One in 9 people—795 million people—are undernourished, 98 percent of whom live in emerging economies. UN SDG 2 targets the end of hunger and all forms of malnutrition by 2030, as well as the doubling of agricultural productivity and incomes of small-scale food producers. Decentralized renewable energy (DRE) solutions can aid subsistence and low-income farmers to increase outputs, create savings, and allow for increased income for spending on more nutritious food.

DRE solutions are increasing food supplies and supporting agricultural output:

- Food is the number one good purchased by families in East Africa use savings from replacing kerosene, candles, or flashlights with solar lights.
- There are 500 million subsistence farmers/smallholders providing food to support 2 billion people with the potential to increase their yields with the use of decentralized renewables.
- In Kenya, solar irrigation helps smallholders grow more crops throughout the year, leading to an increase in their yields of 300 percent.
- To increase farming outputs, India has announced plans to install 26 million solar water pumps, while Bangladesh has set a target to finance 50,000 solar water pumps.
- 11 half-hectare sized market gardens powered by solar irrigation in Benin and farmed by co-operatives of 35-45 women each enable 66,000 people to access fresh fruit and vegetables.
- Solar refrigeration systems can enable the storage and transport of vaccines for livestock, helping to protect farm animals from diseases like the “peste de petits ruminants” disease, which causes over $2 billion in losses each year, mainly in Africa, Asia, and the Middle East.
- In Zimbabwe, solar irrigation pumps allow smallholder farmers to increase yields by 25%. Farmers were able to plant three crops per year, providing a diversity of nutritious cash crops.
- DRE can increase the value of agricultural products. For instance, using solar dryers to create banana chips in Thailand can increase the price of banana chips sold by over 70%, resulting in increased income of $1.5 million per year.

DRE solutions are reducing wasted food and labour through cooling and agro processing:

- The total value of food that is lost annually due to lack of refrigeration is $4 billion throughout all of Africa and $4.5 billion in India. In Sub-Saharan Africa, loss of perishable fruits and vegetables can reach up to 50% annually.
POWER FOR ALL FACT SHEET
Decentralized Renewables: Boosting Agriculture and Improving Nutrition

300%
INCREASE IN AGRICULTURAL YIELDS WITH SOLAR WATER PUMPS IN KENYA

75%
REDUCTION IN GRAIN PROCESSING TIME IN NEPAL WITH MICRO-HYDRO-POWERED MECHANIZATION

66,000
PEOPLE IN BENIN WITH ACCESS TO FRESH FRUITS AND VEGETABLES DUE TO SOLAR IRRIGATION

» Cold storage units powered by decentralized renewables save crops following harvest. In a trial in Zimbabwe, biogas powered chillers doubled the amount of milk a family is able to keep or sell.14

» In Uganda, where 70 percent of the population is involved in smallholder agriculture, solar powered refrigeration could cut agricultural output loss by 30–50 percent.15

» Currently, only 10% of global farm labor relies on machines.16 Using decentralized renewable energy can increase productivity and speed up agricultural processing.

» In Vanuatu, it takes only a few seconds to grate and grind coconut and cassava using solar-powered machinery, opposed to 20 minutes required with manual grinders.17

» Micro-grid hydro plants powering grain mills in Nepal reduce the time and workload of women by over 75 percent, from at least 2 hours of grain processing by hand, to half an hour with mechanization.18

» After installation of solar water pumps, women in Zimbabwe who previously spent 6 hours per day walking to collect water for their gardens—containing crops like spinach, cabbage, tomatoes, beans, and others—now only spend 1-2 hours daily.19

» Solar refrigeration systems used to keep food fresh can also provide cryogenic energy storage, ensuring more reliable electricity supply.20

Share the Message
The role of decentralized renewables in improving irrigation, cold storage, and agricultural yields will be imperative to reach UN SDG 2 targets for hunger eradication, especially as climate change is projected to increase droughts and extreme weather. Join Power for All to share the following messages:

» Decentralized renewables, especially solar irrigation and water pumps, can increase agricultural outputs, as well as increase diversity of crop production.

» Decentralized renewables can power cold storage systems, drastically reducing food waste and preserving more food for people to eat.

» Mechanized agro processing powered by distributed renewables can save labor and increase the value of crops.

Sources: