

## Impacts of vegetable processing on livelihoods, food and nutrition security

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<b>Research Questions</b>	<ol style="list-style-type: none"><li>1. What low and no-cost methods implemented by Concern Worldwide have been most effective in promoting vegetable preservation?</li><li>2. How does food preservation improve food, livelihoods, and nutrition security in households?</li><li>3. What are the differences between different context results from the Concern Worldwide projects and other research?</li></ol>

### Introduction

Since 2021, the global food crisis has affected around 900 million people. As a result, further actions to ensure food and nutrition security have been taken by organisations such as Concern Worldwide in the countries in which they work. Vegetable cultivation and processing are some of the measures that have been used in humanitarian and development programmes to improve access to nutritious food. Despite the benefits brought by vegetable processing, related challenges include ensuring the food is safe for consumption and that the processing methods preserve the nutrients to extend the shelf life of highly perishable goods. This research was conducted to explore how vegetable processing impacts livelihoods and food security.

### Methodology

To answer the research questions, a review of Concern's food security and nutrition programme data from Somalia and Somaliland, Sierra Leone, and Pakistan was conducted, along with semi-structured interviews with programme staff.

### Analysis and Findings

#### Somalia and Somaliland

Since 2014, the Building Resilient Communities in Somalia (BRCiS) programme, funded by UKAid, linked vegetable production and preservation activities to the improvement of food security and nutrition in Somalia and Somaliland. The programme provided small-holder farmers with training and support in the production and processing of fruit and vegetables including watermelon, carrot, lettuce, tomato, and onion.

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The farmers faced three main challenges: the high perishability of most of the vegetables they produced (except for onions), competition within the local market, which could limit their ability to get better prices, and the importation of seeds, making the farmers dependent on the volatile international market prices. In addition, food processing interventions ceased because of insecurity.

In Somaliland, the livelihood Coping Capacity Index increased by almost 19 per cent from the baseline to 2020. This suggests that food processing, of the vegetables produced and its commercialisation, was one of the strategies taken by the community to diversify and protect their livelihoods from shocks and the uncertainties arising from political instability and environmental disasters.

### Sierra Leone

In Sierra Leone, two Irish Aid funded projects include a vegetable processing component: the Safe Learning Model, which focuses on education integrated with livelihoods and health, and Food Systems for Food Security. Project staff perceived a will from the community to understand how they could increase their gains by adding value to the harvested vegetables.

Working with subsistence farmers, production was small-scale. The most common produce were peppers, cassava, rice, onions, and maize. The produce was predominantly consumed by the household, which may lead to improvements in nutritional status and food security, with only a slight portion of the production sold. The percentage of surveyed households in the target communities with a functional garden was 29 per cent in 2023.

Approximately 11 per cent of the vegetable crop was preserved or stored, indicating that its shelf life was extended through the techniques presented by Concern. Lack of electricity led to sun drying being the most common preservation method used amongst the farmers. The feedback from the community was very positive regarding the improvements in their food security as the creation of the vegetable gardens allowed them to have a more diverse diet. However, they mentioned that they did not like the taste of some of the dried food and were very attached to their cultural food habits.

### Pakistan

The Building Institutional and Community Resilience project in Pakistan, funded by USAID's Bureau for Humanitarian Assistance, also focused on the processing and preservation of vegetables. Prior to the project, many of the communities relied on external sources of vegetables, dependent on the main markets and foraging (e.g. for mushrooms). The community would dry wild vegetables without any cleaning process and the produce would be kept in boxes in open areas, vulnerable to dust, insects, and any other kind of contaminants.

The project provided the community with seeds, so they could produce two seasons of vegetables, and training on how to process and store vegetables. Solar drying was the main method of processing and was implemented using locally available materials. It was the preferred method of processing due to the lack of access to electricity in the districts where the project was implemented and the fact it could be replicated easily in neighbouring divisions. The project participants received wooden boxes where they could spread out the vegetables after washing, clean them properly, and grate them. After this process, the boxes with the vegetables would be left in the sun during the daytime. They were also trained on how to pack their products to market them.

Through this operation, they enhanced the quality of their organically grown vegetables and were able to sell them to local restaurants. They also created a market for tourists, where people come to the region to try their local goods. Thus not only food security improved, but also livelihoods.

Most of the households consumed all their stored food stock during the drought, indicating that vegetable processing can improve the availability of nutritious food in hard periods. Most of the target households' livelihoods were affected by droughts, including no income generation during the drought (30%), lost cropping season (37%), lost standing crop (37%), and lost livestock (37%). Therefore, the enhancement of alternative livelihood strategies, such as preservation methods for vegetables, could make the food system in Tharparkar more resilient and improve food availability in times of drought.

### Analysis and Findings

- Vegetable processing is an excellent intervention to guarantee food availability during shocks, such as prolonged dry periods or instability.
- The sun drying method appeared to be the most manageable processing approach, as it is a low-cost technique that needs minimal resources to be applied and does not require electricity.
- Looking for other low-cost or no-cost preservation methods is essential to finding techniques that result in more nutritious products.
- To make sure the vegetable processing introduction has good outcomes regarding food and nutrition security, it is essential to consider their nutritional value, the environmental context, and the community's food habits.