



Koolboks has developed a solar-powered refrigeration unit | Photo source [Koolboks](#)

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A SOLAR REFRIGERATOR FOR OFF-GRID COMMUNITIES

 FOOD & DRINK

The refrigerator makes ice while the sun shines and uses this to remain cool for up to four days with minimal or no sunlight

Spotted: As many as 2 billion people around the world do not have reliable refrigeration. This is largely down to a lack of access to reliable and affordable electricity. More than an annoyance, a lack of refrigeration makes it difficult to store food for long periods, leading to food waste, and forcing people, usually women, to spend more time shopping and cooking. This, in turn, limits the time available for paid work and relaxation. Koolboks, a company based in France and Nigeria, is hoping to improve access to refrigeration.

The company has developed a solar-powered refrigeration unit that can generate continuous refrigeration for up to four days, even with only limited sunlight. The Koolboks achieves this by storing electricity both in a lithium-ion battery and in the form of ice. When there is little sunlight or the battery is low, the ice can keep the refrigerator cold on its own.

In addition to keeping food cold, the power in the Koolboks can also be used to power LED bulbs (included with the refrigerator) and USB ports for charging phones. This makes the refrigerator ideal for use in off-grid areas. Customers can pay in small instalments through a pay-as-you-go scheme. This also enables mobile money payments and remote control of the refrigerator's usage, billing, and performance.

Koolboks explains that the device makes ice during the day, using solar energy, adding, "at night, when the sun is no longer available, energy switches internally to the ice, maintaining the temperature of the cabinet until the next day when the sun is available again. Thanks to this technology we've been able to bring down the cost of owning an off-grid solar refrigerator by close to 40 per cent."

Koolboks claims its product brings down the cost of owning an off-grid solar refrigerator by close to 40 per cent over other options. But it is not the only innovation we have seen aimed at delivering refrigeration for those living off-grid. In Sierra Leone, a university student has developed a **kinetic energy** power source for rural communities, and solar-powered **refrigeration trailers** have been developed to help reduce food wasted during transport.

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Takeaway:

Lack of refrigeration is a somewhat invisible problem, but it can have a big impact. Rural areas, in particular, can be seriously affected. This is because refrigeration not only affects food availability in these areas, but also storage of medicines. It can also affect farming and the food industry as some produce needs to be refrigerated after harvest to avoid waste. This means that access to refrigeration could be a game changer for these areas, allowing small businesses to sell perishables, and farmers and small food manufacturers to improve their efficiency – and profitability. Since, in some regions, small farmers are also food insecure, access to cooling could also help reduce hunger.