POWER FOR ALL FACT SHEET

Decentralized Renewables: Boosting Agriculture and Improving Nutrition

POWER FOR ALL

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

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One in 9 people—795 million people—are undernourished[1], 98 percent of whom live in emerging economies.[2] 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.[3] 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.[4]
- 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.[5]
- In Kenya, solar irrigation helps smallholders grow more crops throughout the year, leading to an increase in their yields of 300 percent.[6]
- To increase farming outputs, India has announced plans to install 26 million solar water pumps[7], while Bangladesh has set a target to finance 50,000 solar water pumps.[8]
- 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.[9]
- 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.[10]
- 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.[11]
- 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.[12]

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.[13]

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- 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.

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