeholders, the project sustainably strengthens local capabilities, empowers communities, and leads to better health and education outcomes.

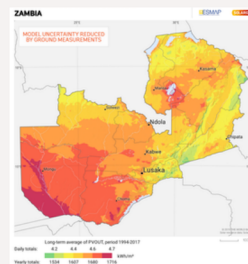
## KEY FACTS

- 1 billion people globally lack access to electricity in their homes. 75% of them live in sub-Saharan Africa. (NIH)
- 50,000+ rural healthcare facilities within the region lack electricity. (NIH)
- 70% of medical equipment fails on a regular basis, often due to unreliable power. (NIH)
- One-third of child hospital admissions are anaemic children, 50% of which do not survive beyond 8 hours due to poor or no (refrigerated) blood bank supply.

## ENERGY POTENTIAL: ZAMBIA AND MALAWI

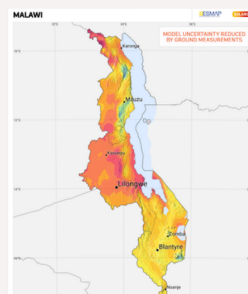
Access to electricity plays a crucial role in reducing inequalities and promoting long-term human development, especially in the areas of healthcare and education. Introducing solar energy in these regions is a smart move, as it allows for the use of an easily accessible and affordable natural resource: plentiful sunlight. According to research, the benefit-cost ratio for electricity ranges from \$22 to over \$60 for every dollar invested. (*Journal of Benefit-Cost Analysis*)

**WE BELIEVE THE PROJECT CAN DELIVER RETURNS OF \$25-\$100 FOR EVERY DOLLAR INVESTED IN ELECTRICITY ACCESS.**



### ZAMBIA

The high reliance on hydropower is problematic due to climate-induced disruptions, leaving 70% of Zambia's population without reliable energy access. Despite having the potential to generate 2,300 MW of solar energy, only 76 MW has been installed due to traditionally high initial costs, energy storage challenges, and grid integration issues (*Global Solar Atlas*).



### MALAWI

Malawi faces major electricity access challenges, with only 18% of the population connected to the grid and just 4% in rural areas. This affects schools and healthcare centers, hindering education and health services. Solar power offers a sustainable solution, leveraging Malawi's 3,000 hours of annual sunshine. 10kW solar systems can provide reliable electricity for mid-sized schools and healthcare centers, improving learning and critical medical services (*Global Solar Atlas*).

## EDUCATION CONCERNS

90%

**LOW LITERACY RATES**

Sub-Saharan Africa has the highest number of illiterate youth. Approximately 9 in 10 children are unable to read or write simple expressions about their daily lives (*African Library Project*).

20%

**LOW SCHOOL ATTENDANCE**

1 in 5 students aged 6-11 do not attend school, often because they live too far from a school or are unable to afford in-person learning. E-learning could eliminate those barriers (*UNESCO*).

## HEALTHCARE CONCERNS

70%

**HIGH MORTALITY RATES**

70% of the total number of global maternal deaths occur in the region annually. Many of which are preventable via access to reliable energy and medical equipment (*NIH*).

50%

**RISING POPULATION**

Population levels across the African continent are expected to more than double by 2050, addressing healthcare disparities is a critical race against time (*Forbes*).

## EMBRACING DIGITAL INCLUSION

Stable electricity allows an additional focus on digital inclusion to address the educational and health disparities that exist in these regions. These are caused by complex systemic barriers related to wealth, education, and geography. Access to modern digital technologies and internet significantly impact student access to online learning resources, leading to improved academic performance. From a healthcare perspective, digital health technologies provide immense potential to enhance health outcomes by tackling inefficiencies and enhancing healthcare access through e-health services.