WFP
World Food Programme

SAVING LIVES
CHANGING LIVES

Energising Schools

A Case Study in Armenia

September 2021

According to the WFP's food security and vulnerability assessment in December 2020, about 20 percent of households with school children were food insecure in Armenia, a slightly higher level than those without school children. The country's relatively strong agricultural performance since 2001 has resulted in substantially increasing self-sufficiency levels of main food products and overall food availability. However, this availability highly depends on food imports. The country still imports 50.5 percent of the supplied wheat, as well as much of its legumes, poultry, pork, and 92 percent of vegetable oil. This reveals the vulnerability of the country's population to foreign food markets and food price fluctuations. The country is also characterised by high levels of poverty, inequality and unemployment. Considerable differences in food security are linked to vulnerable groups or particularly fragile regions. Production costs and post-harvest losses are still high, while mechanisation levels and coverage of land used for agriculture are low.

The Arpi community is particularly vulnerable compared with the rest of the country. Schools are connected to the national electricity and gas grids but struggle to pay bills for cooking and heating. Local dairy and poultry farmers, on the other hand, are faced with high energy costs that limit farmers' ability to increase production. In turn, high production costs make it difficult to compete with market prices against larger producers.

ENERGISING SCHOOL MEALS

WFP Armenia is implementing a nationwide school feeding project to ensure children have access to adequate and nutritionally balanced food through school meals by introducing greenhouse-grown fresh fruits and vegetables to the diet all year-round. The project also addresses heating and lighting needs of schools. In addition, it seeks to stimulate the growth of local businesses and to implement community-centred business practices.

Solar station in Garnarich School

An energy component has been added to this programme by providing **5 schools with solar installations** that decrease electricity bills and the country's carbon footprint and power different energy services:

- **Ambient heating**, which is critical in this mountainous area and was previously granted by diesel powered or biomass stoves.
- **Cooking** of school meals and bread baking for 109 children is provided using electric cookers; and **hygiene standards** are improved through refrigerators and hot water boilers.

Local cheese-making in a dairy farm

- In two schools, the solar **PV system is also used to heat two greenhouses**, Garnarich (220sqm) and Tsaghkut (160sqm), that have been installed as part of the project and are expected to become productive in 2021.

Together with the Social and Industrial Food Services Institute, WFP is also supporting local businesses.

The investment targets four livestock and one poultry business with new equipment to mechanise the production processes and three dairy farms in Ardenis (40kw/h maximum capacity), Tsaghkut (25kw/h maximum capacity) and Berdashen (15kw/h maximum capacity) to power milk processing equipment for pasteurisation and cheese making.

Lower production costs for energy through solar power, increases small-scale farmers' market competitiveness compared to larger producers.

The electricity generation power peak of the solar PV system is about 116,000 kW, corresponding to over 9,500 kW on average per month, in milk processing farms, powering three milk processors and almost 22,000 kW, or 1,800 kW on average per month, for the poultry/egg farm powering one complex incubator.

Farmers benefitting from the electricity generated through solar have committed to investing 30 percent of its monetary value into the school feeding programmes of nine local schools.

MANAGEMENT STRUCTURE

The school-based power generation system is managed by the Community Development Foundation (CDF), a purposely established non-for-profit organisation without membership that oversees operations in the public interest of the Arpi community of Shirak Marz, channelling any extra profit to education institutions, disadvantaged families, the elderly, persons with disabilities, organisations carrying out activities in the community, individual entrepreneurs and farmers.

The CDF has a formal governance structure, constituted by the Executive Director, a Supervisory Board with 9 voting

Milk-processing factory

members, Fund Charter, and Regulations. The CDF is composed of community members, school headteachers, local businesses, and local authority members, all working on a voluntary basis, with business and school's representatives being the most central ones. Members are appointed ex officio and upon nomination.

The funds received back from supported farmers amounted to USD 3600 in 2020 and were used to contribute to purchase food for the 9 schools supported by the project.

The foundation's role is to coordinate relations with the businesses benefitting from the energy supply, support the improvement of land-use efficiency and the provision of affordable agricultural mechanisation services for farmers while monitoring the return on investment.

During the first year of the foundation's existence, WFP and the Social and Industrial Food Services Institute, a Russian NGO involved in the project, provided guidance, technical support and granted seed funds to invest in equipment for productive uses and energy supply.

While the greenhouse workers were initially contributing free labour, it is expected that two people will be eventually employed with a salary of USD 70 per month.

PRELIMINARY RESULTS

The installed solar stations are estimated to generate about 137,000 kW of energy annually, of which 108,600 kW in schools, corresponding to 9,050 kW on average per month. 30 percent of this power is sold and revenues are donated to CDF to be spent for social services, including the school feeding programme.

The volume of production of vegetables and herbs from the installed greenhouses is expected to be in the amount of 2.8 tons per year. Of this, 2,540 kg is the anticipated surplus beyond school meals that could be sold for a profit, which could be in the order of USD 9000 annually.

A total of 109 students have benefitted so far from school meals across these 5 schools. It is expected that for 2021, over 300 kg of greenhouse produce will be contributed to the school feeding programmes of 2 schools.

Overall, the projected increase in productivity of milk processing and poultry farms gained through the installation of the solar PV systems is around 25 percent. For the poultry farm, in 2020, about 5000 eggs from 50 hens were sold with a projection of 10,000 eggs and 3,000 birds to be sold in 2021.

Local dairy companies participating in the project benefit from the opportunity to strengthen their sales by participating in WFP's procurement processes of school meals.

FUTURE DEVELOPMENTS

30 % **of the solar power produced by the installed stations is sold and the profits are directly invested into the school feeding programme**

25 % **is the projected productivity increase of milk processing and poultry farms gained through the solar PV systems**

After an initial phase of approximately one year, the CDF is expected to become solely responsible for the provision of food to schools, managing the inflows of cash to boost the school feeding programme and increase the budget for meals.

After 2021, the School Feeding and Childcare Foundation, the government body that runs the school feeding programme, will take over this programme from WFP.

The profitability of the project is based on increasing the productivity of farmers and schools by enabling mechanised agriculture processes.

Poultry farm

CLIMATE & DISASTER RISK REDUCTION UNIT

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