ENERGY FOR FOOD SECURITY

WFP
World Food Programme

SAVING LIVES
CHANGING LIVES

Shifting schools to eCooking in Burkina Faso

An internal evaluation

Since 2015, Burkina Faso has faced a convergence of humanitarian, environmental, and socio-political challenges: political instability, a fast-growing population, internal displacement due to insecurity, and vulnerability to climate shocks. These factors have deepened rural poverty, reduced land productivity, exacerbated food insecurity, and intensified malnutrition. Approximately 90% of the population lacks access to modern cooking fuels, heavily relying on the unsustainable use of biomass. This dependence fuels deforestation, land degradation, and indoor air pollution, placing the greatest burden on women and children. WFP aims to transition school meals programmes from biomass to clean cooking contributing to food security, improving school attendance, supporting women livelihoods, and safeguarding the environment.

A project to test the viability of solar powered eCooking launched in 2025 is introducing Electric Pressure Cookers (EPCs) in ten school canteens located in vulnerable and food-insecure areas across the Plateau Central, Nord, and Boucle du Mouhoun regions. Each school has been equipped with a 3.3 kWp solar photovoltaic system (solar PV), battery capability of 5 kWh, two 25 litres EPCs and the essential control and protection systems.

September 2025

Cooks, school staff, and members of the School Management Committees were trained in theory and practice on how to use the appliances efficiently, including turning power on, operating the EPCs, different cooking methods (slow and fast cooking, open and closed lid cooking), as well as scheduling cooking during peak sunlight hours and prioritizing the preparation of lunch over breakfast to optimize solar energy use and maximize the benefits of the EPC systems. Besides reducing firewood use, the project looks at improving the efficiency, convenience and hygiene of the school meal preparation processes, to reduce the exposure of both cooks and pupils to smoke and contribute to the Government's school electrification goals.

PROJECT MONITORING

An internal early-stage site visit in seven of the ten schools, has been conducted in March 2025 aimed at observing the technology's performance, effectiveness, rate of adoption, potential challenges, and scaling opportunities. The average pupil population ranged from about 240 to 500 with one cook for every 140 meals on average. The assessment combined quantitative and qualitative data collection and analysis techniques, comprising of:

- Technical performance evaluation of the installed technologies (e.g. reliability and efficiency of the installed solar PV / EPC system under typical school operating conditions).

- Qualitative data collection in focus-group discussions with teachers, cooks, parents, community members and regional representatives of the Ministry of Education, on their experiences and perceptions on the introduction of EPCs.

Technical performance

All systems appeared functioning and in good condition. However, the maintenance of batteries and cleaning of solar panels was not performed regularly, both of which are crucial to ensure the optimal performance and long-term efficiency of the solar powered EPC systems. Additionally, the kitchen work area (counter top) required replacement with a water resistant and easy to clean material (e.g. stainless steel). Furthermore, access to reliable and clean water supply, critical for maintaining proper hygiene in kitchen operations, was identified as a concern in several schools.

EPCs. Figure 1 illustrates the types of meals prepared using EPCs, mostly rice and beans, across the surveyed schools. EPCs were able to suitably cook all dishes, demonstrating the versatility of the technology to accommodate local culinary practices. It was also noticed that EPCs allow for more homogenous cooking and avoid burning of food at the bottom of the pot, hence decreasing food waste and providing a general improvement in the nutritional value of meals served to students.

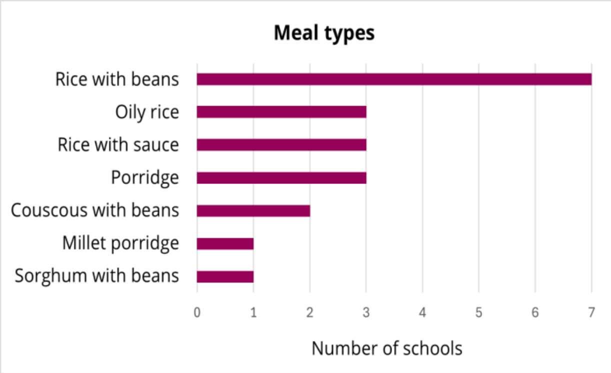


Figure 1. School meal types

System sizing. The technical design of the systems was completed prior to the selection of the schools, based on an assumed average school population of approximately 100 students. Accordingly, two 25 litres EPCs per school, each capable of serving around 80 adults, were budgeted, one to cook staple food, the other for the sauce. However, the initial assessment revealed that the originally targeted schools lacked adequate kitchen infrastructure to accommodate EPCs and the schools that were subsequently identified had a significantly larger student populations. This resulted in insufficient capacity for both the eCookers as well as the solar PV panel arrays powering them. Consequently, cooks resorted to cooking lunch with EPCs, while breakfast continues to be prepared using firewood to meet the required meal volumes.

Use and practices. Given the short period of implementation, end users are still to familiarize themselves with the new technology which in some cases led to misuse or suboptimal use of the equipment. For example, being much faster than traditional cooking, EPCs can be reloaded and used in two consecutive batches allowing for more efficient meal preparation. However, this potential is not yet fully utilized by all users.

Focus groups

Respondents across the seven schools reported a reduction in workload for meal preparation. This has given cooks more time to prepare ingredients for the next meal, clean the kitchen, serve food, or take breaks, thanks to shorter and largely unsupervised cooking times. Parents, particularly mothers, expressed appreciation for the reduced burden of collecting firewood for the school.

> **“Now, we ask pupils to bring firewood just once a week. Before, they had to bring it almost every other day.”-** Head teacher Saaba A Primary School

Working conditions have also improved due to less exposure to excessive heat and the risk of burns and harmful smoke, resulting in safer and cleaner kitchens. The overall workspace environment is reported to be generally cleaner and better maintained. End users expressed appreciation for the positive impacts of the new appliances on working conditions and workload, contributing to increased job satisfaction.

Even when used partially, EPCs have reduced meals preparation times and enabled better organization of meal service, ensuring that pupils receive their meals on time, an important factor for their concentration and overall well-being.

> **“What I like about the pressure cookers is that they are easy to clean, unlike the steel pots that require a lot of effort.” -** School cook

Improved access to timely, quality meals has also shown a positive trend in improving school attendance. The initiative has sparked curiosity not only among cooks and teachers but also in the wider community, through students, as parents have spontaneously enquired about both the EPCs and the solar PV systems.

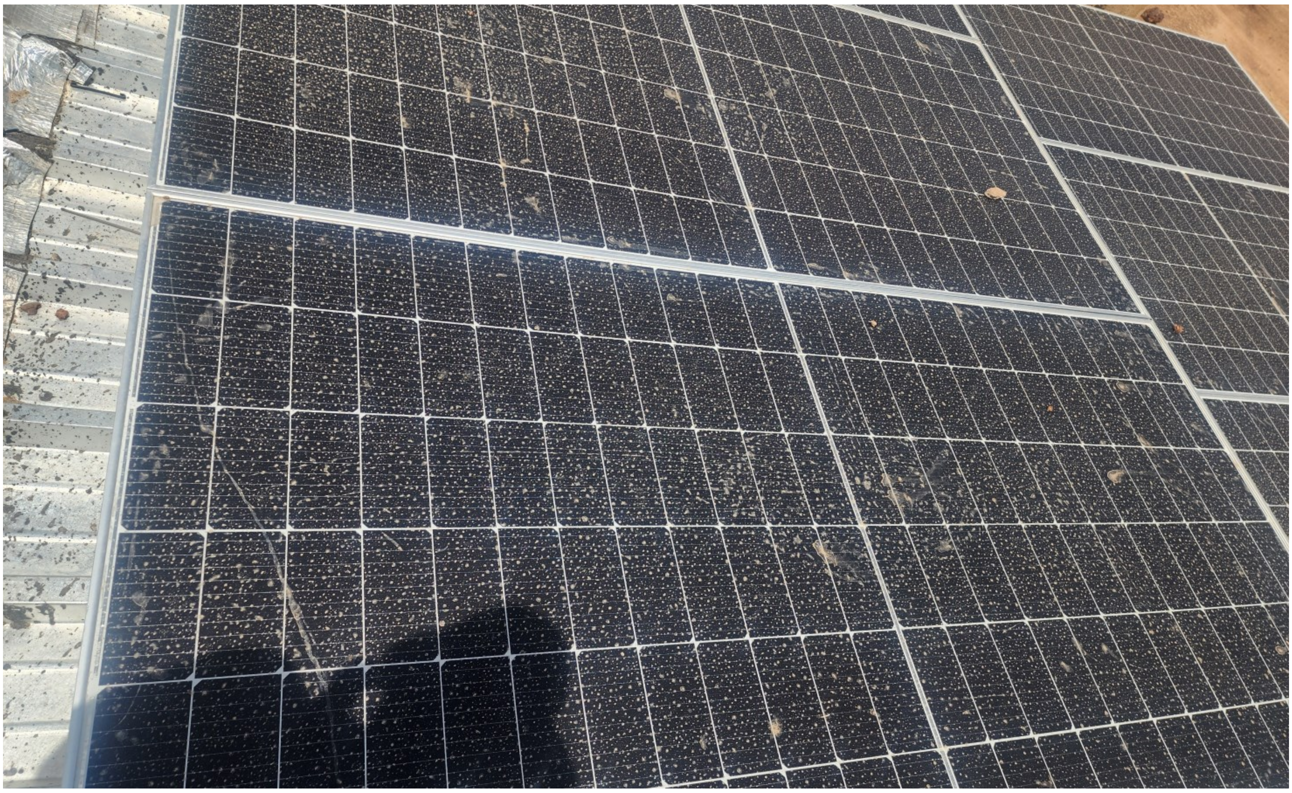
Since schools previously collected their own firewood, the only direct monetary savings reported so far are from reduced purchases of matches, briquettes, and large cooking pots.

RECOMMENDATIONS

The introduction of solar-powered EPCs in schools holds significant potential to yield economic, environmental, and social benefits. These include improved working conditions for cooks, simpler, cleaner and more efficient cooking processes, more timely meal delivery for pupils, healthier learning environments, and a positive contribution to environmental sustainability through reduced biomass consumption. Furthermore, the initiative has helped raise community-wide awareness of the benefits of renewable energy and modern cooking. However, to fully unlock the transformative potential of this intervention, several key areas need to be addressed as shown in the following Table.

Key actions	ISSUE	RECOMMENDATION
	SYSTEM SIZING	Complement the existing infrastructure with additional properly sized EPCs (e.g. more units or higher-capacity models) to accurately reflect the student population and meal preparation frequency of each school, to reduce staking with traditional stoves. Expand the solar electricity generation capacity to ensure a consistent power supply.
	LACK OF CLEAN WATER	Provide adequate water supply through water harvesting and pumping powered by the solar PV system.
	SYSTEM OPERA-TION	Assign a focal person at the schools with the responsibility to supervise the correct functioning of the solar PV system, including cleaning. Ensure a local technician is available to provide maintenance and regular upkeep, to prevent breakdowns promoting long-term functionality.
	LACK OF TRAINING	Develop and implement comprehensive end users trainings for cooks and school staff, focusing on the appropriate handling of EPCs, based on a clear instructions Manual and co-developed recipe’s eCookbook.

Key actions	ISSUE	RECOMMENDATION
	MONITORING AND OVERVIEWING	Establish a robust reporting and performance monitoring system to track the daily use of EPCs, system performance and any operational challenges. This should include real-time data from electricity consumption meters for each EPC and solar PV system, complemented by user-friendly logbooks for manual entries. Combine regular school visits with technical checkup on EPCs usage, feedback from cooks and assessment of the energy generation system.
	FACILITATE PEER LEARNING	Set up peer-to-peer learning and exchanging channels involving the cooks, school staff and the project troubleshooting team.



SCHOOLS MEALS AND SOCIAL PROTECTION

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