

# 5 Solar Innovations Making the World a Better Place

## Life-saving solar energy solutions from around the world

Solar energy is the renewable resource bringing relief to disaster areas, war zones and remote regions. Here are some of the incredible solar innovations from around the world that are improving the quality of life for many.

### Solar-powered Toilets

2.5 Billion people do not have access to toilets, leading to preventable diseases like typhoid and cholera killing an estimated 1.5 billion children a year. Engineers from the [California Institute of Technology](#) created a toilet powered by a solar panel on the roof. When the toilet is flushed, the waste is broken down into usable resources. The solids are dried and used as fertilizer, hydrogen is extracted and stored in a battery which is used to power the toilet, and the water is sanitized and returned to the cistern. The closed-loop system uses very little water and produces fertilizer that can be used for crops, while also eradicating germs through the sanitation process.

### Solar Balloons Power Refugee Camps

Relief agencies need energy and, since they are operating in remote areas often plagued by war or natural disasters, there is little likelihood of connecting to a grid. Using generators is expensive, requires fuel and produces greenhouse gases.

A team of French designers have created solar-powered [Zephyr Photovoltaic Balloons](#). Each balloon is able to provide 50 people with power. They are 4 meters wide and they collect energy from the sun which they relay to the ground via a tether where it can be used or [stored in batteries](#). The balloons can be used to provide energy to hospitals and telecommunications units.

### Solar Streetlight that Kills Mosquitos

In many parts of the world, mosquito-borne diseases like zika, dengue fever and malaria wreck havoc on local populations. Now researchers in Malaysia have created a streetlight that provides light and captures mosquitoes.

Lead researcher [Dr. Chong Wen Tong](#) from the University of Malaya in Kuala Lumpur has produced a powerful LED streetlight powered by solar energy and a small wind turbine. The light emits a very low dose of CO2 which attracts mosquitoes, which are then trapped within the device.

## Solar Fridges Help Deliver Vaccines

Vaccinations in disease-stricken areas of the Democratic Republic of the Congo help to save lives. However, in remote regions there is no electricity—and therefore no refrigeration—to keep vaccines fresh. Developed and distributed by [B Medical Systems](#), [the solar fridge](#) has allowed the people of south-east DRC to get their vaccines on time.

Liliane Kitungu, a volunteer health worker in the DRC, explains: “Thanks to the solar fridge, we can now vaccinate new-born babies in a timely manner without fear of missing vaccines. Before... everything relied on ice which preserved the vaccines. If the ice melted, our work stopped ...”

## Providing Power to Canada’s Remote Communities

Deer Lake First Nation Elementary School just got a hybrid 152 kW rooftop solar array, featuring 624 Canadian-made PV modules. While the community does have a small power plant, it relies on diesel generators to fill in the gaps. These generators require fuel which comes at a hefty \$2.7 million price tag annually.

“This is the first project connected under our dynamic strategic partnerships in a commitment to use renewable energy micro-grid solutions to assist the energy needs of off-grid First Nations and remote communities”, said Dr. Shawn Qu, chairman and [CEO at Canadian Solar](#).

The installation will reduce the community’s costs by \$92,000 a year, its diesel fuel consumption by at least 31,000 litres per year, and its carbon emissions by 99 tons annually.

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