



Food and Agriculture  
Organization of the  
United Nations

# ENHANCING DIETS AND RESILIENCE

Results from a rapid **assessment**  
and **microsimulation study**  
of a pilot project  
in a **Cash+** pilot in **Armenia**



## **Enhancing diets and resilience**

Results from a rapid assessment and microsimulation study of a pilot project in a Cash+ pilot in Armenia

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All remaining errors or inconsistencies are the responsibility of the authors.

# Abbreviations

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|              |   |
|--------------|---|
| <b>ARM</b>   | Armenian dram (local currency)                          |
| <b>ASF</b>   | animal-source food                                      |
| <b>FAO</b>   | Food and Agriculture Organization of the United Nations |
| <b>FB</b>    | Family Benefit  |
| <b>FGD</b>   | focus-group discussion                                  |
| <b>FIES</b>  | Food Insecurity Experience Scale                        |
| <b>FLSEB</b> | Family Living Standards Enhancement Benefits Programme  |
| <b>HDDS</b>  | Household Dietary Diversity Score                       |
| <b>KII</b>   | key informant interview                                 |
| <b>TUP</b>   | Targeting the Ultra Poor programme, Bangladesh          |

Exchange rate            AMD 480.455/USD (2019)

# Executive summary

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The Cash+ approach entails provision of a combination of cash and productive inputs, including training. It aims to improve household food security, nutrition and resilience and to strengthen both access to food and generation of household income. In 2019, a Cash+ pilot was implemented in Lori and Shirak regions in Armenia under the FAO project titled “Developing Capacity for Strengthening Food Security and Nutrition in Selected Countries of the Caucasus and Central Asia”, funded by the Russian Federation. In order to demonstrate how existing delivery systems can be made more impactful, the pilot was built on a national social assistance scheme – the Family Benefit (FB) – and provided selected beneficiaries a package of livestock, together with relevant training to 133 households. The objective of the pilot was to test the modality and the potential of such interventions to generate sustainable improvements for vulnerable rural households in the setting. The onset of the COVID-19 pandemic caused a major income shock to poor households in Armenia; it was therefore necessary to conduct a follow-up assessment to establish the extent to which the pilot had strengthened their resilience in the face of such shocks.

This study describes the results of a rapid assessment of the results of the pilot, combining both qualitative and quantitative data collected in December 2019, and an assessment of the potential impacts of a scale-up of the modality using a microsimulation methodology. In addition, after the onset of the COVID-19 pandemic, a follow-up telephone survey was carried out among the same households that had participated in the rapid assessment. The assessments mapped the impacts on household income-generating activities; diets, food security and perceptions of household resilience; barriers to expanding agricultural activities; and household decision-making *vis-à-vis* the roles of women and men. The quantitative and qualitative rapid assessments were based on a comparison of the households that participated in the pilot and two comparison groups, one comprising households that had received the FB but did not participate in the pilot, the other comprising households that were considered vulnerable but did not qualify for the FB. The microsimulation exercise used the Households’ Integrated Living Conditions Survey conducted in Armenia in 2015.

The quantitative rapid assessment suggests that the households that received the complementary intervention experienced relative improvements in food security and in the frequency of children’s consumption of animal-based protein, fruits and vegetables. The qualitative study corroborates this, indicating that the households primarily used the milk they produced for their own consumption. The microsimulation results also highlight the potential for significant increases in the consumption of animal-based protein across the target population.

The households that benefited from the Cash+ pilot reported more positive trends in agricultural production. The year 2019 was unfavourable for agriculture because of adverse weather conditions and an outbreak of a potato disease. The results suggest that the Cash+ households were able to cope better. The follow-up survey carried out after the onset of the COVID-19 pandemic in September 2020 also indicated that the Cash+ households had retained higher dietary diversity and had a more optimistic view of future changes in income resulting from the pandemic. The microsimulation also confirmed that, carried out on a large scale, a similar pilot could generate meaningful reductions in poverty.

However, for vulnerable households, challenges to significant expansion of agricultural production remain. These include insufficient production for significant market access; lack of access to financial resources, assets and high-quality agricultural inputs; and unfavourable conditions for agricultural activities. The FB scheme provides a regular stream of income. However, alone, it does not ensure enough resilience. Additional support is needed, although without putting households at risk of losing the FB.

Furthermore, the pilot did not seem to have an impact on intrahousehold decision-making, and the focus-group discussions did not indicate major changes in knowledge on nutrition. The results highlight the need for sustainable yet coherent interventions to generate meaningful impacts on poverty, addressing the aspects flagged in this study as well as wider constraints on income generation within poor households.

# 1. Introduction

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Armenia is an upper-middle-income country located in the South Caucasus, with a population of 3 million people. It is highly vulnerable to global economic shocks and international food and commodity price fluctuations, which have an impact on the country's socioeconomic situation and food and nutrition security. Improved food security of the population is an identified sectoral development objective in the country's Development Strategy 2014–2025 and the second main priority area of the Sustainable Agricultural Development Strategy for 2016–2025. FAO is supporting the Government of Armenia in developing a vision for pathways out of poverty for recipients of the national social assistance scheme, Family Benefit (FB), in rural areas. This includes a gradual and sustainable approach to supporting productive inclusion and improvement in food security and nutrition. By bringing together the Ministry of Labour and Social Affairs and the agricultural departments of the Ministry of Economy, FAO is fostering dialogue to integrate social protection with nutrition-sensitive agriculture and education for rural household beneficiaries.

Analysis of food security and nutrition indicates that 16 percent of households were food-insecure in 2015 and that stunting occurred among 9.4 percent of children under 5 years of age (WFP, Statistical Committee of the Republic of Armenia and CRRC, 2017). Evidence shows that hunger and malnutrition are caused by a multitude of drivers and are intertwined with poverty and inequality and their underlying causes (FAO, IFAD, UNICEF, WFP and WHO, 2021). Hence, integrated interventions are required to address them. From 2018 to 2020, an integrated approach, or a Cash+ project, was implemented under the FAO project titled “Developing Capacity for Strengthening Food Security and Nutrition in Selected Countries of the Caucasus and Central Asia”, funded by the Russian Federation. This was carried out in Lori and Shirak regions. The aim of this study is to evaluate the impacts of the pilot on beneficiaries, in particular in terms of agricultural production, food security and consumption of nutritious foods. The study also seeks to assess the potential for poverty reduction through scaling-up of similar support.

The Cash+ pilot intervention built on the FB, an existing social protection instrument that provides regular monetary support to vulnerable low-income families. The complementary packages provided to FB beneficiaries included two options: either one cow or 30 chickens and 100 raspberry seedlings. The packages were supplemented with provision of agronomic and technological trainings and nutrition awareness-raising. The aim of the packages was to improve both household food security and nutrition by providing a source of animal protein and to contribute to household income generation through sales of livestock products and by-products and raspberries.

The COVID-19 emergency arose in 2020, shortly after the pilot, and highlighted the importance of household resilience among vulnerable households. It also prompted the question of whether the pilot had strengthened households' ability to cope with such shocks. Assessments predicted that COVID-19 has had negative implications for employment and livelihoods among a large proportion of households (UNDP, 2020), as well as

on access to food (WFP, 2020). Use of negative coping strategies has increased and there are indications of weakened food security (WFP, 2020). Many Armenian households are also reliant on remittances from migrants, which have also been negatively affected by the pandemic (UNDP, 2020). The study includes an assessment of whether the pilot had a role in mitigating such impacts.

This study first presents the results of the rapid assessment of this project. The rapid assessment carried out at the end of 2019 provides both qualitative and quantitative descriptive information on the project impacts, highlighting participants' subjective perceptions of the changes that may have occurred during implementation of the pilot. The study focuses on changes in household diet, income generation, poverty reduction and increase in resilience. Furthermore, the impacts of the COVID-19 pandemic are explored through the results of a follow-up survey. More specifically, the survey explored whether the resilience of the pilot households in the face of the crisis has been different from those who did not participate in the pilot, and whether the pilot has made a significant difference to their food security, coping mechanisms and sustainability of their income generation.

In addition, this study presents the results of a microsimulation of scaled-up scenarios. These results provide a broad illustration of how similar production support could reduce poverty and increase households' consumption of protein-rich foods at the national level. The microsimulation exercise also provides insights into how the results would change depending on coverage of the programme.

Section 2 of this study presents the theory of change and previous experiences with livestock-based interventions. Section 3 describes the intervention, while Section 4 sets out the methodology and Section 5 the results. Section 6 concludes with policy recommendations.

## 2. Theory of change

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Evidence has shown that social protection has productive impacts on the poor and most vulnerable households (FAO, 2015). Access to predictable, regular and sizeable cash transfer programmes can enhance food security, enable access to health and education, and generate productive and economic impacts, through promoting investment in agriculture activities and reallocating household resources to more productive activities (FAO, 2015a; Davis et al., 2016; Daidone et al., 2019;). Evidence also shows that, when provided together with agricultural support, such impacts can be strengthened (Pace et al., 2017; Veras Soares et al., 2017). Cash+ is a modality that aims to bring together these two types of intervention.

Integrated approaches such as Cash+ intend to equip the poor with skill sets and asset bases and increase their confidence and social capital (in terms of community inclusion, gender empowerment, etc.) so that they can become or remain food-secure, lead sustainable economic lives and ultimately become more resilient. Some studies of the approach have shown increases in participant annual earnings, household per capita food expenditures and other outcomes. These results have been consistent in various parts of the world, including

Bangladesh, Ethiopia, Ghana, India, Pakistan and Peru (Veras Soares et al., 2017). However, in order to improve nutrition, an integrated approach that includes complementary nutrition education is required<sup>1</sup> (Lagarde, Haines and Palmer, 2007; Alderman, 2016). Provision of agricultural support together with nutrition training and specific nutrition objectives enhances the impact of social protection on nutritional outcomes. This constitutes a key element of “nutrition-sensitive social protection”. The Cash+ approach also seeks to build policy coherence by bringing together key sectors and applying an integrated approach to address key determinants of poverty and the underlying causes of malnutrition.

Regular and predictable cash transfers combined with production support can respond to both immediate and medium- to long-term needs. The cash component allows households to consume basic goods and improves access to nutritious food. By providing a secure source of income, cash enables investment, better risk management, consumption smoothing and access to credit. The “plus” components additionally support income-generating activities and achieve better returns on investments than cash transfers alone allow (for evidence on interaction effects, see Veras Soares et al., 2017). Poor households may lack access to knowledge, technology, skills or inputs, which prevents them from investing in productive activities. The production support elements of Cash+ enable these households to overcome these shortages.

Livestock is perceived to have several positive impacts on households in the context of developing countries (Randolph et al., 2007). Indeed, livestock can directly contribute to food security and nutrition. This is especially true during the first 1 000 days of a child’s life – comprising the period during pregnancy, lactation and early childhood – because deficiencies in zinc, vitamin A and iron severely restrict growth, cognitive development and proper immune function. Animal-source foods (ASF) are dense in these and other essential micronutrients, such as vitamin B12, riboflavin, calcium and various essential fatty acids (FAO, 2019). These nutrients are difficult to obtain in adequate amounts from plant-based foods alone, and including even modest amounts of ASF in diets adds much-needed nutritional value for better health outcomes.

In addition to directly improving access to ASF, livestock can provide rural households with monetary income, fuel and fertilizer, thus contributing to their livelihoods, food security and nutrition. Owning livestock can have an important safety-net function for the most vulnerable households, helping rural households withstand external shocks such as injury or illness of productive family members (FAO, 2009). Livestock can contribute to the stability of food security and nutrition by serving as collateral for credit, being sold for income or being consumed directly in times of crisis.

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<sup>1</sup> The Targeting the Ultra Poor (TUP) programme of the Bangladesh Rural Advancement Committee provides an example of such an integrated approach, whereby participant households receive income-generating assets (typically livestock) and training on business development, nutrition and social development every 2 weeks for 2 years. An evaluation of TUP’s impact on nutritional outcomes over a 4-year period (2007–2011) found that children below 5 years of age were 12.5 percentage points less likely to be wasted than similarly aged children in the control group. Among children under 5 years of age in poor non-participant households in the treated communities, the likelihood of being wasted was reduced by 9 percentage points (Raza, Van de Poel and Van Oort, 2018).

Livestock ownership, however, does not necessarily translate into improved nutrition. Poor households may choose to sell high-value products to buy lower-cost staples. Furthermore, the intrahousehold distribution of resources between men and women may also play a role in the overall nutrition of specific household members. In order to support increased dietary diversity, nutrition education can be critical to avoid the poverty–micronutrient–malnutrition trap (FAO, 2009). To ensure all household members experience improvements in nutrition outcomes, it is important that these interventions be gender-sensitive (FAO, 2009).

While ASF can support improvements in nutrition when consumed as a component of a diverse diet that includes plant-source foods, it is important to recognize that excessive consumption of foods of animal origin may have adverse health effects, such as obesity and associated chronic diseases, including heart disease and diabetes (FAO, 2009). The challenge is how to manage complex trade-offs to enable livestock’s positive impacts to be realized while minimizing and mitigating the negative ones, including the threats to the health of people and the environment (FAO, 2019).<sup>2</sup> However, livestock can play an important role in human nutrition and health and in poverty reduction in developing countries (FAO, 2009).

The impact pathways of the proposed packages in Armenia are:

- to increase household income directly through sales or barter and indirectly through the reduced need to purchase the food that households now produce themselves, such as dairy products and eggs;
- to have a direct positive impact on household consumption of food rich in animal protein through production of animal-protein products and pursuant to interlinked production and consumption decisions (as described above);
- to have an indirect positive impact on consumption and food expenditures and on the quality of diets in terms of protein consumption and dietary diversity through a positive impact on household income; and
- to have a positive impact on dietary diversity through nutrition training.

Impacts through these pathways are not automatically realized. Although the support packages include nutrition training, it is not possible to control directly how the additional produce and income are used. Furthermore, livestock production also affects households’ time and resource investment in agriculture and can also reduce the resources allocated to other activities or increase the workload of some household members disproportionately.

Additional income-generating activities and the role different household members play in them may change intrahousehold decision-making and further affect consumption patterns. One of the potential pathways towards nutrition effects occurs through women’s empowerment. Evidence shows that cash transfers have

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<sup>2</sup> There is a need to balance the benefits of ASF and livestock-keeping for nutrition, health and well-being, on one hand, with the urgent need to reduce greenhouse gas emissions to tackle the climate crisis – which also threatens food security – on the other. “Low-carbon livestock” can help countries achieve a balance whereby ASF such as meat, milk, eggs, cheese and yoghurt – sources of essential nutrients – feed the hungry and malnourished yet are produced in a way that minimizes the overall output of greenhouse gases into the atmosphere (FAO, 2019).

economic impacts on women (FAO, 2015b). However, the evidence relating to women's empowerment is still mixed and heterogeneous (Hagen-Zanker *et al.*, 2017). It has been hypothesized that integrated interventions can be more powerful in attaining such impact (FAO, 2015b); however, evidence of the role of different programme components is still limited (Peterman *et al.*, 2019).

### 3. The Cash+ intervention in Armenia

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FAO supported the Cash+ pilot in Armenia, which complemented the cash benefits provided by the Ministry of Labour and Social Affairs under the FB scheme. The FAO Country Office team in Armenia designed the pilot, including selection of beneficiaries and definition of the productive packages based on initial assessments. They also implemented the pilot. The pilot made available several options for productive interventions, including provision of inputs such as seedlings, poultry and cattle and assets and trainings. Households received these interventions based on their livelihood profile and the opportunities available in the selected region. In addition, the pilot included a range of nutrition-sensitive interventions, such as food and nutrition training and awareness-raising.

The selection of the pilot sites – Shirak and Lori *marzes* (regions) – was based on the prevailing poverty level (42.4 percent in Shirak and 34.2 percent in Lori compared with the national average of 27.6 percent in 2017) (Statistical Committee of the Republic of Armenia, 2018); the prevalence of food insecurity (17 percent in each region); and the greater levels of anaemia, stunting and overweight in children there with respect to other regions. Eleven rural settlements in two consolidated communities were selected based on a qualitative assessment of household characteristics (dietary diversity, land size, ownership of livestock) and productive capacities (financial barriers to the use of water for irrigation; appropriate use of fertilizers, pesticides and good-quality seeds; lack of appropriate agricultural practices; low technological uptake). The communities were Gyulagarak (with Gyulagarak, Pushkino and Vardablur settlements) in Lori; and Marmashen (Mayisian, Marmashen, Hatsik, Hovuni, Vahramaberd, Shirak, Kety and Saria settlements) in Shirak.

Because of the limited financial resources available, a restricted number of vulnerable FB recipient households were provided with assistance within the Cash+ pilot. To achieve this, the project set additional clear criteria for inclusion in the Cash+ pilot. The pilot covered households with two or more children, of which at least one child was aged 0 to 5 years. The criterion was set because the child poverty rate was 30.8 percent in the regions, compared with 25.7 percent nationwide. In addition, in Armenia it is reported that 19 percent of children aged under 5 years of age are stunted – a condition caused by chronic malnutrition. The households were identified based on thorough needs assessments, performed by the project team using a predesigned questionnaire.

The Cash+ pilot intervention consisted of two main components:

- *Support for diversification of income-generating activities.* Provision of high-value crops (100 raspberry seedlings) and poultry (30 chicken with feed for one year) or one cow (a pregnant heifer and feed for one

year) for milk production. The pilot assured regular follow-up or coaching of beneficiaries in the form of ongoing consultations.

- *Trainings.* The pilot envisaged two categories of training:
  - a) Provision of agricultural production trainings and needs-based consultations on livestock breeding upon delivery of the packages. These trainings included information lists on keeping and feeding the animals.
  - b) Development of nutrition, hygiene, food security and safety trainings based on the results of the training needs assessments,<sup>3</sup> complemented with trainings on household budgeting.

The beneficiaries of the Cash+ intervention were selected from the list of FB recipient households. The FB is a continuous, poverty-targeted non-contributory cash transfer paid on a monthly basis. The target group is families with children under 18 years of age nationwide that are registered in the social assessment system. The FB is provided under the Family Living Standards Enhancement Benefits (FLSEB) programme and is linked to the number of children and place of residency. Eligibility for the FB is determined according to a vulnerability assessment procedure based on parameters such as the social groups to which family members belong (disabled, unemployed, pensioner, student etc.), regional indicators, housing conditions and total family income, and on constraint variables that exclude non-poor households. According to Tumasyan, Harutyunyan and Hakobyan (2016), the FLSEB system is subject to inclusion and exclusion errors, although exclusion errors tend to be lower in rural areas. However, the FLSEB also contributes significantly to the reduction of poverty, in particular extreme poverty.

In the context of this pilot, the FLSEB programme was considered a suitable targeting tool to reach vulnerable households. Moreover, to participate in the pilot, households had to have enough labour resources to be engaged in productive activity, taking care of children younger than 5 years and willing to participate in the pilot programme.

Depending on their livelihood profiles, including labour potential and ownership of specific assets (namely barns), pilot participants received either cattle (63 households) or poultry and a high-value crop (70

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<sup>3</sup> The project partnered with the National Institute of Health of the Ministry of Health of Armenia to support awareness-raising activities focused on food security, nutrition and social protection in the country and selected project areas and to conduct the training needs assessment.

A series of one-day “training of the trainers” sessions were held for nine groups of trainers (nurses and social workers) in Ararat, Lori and Shirak regions. The focus was on nutrition, food safety and security and improving participants’ skills to become trainers themselves.

Round-table discussions were organized with local administrative representatives in selected regions. The members of the departments of health care and social protection, agriculture, sports and education participated in the discussions (which drew overall approximately 30 people). The main purpose of the round-table discussions was to draw decision-makers’ attention to the challenges of food security and nutrition and social protection and facilitate more collaborative work among stakeholders.

Trainings for 116 pilot beneficiaries were organized in Lori and Shirak regions. The purpose of the trainings was to raise awareness on nutrition, hygiene, food security and safety.

households)., An additional round of needs assessment was conducted and clear criteria for package eligibility were set identify which households would receive which package. The package comprising a pregnant heifer with feed for 1 year was delivered to households that had a barn to keep the cow, had no or one cow (in the case of large households) and had expressed willingness to keep a cow. The other assistance package – 30 chickens with feed for 1 year and 100 raspberry seedlings – was delivered to households that did not meet the criteria set for the first package (i.e. did not have a barn to keep the cow).

## 4. Methodology

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This study used three different methodologies to assess the impact of the pilot and the role that a similar intervention at a larger scale could potentially have. The rapid assessment survey, though not large enough to constitute an impact evaluation and carried out *ex post*, provided representative evidence on whether the participant households experienced significant changes compared with broadly similar households in the same region during the pilot period. A microsimulation yielded insights into the potential for overall poverty reduction and improvements in animal-protein consumption through similar interventions at a larger scale. After the onset of the COVID-19 emergency, follow-up data collection was conducted by telephone on the original study sample. These data are reported in the following section.

### 4.1 Rapid assessment

The main purpose for undertaking the rapid assessment was to understand the role of the pilot Cash+ intervention in improving the various dimensions of households' well-being, including food security and nutrition, health and poverty, and to identify any possible negative impacts.

The study aimed to assess the impacts of the Cash+ intervention on the well-being of Armenian households, focusing on: (i) food consumption and nutrition; (ii) agricultural production; and (iii) time spent working and income. Other impacts (including negative ones) were also noted as found during the fieldwork.

Two limitations of the methodological approach adopted should be noted at the outset.

The rapid assessment was designed to provide early evidence on the effectiveness of the Cash+ intervention. However, it did not constitute a full impact evaluation. The fieldwork was conducted over a short period and was not underpinned by an impact evaluation methodology. In particular, the sample size of the control group was not large enough to utilize matching procedures or similar methodologies to construct a comparable control group. Furthermore, the sample size of the actual pilot was not large enough, even with a similar control group, to achieve the level of statistical power normally required for detecting statistically significant impacts of realistic size. However, despite these limitations, the rapid assessment was conducted as rigorously as possible and was designed to generate descriptive evidence on the impact that the Cash+ intervention had on the households covered.

The rapid assessment drew on both quantitative and qualitative information. These two types of data also allowed the adoption of a mixed-method approach and triangulation of qualitative and quantitative information. These, in turn, enabled reconciling perceived quantitative trends and attaining in-depth qualitative understanding of how changes accrued as a result of the interventions.

#### 4.1.1 Quantitative approach

The source of quantitative information for the rapid assessment was a representative survey of FB households benefiting from the two additional components (i.e. support for diversification of income-generating activities and trainings), which represented the Cash+ treatment arm; and FB beneficiary households not receiving the complementary interventions, which represented the cash-only treatment arm. The third arm, the comparison group, consisted of households that were vulnerable but received neither the FB nor the complementary interventions. The second and the third treatment arms were used as control groups to evaluate the effectiveness of the complementary interventions and their joint effect with the FB. It must be noted that, in this case, such groups were of particular importance: in 2019, local households suffered a number of setbacks as a result of a bad agricultural year caused by an outbreak of a potato disease and unfavourable weather conditions. Thus, a simple before-and-after comparison would have likely produced misleading results regarding the impact of the pilot, whereas the design of the rapid assessment enabled investigation of how the trends experienced by the treatment households differed from those that did not receive pilot or social assistance.

The beneficiaries of the pilot were selected from the households that were receiving the FB, had two or more children (among whom children under 5 years of age), had enough labour resources to be engaged in productive activity, needed the assistance (based on home visit results), and were willing to participate in the pilot. The pilot participants were thus likely to be slightly different from the cash-only group. Nevertheless, they could be considered similar enough for a descriptive comparison with the pilot beneficiaries. The comparison group of households that did not receive either form of support was selected from among families registered in the family vulnerability assessment system but whose vulnerability score excluded them from the FB. These households were “almost similar” to the families that received the FB and the pilot.

The fieldwork was carried out in December 2019; the livestock packages had been delivered in November 2018. FAO provided the list of the Cash+ project beneficiaries, with 133 contacts in total. The final sample size was 131: one household had migrated and a second one could not be interviewed because of a death in the family. For the second group, a list of 350 households that received the FB but were not beneficiaries of the Cash+ project was initially identified. From this list, households were sampled randomly until 100 interviews had been completed. There were no refusals, although two households were absent and were replaced. The list of non-beneficiaries of either programme or the comparison group comprised 120 contacts, of which 52 had been selected from target rural settlements and 68 from non-target settlements. The reason for including non-target settlements was that the number of non-beneficiary households registered in the family vulnerability assessment system was limited in the communities where the beneficiaries of the pilot resided. In this group, all households were contacted to obtain 100 interviews.

The analysis of the quantitative data component does not prove a direct causal link between the observed trends and the impacts of the interventions. More specifically, the purpose of the quantitative analysis was twofold: (i) to provide statistically representative evidence on the use of the transfer as reported by beneficiaries and the perceived contribution of the interventions to household well-being; and (ii) to provide statistically representative evidence of trends in the indicators of interest and of the differences in the subjective perceptions thereof by beneficiary and comparison households.

To respond to the first objective, direct questions on the impact of interventions – both cash and production support – were included in the questionnaire. The second objective was pursued by introducing, in the questionnaire, a set of retrospective questions whereby respondents were asked to remember the state of a series of outcomes in a situation preceding the interventions or trends in the outcomes during the pilot period. While retrospective questions are affected by recall bias, it is generally accepted in the literature that the quality of the data increases when questions focus on discrete, recordable events. By comparing changes in the situations of beneficiaries over the course of the pilot, it is possible to infer whether the perceived trends in the outcomes of interest differed between the beneficiaries and the control groups. It is important to stress that, because the recall process is based on respondents' memory, it only provides evidence of individual and subjective perceptions of changes rather than of real objective changes. Descriptive comparisons between the households receiving the full intervention with those receiving only cash or no support allow for an assessment of the impact of the pilot. The results of the quantitative and the qualitative surveys also yield information on how the pilot was perceived by the community and its channels of influence on the livelihoods and well-being of the households.

After the onset of the COVID-19 emergency, it was decided that it was important to follow up with the participants of the pilot and with the two control groups to establish their resilience in the face of the pandemic. The follow-up survey was carried out by telephone. Attempts were made to contact all households that participated in the original survey. Out of the 331 households on the list, 307 were reinterviewed. The response rate was slightly higher in the Cash+ and cash-only groups (97 percent) than in the comparison group (87 percent). The survey questionnaire included questions on dietary diversity, food insecurity, sources of income and their stability, coping strategies and the support received.

#### 4.1.2 Qualitative approach

Qualitative fieldwork was conducted in December 2019 and January 2020 in Marmashen (Shirak region) and Gyulagarak (Lori region), including the intervention settlements of the Cash+ project. The research team visited 11 beneficiary villages, eight of which were in Marmashen, Shirak region (Mayisyan, Hatsik, Hovuni, Marmashen, Shirak, Mets Sarian, Vahramaberd and Keti) and three in Gyulagarak, Lori region (Gyulagarak, Pushkino and Vardablur). The research team representative also held two meetings with the heads of relevant ministry departments in February 2020.

The qualitative analysis was based on face-to-face in-depth interviews and focus-group discussions (FGDs). Interviews were conducted using a specifically designed semi-structured questionnaire and interview guides.

Overall, six FGDs were conducted with target groups, 11 in-depth interviews with local key informants (key informant interviews, or KIIs) and two interviews with national experts at the Ministry of Labour and Social Affairs and the Ministry of Economy. The questionnaires and the FGD guide were provided to the research team by the team at FAO headquarters. The fieldwork was organized with the assistance of the FAO Representation in Armenia, the heads of the communities and community social workers.

The FGDs were held for representatives from the three treatment arms described above. Two discussions were conducted with the representatives of each group. One of each of the three FGDs was held with female participants only, and another with male participants only. The participants were selected randomly from the household lists used in the quantitative survey. In total, 40 participants were present at the discussions. On average, seven people participated in each group.

## 4.2 Microsimulation

Microsimulation is a methodology that can be used to demonstrate the potential impact of an intervention on aggregate outcomes (such as poverty or average consumption) by changing the outcomes at the level of unit of intervention and calculating the change in aggregate indicators. In this instance, the expected impacts of the Cash+ intervention at the household level occurred through changes in household consumption or consumption of food rich in animal protein. These simulated outcomes were then summarized and compared with the original values of the indicators of interest. The results were used to show how the intervention could change outcomes at the level of the population or the entire target group. The expected impacts at household level were obtained through both approximate arithmetical estimates of the value of income generated from the package and statistical models of total consumption and consumption of food items rich in animal protein.

The data used in this exercise were derived from the Households' Integrated Living Conditions Survey conducted in Armenia in 2015. This household survey dataset included approximately 5 000 households. It was designed to provide representative data at national, rural, urban and region level. The data include a large number of variables related to consumption and production of food items, sources of income, employment and background variables on the living conditions of the households and their agricultural activities. Data on consumption per adult equivalent and income calculated by the Statistical Committee of the Republic of Armenia were used in the calculations. In addition, their price data were used to approximate the value of the livestock products generated from the intervention.

Measurement of the consumption of foods rich in animal protein was done in monetary terms. From a dietary perspective, this is not precise, as different foods have different protein contents and vary in terms of the biological availability of the protein. The prices of the food items reflect not only their dietary value but also their availability on the market and consumer preferences. A more precise measure would be total protein

content of the diet or energy from protein,<sup>4</sup> or a measure that is also adapted to the food’s digestibility or amino acid contents (FAO, 2013). For the purposes of this study, however, it was considered adequate to estimate the changes in consumption in monetary terms. Consumption of ASF has been found to be correlated with nutritional outcomes (see, for example, Headey, Hirvonen and Hoddinott, 2018), and the design of the pilot aimed to increase the consumption of such food items. Thus, changes in this indicator also directly measured the outcomes of interest.<sup>5</sup> The intrahousehold distribution of resources is not documented in the data. Therefore, it is not possible to assess the total consumption or the consumption of protein-rich food of specific individuals such as women and children. The analysis was carried out at the household level, based on the assumption that consumption divided by adult equivalents also correctly reflected individual consumption. This is a limitation.

For outcomes, the study reported the results of the programme’s impacts on the overall poverty rate and on the average consumption of animal-based protein food in the target population. Different scenarios vary in terms of their assumptions regarding how consumption is determined. The scenarios are summarized below, and the methodology is documented in further detail in Annex 1. The basic differences between the scenarios concerned the monetary value of the packages (full market value; lower sales price because markets were lacking; or approximate additional income generated by livestock, as per the vulnerability assessment methodology to estimate household income used in the FLSEB) and whether the changes in consumption were calculated arithmetically or based on a statistical model of total consumption or consumption of food items rich in animal protein.

**Table 1. Different scenarios used in the simulation**

| Scenario  | Assumptions  | Amounts, prices or package value used   | Eligibility  |
|---|--|---|--|
| <b>Scenario 1 – full market value of packages</b> | <b>Arithmetical simulation, total consumption</b><br>The package increases total consumption by its full net value.<br>Costs are subtracted in full from total consumption | <b>Cow package</b><br>Milk production: 7 litres per day for 8 months; 3.5 litres for 2 months (3.5 litres per day used to feed calves)<br>Price: AMD 269 per litre<br>Calf, sale price:<br>AMD 60 000<br>Cost of veterinary services: AMD 15 000 per year | <b>For both cow and chicken packages</b><br>The household must belong to the target group (FB recipient or household consumption per adult equivalent below the chosen poverty line)<br>AND<br><ul style="list-style-type: none"> <li>for cow: household has engaged in cattle breeding over the past 12 months and has currently 0 or 1 cows</li> </ul> |
|   | <b>Arithmetical simulation, consumption of food rich in animal protein</b><br>The package increases total animal-protein food  |   |  |

<sup>4</sup> World Food Programme has carried out assessments of the calorific value of food consumption with the same dataset (WFP, Statistical Committee of the Republic of Armenia and CRRC, 2017).

<sup>5</sup> Measuring total protein consumption adjusted for bioavailability would also require calculating and estimating a full system of the demand for different nutrients, which would add significant complexity to the estimation and simulation. The list of food items in the household data is not particularly detailed; thus, any such measure would not be precise.

| Scenario  | Assumptions   | Amounts, prices or package value used   | Eligibility   |
|---|---|---|---|
|   | consumption by the amount of production of protein-rich food, minus the share of cost in proportion to the share of protein consumption of total consumption  | <b>Chicken package</b><br>Egg production: 150 eggs per year per chicken<br>Price: AMD 64 per egg<br>Raspberry production: 10 kg<br>Price: AMD 1 000 per kg  | AND is not labour-constrained <ul style="list-style-type: none"> <li>for chicken and raspberries: has access to land</li> </ul> |
| <b>Scenario 2 – value of packages at lower sales price</b>                        | <p><b>Arithmetical simulation, total consumption</b><br/>The produce is sold at feasible prices and the net income is fully spent on consumption</p> <p><b>Model simulation</b><br/>The impact of additional income from selling products on consumption is estimated based on a model</p> <p><b>Arithmetical simulation, consumption of food rich in animal protein</b><br/>Additional income is spent on protein-rich food in the same proportion as the share of consumption of protein-rich food as a proportion of total consumption</p> <p><b>Model simulation</b><br/>The impact of additional income on food rich in animal protein is estimated from a model</p> | As above, but the price of milk on average is AMD 200 per litre and that of an egg is AMD 60  |   |
| <b>Scenario 3 – value of packages based on vulnerability assessment benchmark</b> | As in Scenario 2, but the additional income is calculated as in the next column   | Additional net income from the cow:<br>AMD 150 000 per year<br>Plus calf: AMD 90 000 per year<br>From the chickens:<br>AMD 3 300 per chicken per year<br>From raspberries:<br>second year estimate – 50 kg, price AMD 1 000 |   |

Source: Authors' elaboration.

## 5. Results

### 5.1 Rapid assessment

This section presents the results of the rapid assessment using data collected by both quantitative and qualitative fieldwork, and of the follow-up phone survey carried out after the onset of the COVID-19 pandemic. The discussion emphasizes the results concerning diets, food security and income generation from agriculture and the changes occurring in these over the course of the pilot. Furthermore, the barriers to increasing agricultural production, use of the FB, resilience and decision-making within households are examined.

Table 2 shows the average household characteristics by treatment arm, as described in Section 4.1.1.

**Table 2. Household characteristics in different treatment arms**

|  | (1)<br>Cash+ | (2)<br>Cash-only | (3)<br>Comparison |
|--|--------------|------------------|-------------------|
| Number of household members  | <b>5.9</b>   | 4.92             | 5.11              |
| Number of adults in the household                                      | <b>2.76</b>  | <b>2.28</b>      | 3.12              |
| Age of head of household   | 50.3         | 50.8             | 53.9              |
| Gender of head of household (1=female)                                 | <u>0.21</u>  | 0.38             | 0.27              |
| Education of head of household (more than secondary-school level)      | <b>0.32</b>  | 0.43             | 0.45              |
| Land ownership (yes=1)   | 0.97         | 0.95             | 0.96              |
| Size of land (hectares)  | 1.05         | 0.84             | 1.06              |
| Number of household assets   | 3.27         | 3.27             | 3.41              |
| Number of household assets 12 months ago                               | <b>2.95</b>  | 3.04             | 3.26              |
| Number of agricultural assets  | 2.21         | <b>1.85</b>      | 2.50              |
| Number of agricultural assets 12 months ago                            | 2.09         | 1.80             | 2.29              |
| Household able to save money between October and December 2019 (yes=1) | 0.09         | 0.09             | 0.04              |
| Household able to save money between October and December 2018         | 0.15         | 0.14             | 0.13              |
| Access to credit   | 0.82         | 0.83             | 0.77              |
| Access to credit 12 months ago   | 0.93         | 0.94             | 0.89              |
| Observations   | 131          | 100              | 100               |

Notes: (1) Mean values in bold text are statistically different with respect to the comparison group. (2) Underlined mean values for the Cash+ group highlight differences with respect to the cash-only group. Land area is calculated for those who have land; the number of observations in the three groups is 127, 95 and 95, respectively.

Source: Authors' elaboration.

Overall, the Cash+ and the cash-only groups were slightly different with respect to the comparison group. The Cash+ group households were larger than those in the other groups and they had more adults than the cash-only group. They were also less often female-headed than the cash-only group. The number of household assets in the Cash+ group was lower than in the comparison group 12 months earlier, although at the time of

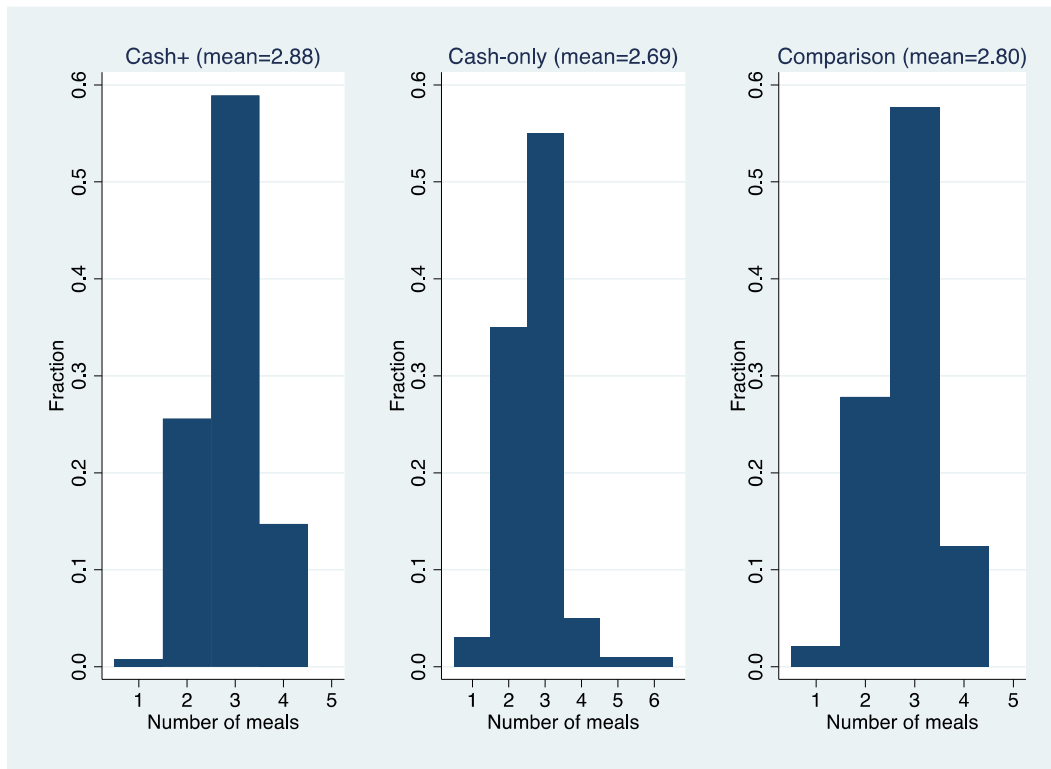
the survey the differences were no longer significant, indicating an improvement in assets among the Cash+ group over the preceding 12 months. Access to land and land size were not significantly different between groups; however, the cash-only group had fewer agricultural assets (sum of horses, donkeys, cart, water pump, seeder, tractor and ploughs) than the comparison group. In terms of access to credit and ability to save, there were no significant differences, although it is notable that in all groups both aspects had declined, perhaps because of the unfavourable agricultural year. The differences found between the groups were unsurprising, given that the households receiving cash transfers were generally less well-off and the selection criteria applying to Cash+ recipients – in particular for the cow package – slightly favoured households with adequate labour and assets.

### 5.1.1 Dietary diversity and food security

Despite 2019 having been an unfavourable agricultural year, the beneficiaries of the Cash+ pilot witnessed relative positive impacts on their diet. The impact of the programme on food security and dietary diversity was assessed through the analysis of several indicators relating specifically to children (below 18 years of age), women (aged between 15 and 49 years) and the household as a whole. The rationale for disaggregating within the household was based on the potentially differing patterns of intrahousehold allocation of resources – particularly food – and the need to understand whether children and women also benefited from the pilot.

For children, the study examined the number of meals per day; the frequency of intake of animal protein, protein-rich vegetable food, vitamin A-rich food, fruits and vegetables; and the changes that occurred in the 12 months since the implementation of the pilot. Most households in the three groups reported having about three meals per day for children, with the Cash+ group having more meals on average than the cash-only group (Figure 1).

**Figure 1. Number of meals for children, by treatment**

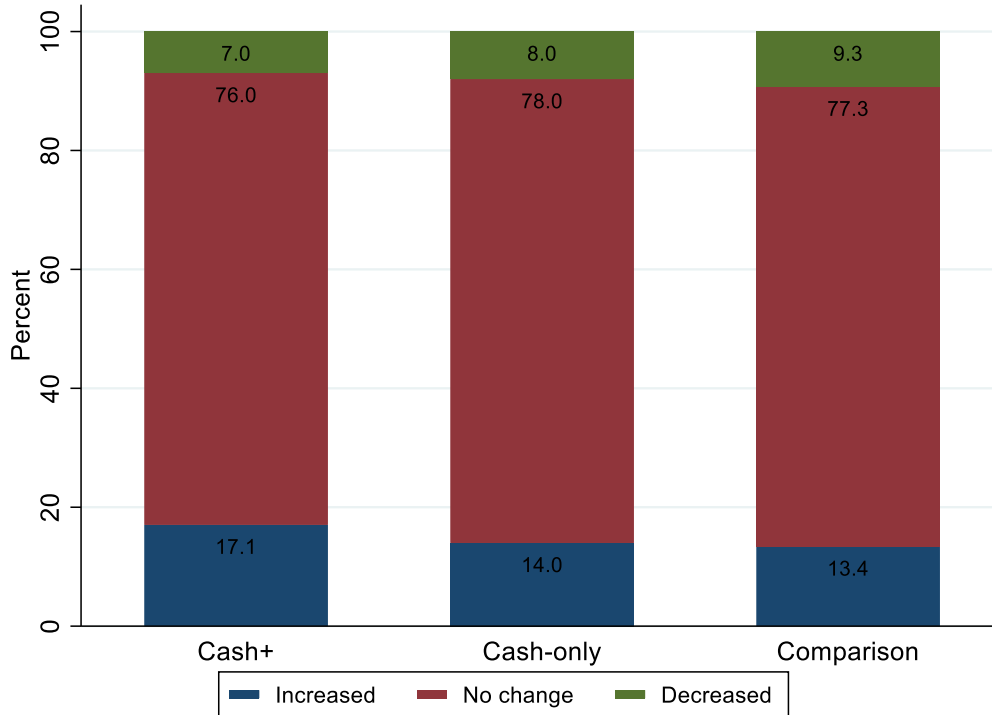


Source: Authors' elaboration.

Compared with the previous year (Figure 2), households in the Cash+ group reported an increase in number of meals for children more frequently with respect to the comparison and cash-only groups. However, the difference was not statistically significant.

This is supported by the results of the qualitative study: according to the FGD participants, the households had not registered any changes in their daily intake of food compared with the previous year. Even during hard times, households, including the beneficiaries, continued to consume the same number of meals per day, the only difference being that the foods consumed during periods of scarce income were more homogeneous (mainly potato and pasta). Many households complained about the impossibility of including the needed amount of meat, dairy and other nutritious foods into their diet. However, none of the FGD participants talked about remaining hungry. The KIIs also confirmed that the amount of food per se was not the main source of concern for these families but rather the quality of their diets.

**Figure 2. Change in the number of meals for children over the past 12 months, by treatment group**



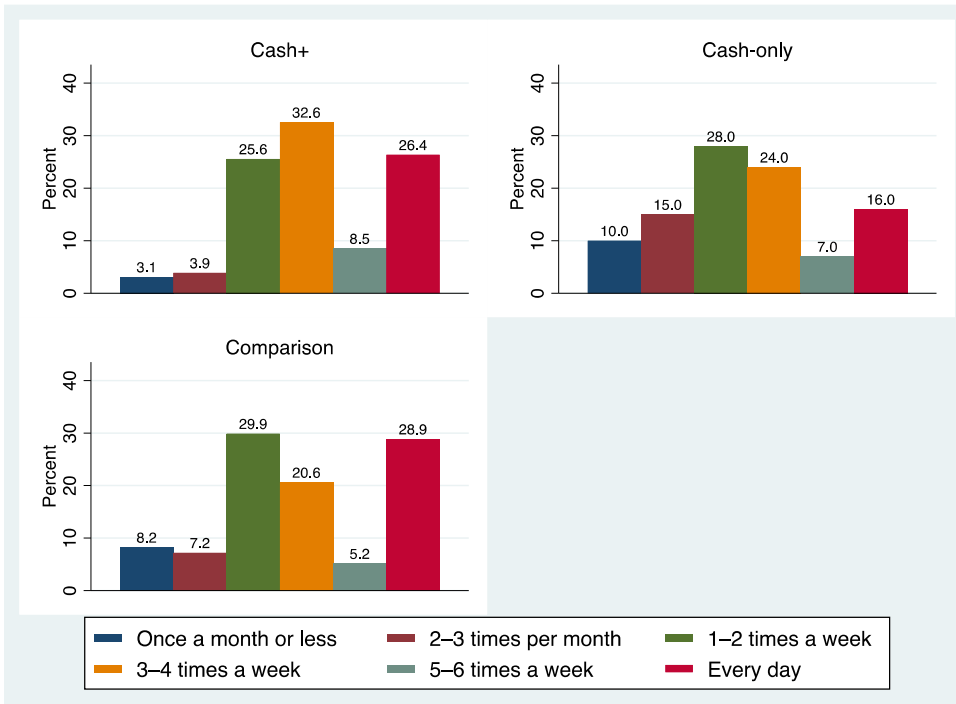
Source: Authors' elaboration.

To capture the impact on the quality of children's diets, the study examined the various types of food consumed. Overall, the analysis showed that the Cash+ intervention improved children's dietary diversity by increasing the consumption of ASF (Figure 3).

A comparison of the frequencies<sup>6</sup> of children eating animal-based proteins shows that Cash+ households reported a higher frequency on average than cash-only households. With respect to the previous year (Figure 4), a larger share of Cash+ households reported having increased consumption of animal-based protein compared with the other two groups.

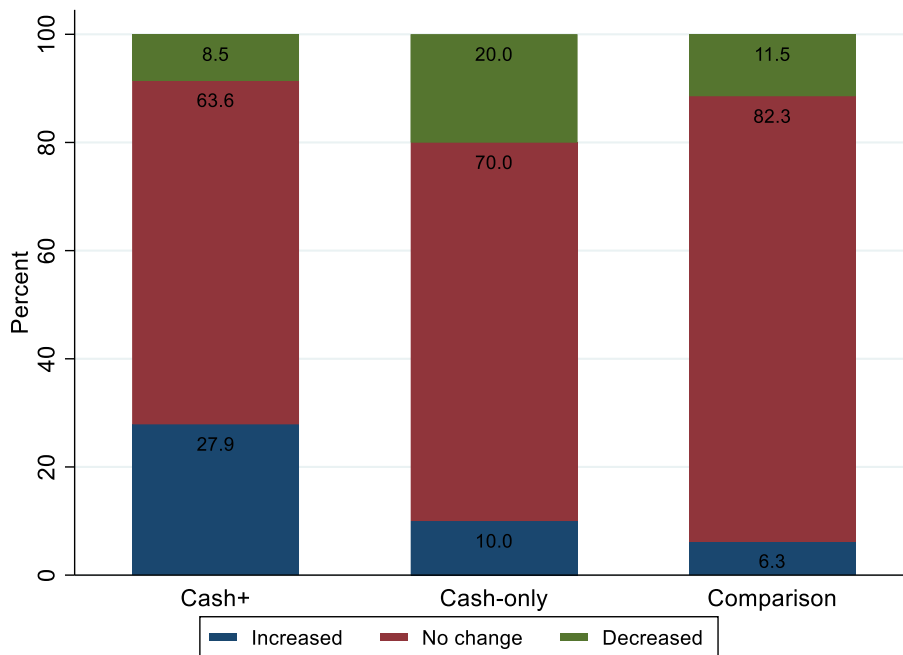
<sup>6</sup> Different frequencies were denoted by ordinal numbers, and the average thereof was used for comparison.

**Figure 3. Frequency of consumption of animal-protein-based food by children, by treatment**



Source: Authors' elaboration.

**Figure 4. Change in the frequency of consumption of animal-protein-based food by children, by treatment**



Source: Authors' elaboration.

This is corroborated by the FGDs, in which participants of the pilot who produced milk, dairy and eggs pointed to improved diets because of these animal-based protein sources. As a result of the increase in own production, these foods had become a more regular part of the beneficiaries' diet.

*“Well, we used to buy milk only for milk and matsoun<sup>7</sup> at that time; now we have milk, there is also butter, cheese, curd.” (Female FGD participant, Cash+ group)*

Several participants in all FGD groups complained that the quantities of fruits, vegetables, milk and dairy and meat they consumed had decreased over the past year. They had received limited and poor-quality products or had not received any products at all. The FGD participants reported that this was because of drought, hail and potato or chicken diseases. The participants in the pilot group emphasized that they had started consuming eggs, milk and dairy and, in some instances, raspberries.

*“I had chickens but they died, the quantity of eggs has decreased. ... I cannot say that we always go and buy, no.” (Female FGD participant, comparison group)*

*“There was no pasture in the field, the cow could not come with a full belly and give enough milk.” (Female FGD participant, cash-only group)*

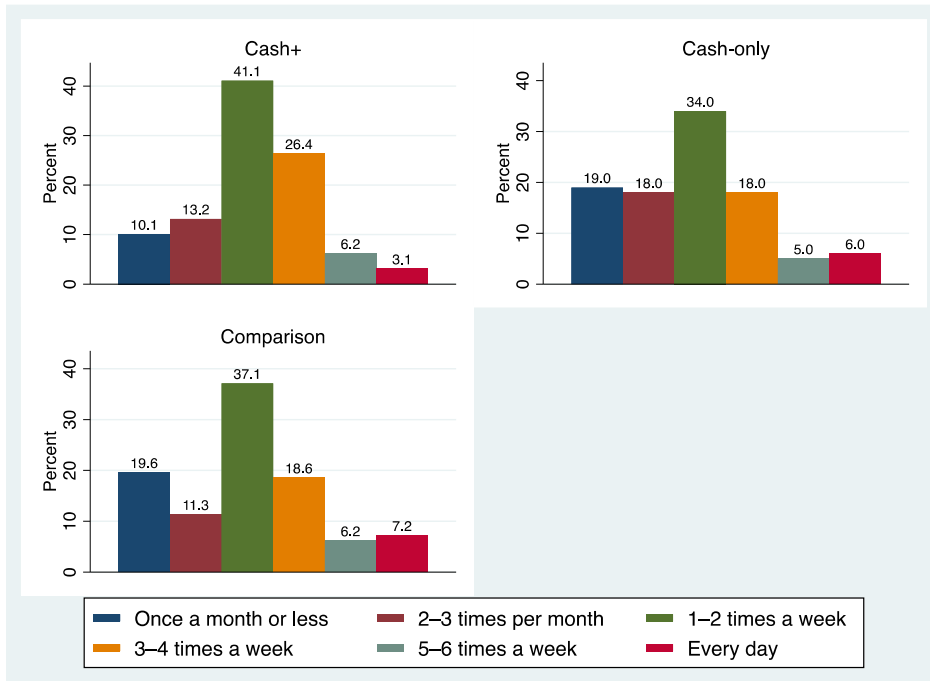
This may point to the effectiveness of the Cash+ pilot interventions in improving the diets of the participants of the programme, helping the beneficiaries withstand the poor agricultural year. However, it needs to be noted that despite the Cash+ group reporting increases in consumption of these products more often, the most common response for this group was also that the frequency of consumption of these products was the same as before, similar to the other two groups. It is worth noting that the KIIs and FGDs pointed out that not all households consumed sufficient quantities of milk and dairy, partly because only some poor households were typically engaged in cattle breeding.

Figure 5 illustrates the frequency of consumption of protein-rich vegetable food (beans, nuts, seeds) at the time of the survey. As in the previous case, more households in the Cash+ group reported children consuming these types of foods once or twice or three to four times a week than did households from the comparison and cash-only groups. However, there were no significant differences in frequency overall. With respect to the previous year, most households across the three groups did not report any change in the frequency of consumption of protein-rich vegetable food (Figure 6). Only a slightly higher proportion of households in the Cash+ group reported an increased frequency of consumption of these foods compared with the others. Here, too, the difference was not statistically significant.

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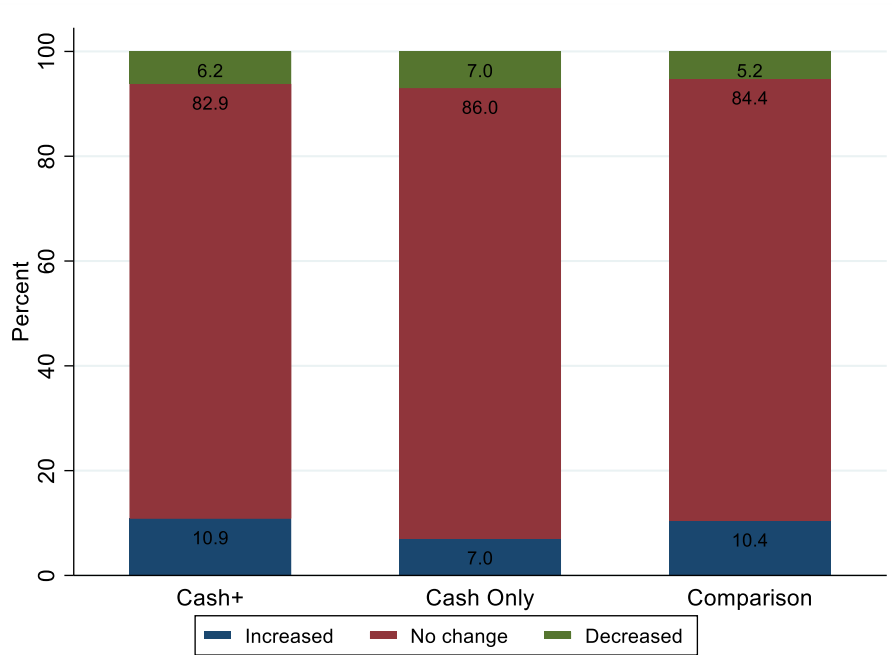
<sup>7</sup> Matsoun is a fermented milk product.

**Figure 5. Frequency of consumption of protein-rich vegetables by children, by treatment**



Source: Authors' elaboration.

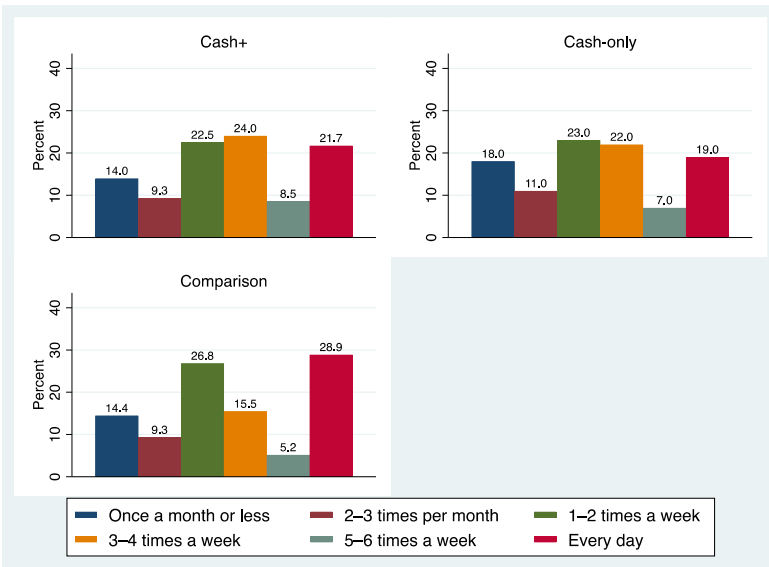
**Figure 6. Change in the frequency of consumption of protein-rich vegetables by children, by treatment**



Source: Authors' elaboration.

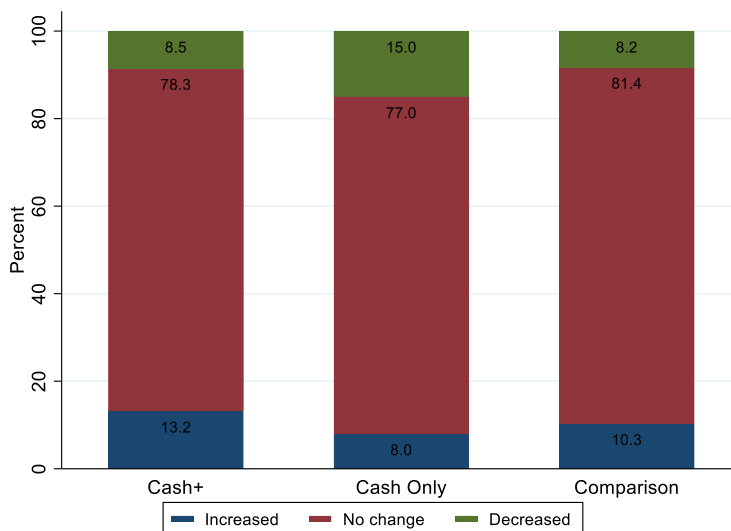
Figure 7 shows the frequency of consumption of fruits and vegetables by children. There were no statistically significant differences in the frequencies or their trends. Compared with the previous year (Figure 8), households in the Cash+ group reported an increase in the frequency of fruit and vegetable consumption slightly more often than did the other two groups. The majority of households had not changed consumption frequency. With regard to similar questions on food items rich in vitamin A, the Cash+ group actually reported having decreased the frequency of children’s consumption of such items slightly more often than did the other groups. However, the differences were not statistically significant.

**Figure 7. Frequency of consumption of fruit and vegetables by children, by treatment group**



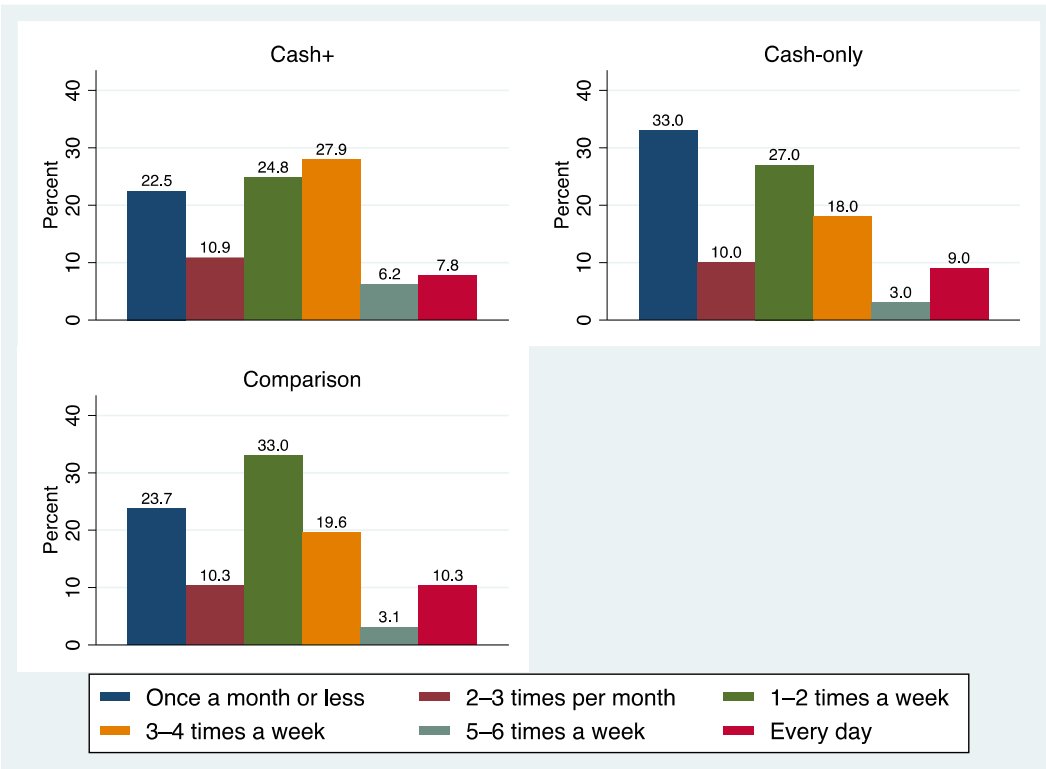
Source: Authors’ elaboration.

**Figure 8. Change in frequency of consumption of fruit and vegetables by children, by treatment group**



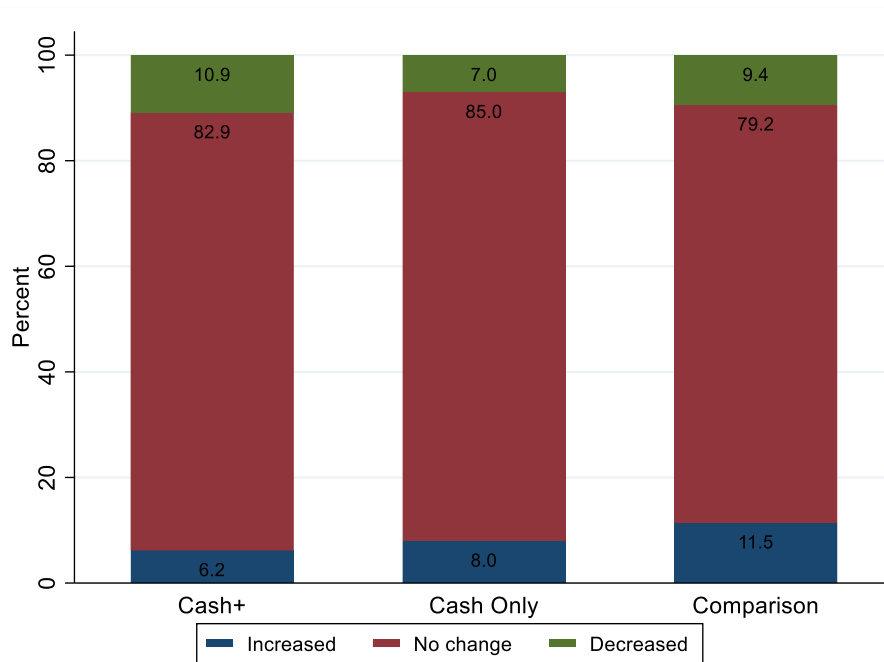
Source: Authors’ elaboration.

**Figure 9. Frequency of consumption of food rich in vitamin A by children, by treatment group**



Source: Authors' elaboration.

**Figure 10. Change in frequency of consumption of food rich in vitamin A by children, by treatment group**



Source: Authors' elaboration.

The same set of questions about dietary diversity was asked regarding women aged from 15 to 49 years. The results for women's diets were similar to the findings for children: there was increased frequency of consuming animal protein in the Cash+ group compared with the other groups. For other items, which for women also included iron-rich food and leafy green vegetables, there were no significant differences in the changes in consumption frequency. However, the Cash+ group reported a higher frequency of consumption of food rich in vitamin A compared with the cash-only group. It is notable that, overall, the frequencies of consuming iron-rich food, leafy green vegetables and food rich in vitamin A were low, with the majority consuming them once or twice a week or less.

The information gathered from both in-depth interviews and the FGDs provided further insights into these results. It emerged that the diet of poor families was extremely homogeneous and incomplete. It was mainly limited to crops growing in their climatic conditions (mostly potato) and basic food items (pasta, vermicelli, rice) purchased from local shops.

The FGD participants mentioned that the concept of dietary diversity was understood. However, they attributed the lack of diversity in their diets to an issue of accessibility. They were simply unable to purchase certain foods and thus they would go without and rely on locally specific staples. There were no differences among the different FGD groups on knowledge of healthy diets, although the pilot included nutrition training, and it was not obvious whether the participants had clearly understood what constitutes a healthy diet.

*"Well, how can we buy if we don't have money? ... We buy lentil or buckwheat, but if it is not possible to buy, we make peas or beans planted by us. We make bulgur from wheat groats and cook it ... If there is no money, it is not mandatory to go buy lentil and buckwheat. We use whatever we have. We all are in the same situation ... We want to eat, there is no money, we have our potatoes." (Female FGD participant, comparison group)*

*"I would say that the main food of such people is potato, bread and cheese. They are not able to eat meat – chicken, beef – every day." (Local key informant)*

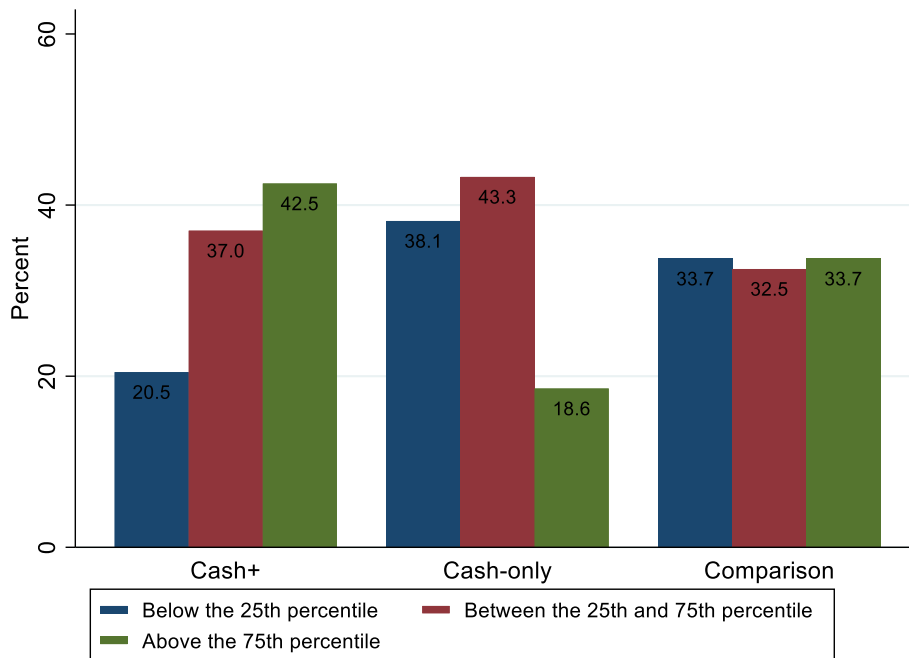
*"Their nutrition is not diverse; it is mostly homogeneous. They receive the products they need from agriculture. ... For example, potatoes, beans, peas. ... Their diet mostly consists of these products; they also use a lot of macaroni, ... which is more affordable, corresponding to their family basket." (Local key informant)*

To assess the impact of a major shock on diets, the COVID-19 follow-up survey included questions on dietary diversity to calculate a full Household Dietary Diversity Score (HDDS). The dietary diversity score is the sum of 12 food groups consumed. The potential score range for each household is 0 to 12. The HDDS provided an indication of household economic access to food rather than of the quality of individual diets.

The distribution of the HDDS scores obtained from the follow-up survey was divided into three groups, based on the percentiles of the score within the interviewed households. Figure 11 shows that the Cash+ respondents had a lower percentage of households below the twenty-fifth percentile and a higher percentage of households

above the seventy-fifth percentile compared with the other groups. The overall HDDS score was statistically significantly higher in the Cash+ group than in the other two groups. These results suggest that the Cash+ recipient households were better at retaining household dietary diversity during the COVID-19 emergency.

**Figure 11. Household Dietary Diversity Score**



Source: Authors' elaboration.

The questionnaire of the original survey carried out immediately after the pilot included a set of questions on food insecurity for the household as a whole. These questions were selected from the Food Insecurity Experience Scale (FIES) items used to assess food security at the national level. They do not constitute as reliable a measure of food security as FIES and as such cannot be compared with FIES results from different contexts. However, they provide an indication of certain elements of food insecurity. Table 3 summarizes the results.

Panel A shows that a slightly smaller share of households in the Cash+ group reported being worried about food security compared with the cash-only and comparison groups, although the difference is not statistically significant. However, with respect to the previous year, a significantly larger share of households in the Cash+ group that had experienced such worries reported a decrease in their frequency.

Panel B shows that a smaller share of households in the comparison and Cash+ groups were obliged to limit the variety of food consumed relative to the cash-only group. Households in the cash-only group also had to limit the diversity of their diet more often. The differences between limiting dietary diversity and the frequency of such limitations were, however, not statistically significant. With respect to the previous year, a greater proportion of Cash+ households that had to limit their dietary diversity also reported a decrease in the

frequency of having to limit the variety of food compared with the other two groups, and this difference was significant compared to the comparison group. The evidence thus suggests that, compared with the other groups, the Cash+ group experienced some improvement in their diets and food security.

**Table 3. Food insecurity of the households**

|   | Cash+              | Cash-only | Comparison |
|---|--------------------|-----------|------------|
| <b>Panel A</b>  |                    |           |            |
| Worry about not enough food (Worry = 1; Not worried = 0)              | 0.74               | 0.78      | 0.77       |
| N observations  | 131                | 100       | 100        |
| Frequency of worries (Rarely=0; Sometimes=1; Often=2)                 | 1.20               | 1.33      | 1.13       |
| N observations  | 97                 | 78        | 77         |
| Change since previous year (Decrease=0; Same=1; Increase=2)           | <b><u>0.82</u></b> | 1.05      | 1.13       |
| N observations  | 97                 | 78        | 77         |
| <b>Panel B</b>  |                    |           |            |
| Limited variety of food (Limited = 1; Not Limited = 0)                | 0.52               | 0.61      | 0.56       |
| N observations  | 131                | 100       | 100        |
| Frequency of limited variety of food (Rarely=0; Sometimes=1; Often=2) | 1.07               | 1.33      | 1.18       |
| N observations  | 68                 | 61        | 56         |
| Change since the previous year (Decrease=0; Same=1; Increase=2)       | <b>0.90</b>        | 0.98      | 1.11       |
| N observations  | 68                 | 61        | 56         |

Notes: (1) Mean values in bold text are statistically different with respect to the comparison group; (2) Underlined mean values for the Cash+ group highlight differences with respect to the cash-only group.

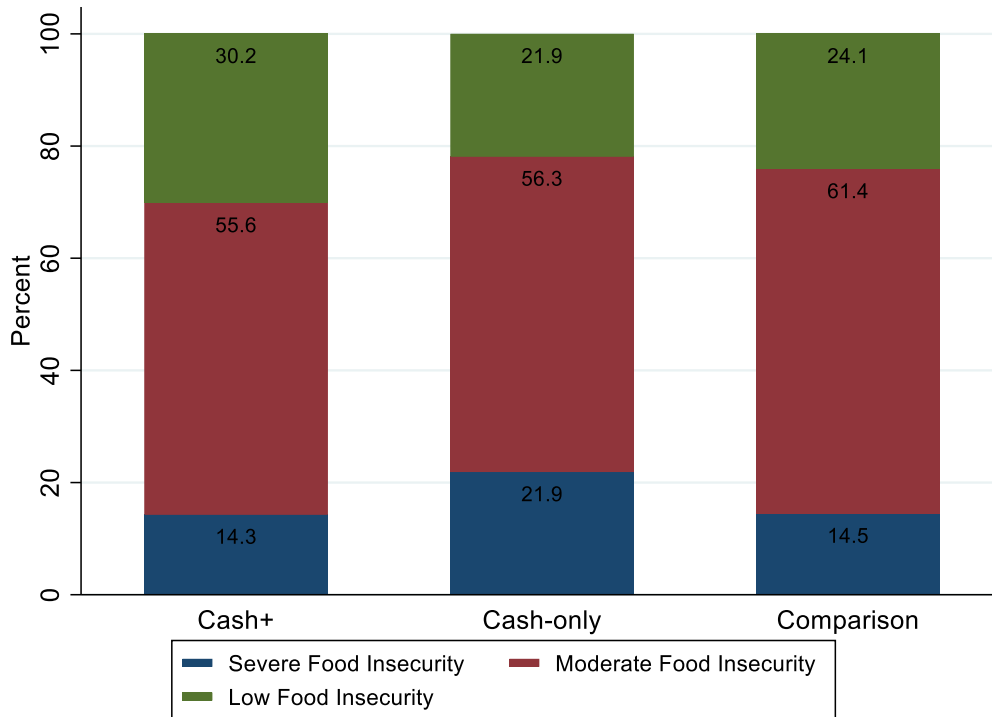
Source: Authors' elaboration.

In the follow-up survey, collected during the COVID-19 pandemic, the full FIES was used to measure the severity of food insecurity at the household or individual level through eight brief yes/no questions on access to adequate food. When considering raw scores, over the previous 30 days, the Cash+ and comparison groups reported lower food insecurity than the cash-only group, although the differences were not statistically significant. To better understand the composition of the food insecurity scale, three categories of FIES were generated: low, moderate and severe.<sup>8</sup> The Cash+ group reported a higher percentage of individuals in the low food security category and a lower percentage of people in the moderate and severe food insecurity category compared with the cash-only and comparison groups (Figure 12). However, in this case too, the difference was not statistically significant. Eighty-four percent of households in all groups reported the COVID-19 pandemic as the reason for at least one FIES item, although there were no statistically significant differences between the

<sup>8</sup> The “low food insecurity” row scores less than 4; the “moderate food insecurity” row score between 4 and 6; and the “severe food insecurity” row scores greater than or equal to 7. These are arbitrary discrete categories. In nationwide analyses of the full FIES, division into severe, moderate and low food security categories is carried out by using a more complex methodology.

groups. This suggests that the Cash+ project did not completely prevent the households from experiencing food insecurity in the case of shocks such as COVID-19.

**Figure 12. Food Insecurity Experience Scale**

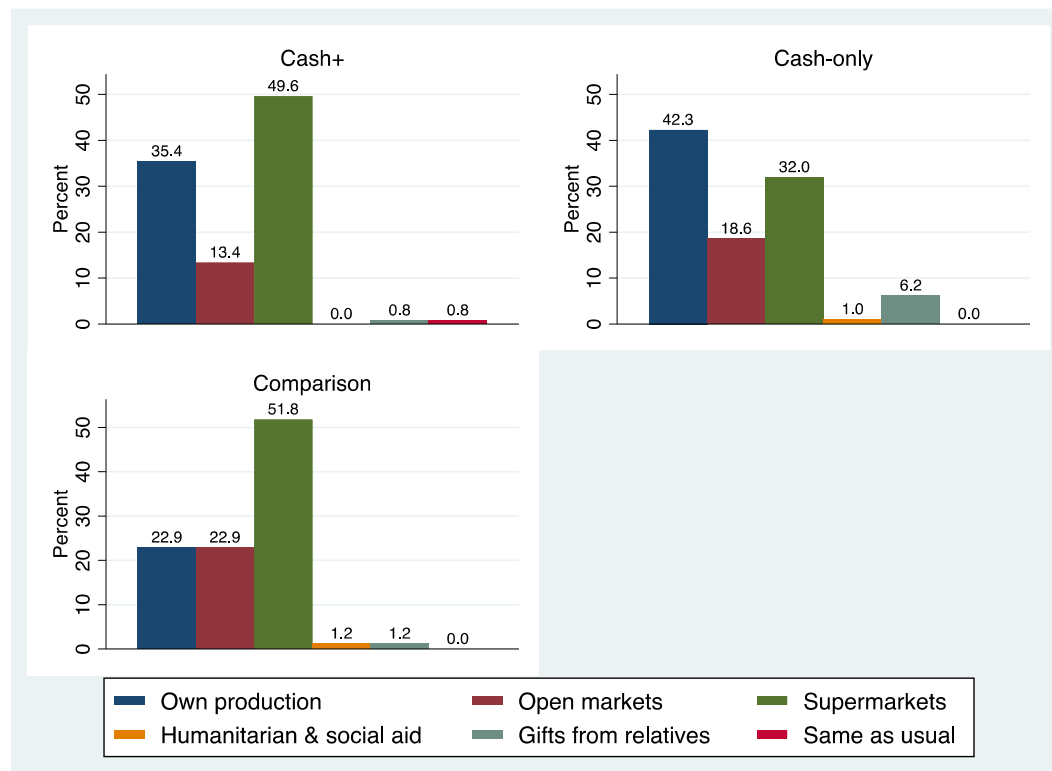


Source: Authors' elaboration.

The follow-up survey also asked respondents about their main sources of food commodities and how they changed in the face of the emergency. The Cash+ and cash-only groups mentioned having increased sourcing food from their own production more often than the comparison group,<sup>9</sup> providing further evidence of the role of agricultural production in improving food security for poor households in cases of shock (Figure 13). Increased use of supermarkets was reported more often among the Cash+ and comparison groups than among the cash-only group.

<sup>9</sup> The difference was significant at a 5 percent level for cash-only and almost significant for Cash+.

**Figure 13. Source of food used more often than usual during the COVID-19 emergency**



Source: Authors' elaboration.

### 5.1.2 Agricultural production and sales

The KIIs and FGDs corroborated the fact that most poor families in the pilot communities depended for their livelihoods on small-scale agriculture, such as crops grown on homestead landplots or kitchen gardens. In the best-case scenarios, these households also owned poultry, pigs and one or two cows. The key informants estimated that fewer than half of the poor households in the beneficiary settlements were engaged in cattle-raising.

The crops listed by the FGD participants and key informants included various vegetables and fruit. Among crops that poor households produced, potato was the most important: it is easy to grow and to store for long periods. Most importantly, it is filling as a meal. Although the families were largely engaged in crop production, they did not cultivate large plots; consequently, they did not produce large quantities and many varieties of crops. As all informants of the study indicated, they mainly used homestead plots to produce crops for their own consumption.

*“We grow bean, pea, pumpkin, zucchini, potato, carrot, beet, greens, onion, garlic – everything ...”  
(Male FGD participant, Cash+ group)*

*“If you live in the village, [crop production] is the only livelihood for a resident, especially if there is no other job.” (Female FGD participant, cash-only group)*

In both target communities, 2019 was an unfavourable agricultural year, as drought affected both Marmashen and Gyulagarak. In addition, there was widespread potato disease in Gyulagarak. Thus, it was expected that there would be negative trends in production and sales compared with the previous year.

According to the views of key informants and observations from FGDs, a smaller proportion of rural poor households were engaged in livestock production than in crop production. The key informants indicated that livestock had a large impact on the economic stability of households, as was confirmed by the FGD participants. Those who had cows considered them a major source of income.

*“They say, ‘When famine comes the cow saves.’ It is an old saying.” (Female FGD participant, cash-only group)*

*“If you do not have a job, it is natural to live through cattle breeding. ... It is more than 80 percent [of income], there is no income apart from it. The benefit and pension are so low that it is definitely not enough ...” (Female FGD participant, Cash+ group)*

*“Cattle-raising comes the first place for us, and only then – farming.” (Male FGD participant, comparison group)*

Nevertheless, poor families often cannot afford cattle. The FGD participants mentioned that the majority of poor families kept chickens, with some of them raising pigs. A reason suggested for non-engagement in livestock production was the lack of financial resources needed to start cattle-raising, a low asset base (absence of barn, grassland) and health issues. The key informants also mentioned that ownership of livestock puts the household at risk of losing the FB.<sup>10</sup>

*“Today the prices of cattle are too high... People can barely buy bread. It is very difficult to keep, raise even a calf, let alone a cow until it becomes a cow.” (Female FGD participant, cash-only group)*

*“A newborn calf costs AMD 70 000 to AMD 80 000. If you buy a newborn calf, you have to buy at this price, you also have to buy milk so as to keep the calf and rear it; we are not able to keep them.” (Female FGD participant, cash-only group)*

The results of the quantitative survey are consistent with these findings (Table 4). Indeed, the share of households engaged in the production of crops, fruits and vegetables are relatively similar across the three groups and varies from 90 percent of households producing crops in the comparison group to 94 percent in the Cash+ group. However, the households in the Cash+ group reported negative changes in incomes from sales less frequently than the cash-only and comparison groups and in agricultural production compared with

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<sup>10</sup> According to State Decision No. 145, families receiving the FB do not lose it because of one or two head of cattle. Nevertheless, they may prefer the stability of the FB and the cash to the uncertainty based on income from livestock (for a more detailed description see Section 5.1.1.3: Income sources and resilience).

the comparison group<sup>11</sup> (Table 4). All households in the Cash+ group have livestock, as would naturally be the case after the intervention; in cash-only and comparison groups, the proportions are 60 percent and 63 percent respectively. More positive trends in livestock activities and livestock sales were reported significantly more often for the Cash+ group than for the other two groups.

**Table 4. Agricultural production and sale**

|   | (1)<br>Cash+ | (2)<br>Cash-only | (3)<br>Comparison |
|---|--------------|------------------|-------------------|
| <b>Agricultural production</b>  |              |                  |                   |
| Produced crop (yes=1)   | 0.95         | 0.89             | 0.90              |
| N observations  | 131          | 100              | 100               |
| Change in the production of agricultural products: 0 = “Decreased”; 1 = “The same”; 2 = “Increased” | <b>0.84</b>  | 0.65             | 0.62              |
| N observations  | 128          | 93               | 97                |
| Change in the sale of agricultural products: 0 = “Decreased”; 1 = “The same”; 2 = “Increased”       | <b>0.92</b>  | 0.63             | 0.63              |
| N observations  | 60           | 49               | 49                |
| <b>Livestock</b>  |              |                  |                   |
| Livestock (yes=1)   | <b>1.00</b>  | 0.60             | 0.63              |
| N observations  | 131          | 100              | 100               |
| Change in the production of livestock: 0 = “Decreased”; 1 = “The same”; 2 = “Increased”             | <b>1.44</b>  | 1.01             | 0.79              |
| N observations  | 130          | 70               | 76                |
| Change in the sale of livestock products: 0 = “Decreased”; 1 = “The same”; 2 = “Increased”          | <b>1.28</b>  | 0.83             | 0.75              |
| N observations  | 82           | 58               | 53                |

Source: Authors’ elaboration.

The qualitative study supports this observation: project beneficiaries were the only FGD participants mentioning improvements in agricultural production in the past 12 months despite the agricultural shocks. Significant achievements were noted among the beneficiaries who received cows within the project and could produce milk and dairy. Another important change was reported by beneficiaries who produced eggs: they consumed more eggs and were sometimes able to sell or exchange them. As for raspberries, beneficiaries had not yet observed yields sufficient to make a difference: the plants were still too young to produce a large amount of berries, while some beneficiaries’ plants dried up. Some Cash+ beneficiaries recorded deaths of chickens; however, to some extent, the dead animals had been replaced. The beneficiary households generally benefited not only in terms of diets but also by generating additional income.

<sup>11</sup> The difference from the cash-only group is also almost significant, with a *p* value of 0.058.

*"Our income has probably changed by 10 percent [because of the intervention], because we used to buy [food] before and now we do not buy it [and save money]." (Female FGD participant, Cash+ group)*

*"Of course, a lot of problems have been solved [in terms of diet]; the quantity of food has increased and it is very good for the family. We have registered achievements with regards to milk production, in everything [dairy]." (Female FGD participant, Cash+ group)*

*"For example, we are satisfied with the chickens given to us, they lay eggs very well, and the children do not need eggs." (Male FGD participant, Cash+ group)*

*"For example, there were cases when the children had to take money to school, but we did not have it, so we sold 2 litres of milk and sent the money..." (Female FGD participant, Cash+ group)*

Generally, only a small part of the production was used for sale or barter. Some poor families not only consumed the crops, milk and dairy produced, they also sold or exchanged them, thus providing additional income to their households. However, poor families did not keep large numbers of animals or cultivate large plots. Consequently, they were not able to sell or exchange large quantities of product. As stated by FGD participants, their produce was mainly consumed by their households and only a small proportion was sold. Comparing the volume of produce sold and consumed, they estimated that the amount sold reached a maximum of 30 percent.

*"Approximately 25 to 30 percent is sold, they make cheese from the rest and preserve it in big jars." (Male FGD participant, cash-only group)*

*"Probably, 15 to 20 percent [is sold]; primarily, it satisfies their family needs. They may not even sell it, but they do barter exchange. That is also a benefit, what is the difference?" (Local key informant)*

Cash sales were mostly local and in small quantities. This practice was not as common as barter exchange, because in villages the main market consisted of mobile sellers who would visit settlements with the intention to exchange goods with local production. Because of the small quantities produced, the villagers did not deem it advantageous to transport their products out of their settlements: they could easily find buyers for their small quantities among fellow villagers. They even preferred barter exchange with mobile sellers to cash sale outside their villages. The variety of the products available for barter exchange was also wider than in case of cash sale. The only exception was meat, which was more typically sold for cash.

*"For example, now it is not so much to send it elsewhere ... But there are some people among the neighbours who have no cows, they buy milk from us; or they do not have eggs, do not keep chickens and buy eggs from us." (Female FGD participant, Cash+ group)*

The main perceived challenge for generating income from agricultural production is not the lack of market opportunities per se but rather the small quantity of product, which is enough for only self-consumption and small-scale sale or exchange. The limited production makes households much more vulnerable to reductions in price. Other challenges mentioned include lack of financial resources (including credit); lack of favourable conditions for agricultural activities; inaccessibility of economic assets and agricultural inputs; and the absence of quality control for agricultural inputs. The views presented by the discussants also demonstrated the vulnerability of such families to natural disasters and diseases (drought, hail, animal disease, plant infections). The FGD participants believed that they were already experienced and skilled in agricultural activities; thus, they were reluctant to take part in the trainings. However, some participants among both the beneficiaries and the comparison groups pointed to the need for knowledge in specific areas: marketable cheese-making, beekeeping, using greenhouses with drip irrigation and growing raspberries more efficiently.

*“One kilogram of normal potatoes costs AMD 500, but there are no finances so that you can buy those potatoes and plant them. Thus, you have to buy potatoes planted for the second or third year. You buy it with AMD 100 to AMD 150, but it does not provide a good harvest.” (Male FGD participant, comparison group)*

*“First of all, I must solve the agricultural issues. I should spend finances on those issues, and only then can I think about diet or clothes or something else.” (Male FGD participant, Cash+ group)*

The COVID-19 emergency may have introduced significant unusual difficulties in agricultural activities because of problems accessing markets or inputs. The follow-up survey asked a series of questions on such difficulties, including on weather- and health-related problems. Most households engaged in agriculture had experienced difficulties, either because of adverse weather conditions or difficulties in accessing inputs needed for crop or livestock production. However, only 23 percent had experienced difficulties in selling their produce and 40 percent cited difficulties relating to health reasons. There were no significant differences between groups. Insufficient household income was frequently stated as a reason for difficulties in accessing inputs.

### 5.1.3 Income sources and resilience

From the FGDs and KIIs, it emerged that income sources other than agriculture and the FB or pensions were unpredictable, unstable and short term for poor households. Available jobs were mostly seasonal and limited to low-paid jobs in construction or agricultural sectors, during the warm and agricultural seasons. Such income sources included women collecting potatoes or milking cows for large-scale farmers, while men reaped grass, kept cows on large farms or did heavy labour. In addition to hired jobs, in Gyulagarak women also engaged in gathering wild crops, collecting berries or mushrooms from the forest and selling them.

*“Even if they are not engaged in agriculture, there are large-scale farmers; they go and work for them seasonally. Or they are occupied with feeding big farmers’ cows ...” (Local key informant)*

*“For example, they go to Vardablur to collect potatoes; they get ... at least AMD 4 000 per day. It is also money ...” (Local key informant)*

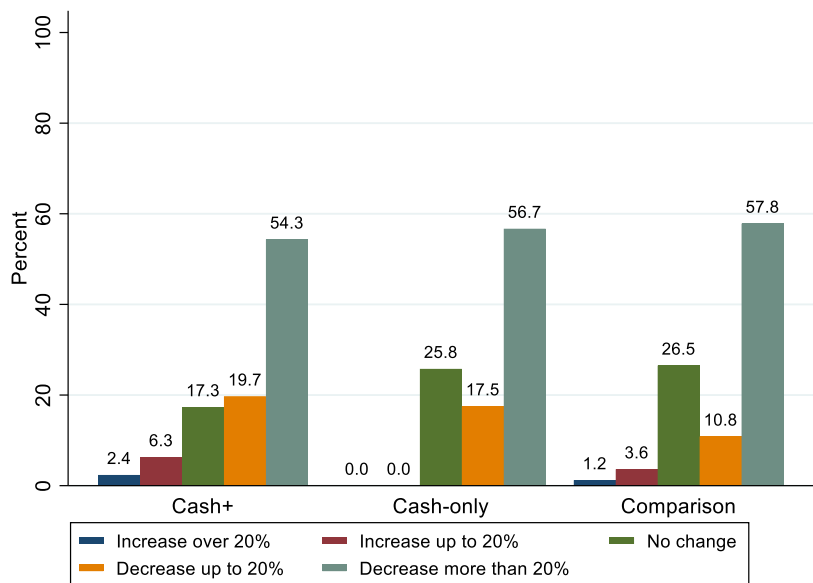
Informants agreed that the FB improved the situation of poor households, providing them with a regular stream of income that contributed to their food security and helped them meet their utility payments. The worst off were those households that did not receive any benefits, leaving them with no regular source of income and completely reliant on casual work. Local shops also provided FB beneficiaries with credit.

*“People purchase on credit with the village stores, then they receive the pension or benefit and pay.” (Local key informant)*

The FGD participants emphasized that the FB only covered minimal needs, such as utility costs and basic food items. The benefit was not large enough to make them resilient to shocks. The FGD participants also indicated that the lack of stable work opportunities generated a fear of losing their benefit. When offered an opportunity to work that may be temporary, they often preferred to reject it out of fear of losing their regular benefit.

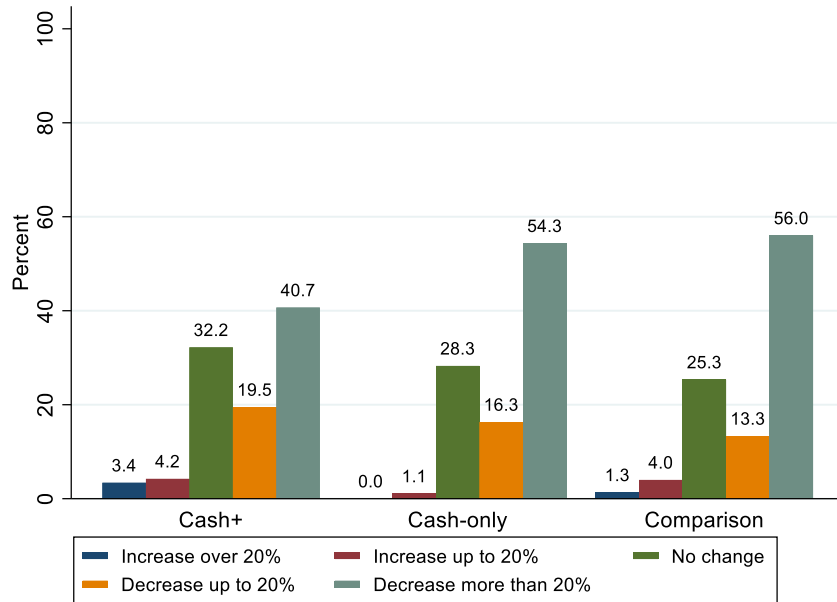
The follow-up study undertaken to assess the role of the Cash+ intervention in helping households to cope with the COVID-19 crisis provided an opportunity to examine how these observations played out in practice. When the three groups were asked how their income had changed in the past month compared with the same period the previous year, the majority declared having experienced a decrease of more than 20 percent (Figure 14). They also predicted that a similar change compared with the previous year would take place in the next three months (Figure 15). In the latter case, the Cash+ group showed a lower percentage of households expecting the highest reduction. The proportion was statistically significantly smaller than in the other groups.

**Figure 14. Change in income in the past month compared with the same period the previous year**



Source: Authors' elaboration.

**Figure 15. Expected change in income over the next three months**

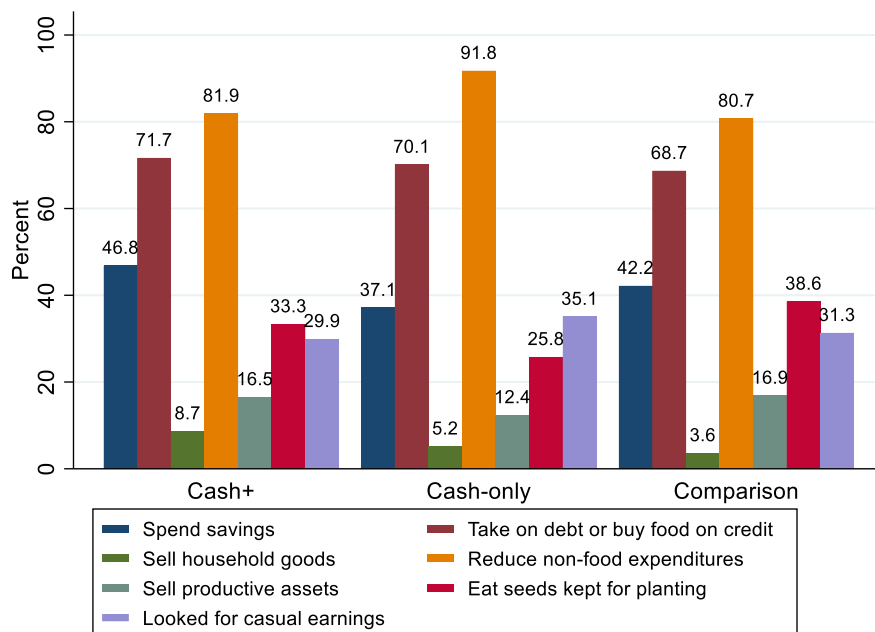


Source: Authors' elaboration.

The questions on coping strategies showed that households in all three groups had used various strategies to deal with reductions in income (Figure 16). Most typically, households in all groups had reduced non-food expenditure, with the second most common strategy being taking on debt or buying food on credit and spending savings.

In the case of reducing essential non-food expenditures, both the Cash+ and comparison groups used the coping strategy significantly less often than the cash-only group; however, a large majority of households in all groups used it. This may reflect the relative affluence of these groups. Alternatively, it may also indicate that the Cash+ intervention had provided relative protection from negative coping strategies, although the households still had to resort to such strategies.

**Figure 16. Percentage of respondents that adopted coping strategies over the past month**



Source: Authors' elaboration.

### 5.1.4 Intra-household dynamics

The overall impact of resource transfers to households may mask significant diversity in household effects if the resources were distributed unevenly. There may be significant gender and age discrepancies in the distribution of household resources and allocation of tasks. The FGDs touched upon the issues of how food was distributed within households and, similarly, how household decisions were made. The quantitative survey also included a section on decision-making within households.

Within the participating households, clear priority was given to children when it came to food. Scarcer and more-expensive foods were reserved for children. The FGD participants emphasized the fact that children suffered most if food was lacking; in vulnerable families, adult members were the first to be affected by the lack of nutritious food items.

*“There is a lack of fruits for many children. Well, you may not eat it, but a child ... You may not eat fruits, but you have to do something so as to provide your child with food rich in vitamins.” (Male FGD participant, comparison group)*

*“For example, if we have two eggs, we prefer to give them to the child rather than to the man or the woman. It is normal, we primarily give the advantage to the child in our family.” (Female FGD participant, Cash+ group)*

*“For example, now we have some meat; even if we put it in the common meal, first we try to give the pieces of meat to the children, and then if some are left, we will eat. If there are a lot, we will also eat, otherwise at least for children, if possible.” (Female FGD participant, cash-only group)*

Although prioritizing children’s diet was considered a common practice, perceptions on how food was distributed between men and women varied somewhat. Male FGD participants more often shared the view that “Everyone should have equal nutrition”, while women focused on separating children from adults and paying special attention to their nutrition. In addition, they often admitted to giving some of their share of food to male members of the family, in addition to prioritizing children. The FGDs also revealed that men often seemed oblivious to this.

*“You know, no matter how much we say ‘to a child’, but first – ‘to a man’.” (Female FGD participant, cash-only group)*

*“For example, there are cases when you prepare something, but suddenly you see that it is not enough for someone, so that person is me. I say: ‘I have already eaten in the kitchen.’” (Female FGD participant, Cash-only group)*

In terms of household decision-making, all FGDs and KIIs suggested that significant economic decisions, such as buying or selling cattle and the use of large plots of land, were made by men (particularly older men). If there was no adult male in the household, the responsibility for key decisions shifted to the eldest female member of the family. Women made decisions regarding agriculture and household economics, such as chicken keeping, crops on small-scale plots and small-scale barter exchange. However, neither male FGD participants nor male key informants stated explicitly that men were the key decision-makers in families. In their opinion, the most important issues were discussed by all adult members of the family; nonetheless, as far as major issues were concerned, the last word was that of men.

*“Women decide what kind of food is good to make, big decisions are made collectively ...” (Male FGD participant, Cash+ group)*

*“To buy the plots and livestock is the decision of men, other decisions are always made by women in the households – for example, to buy clothes for children or not ...” (Local key informant)*

The quantitative analysis also included an assessment of the project’s impact on decision-making within the household. The same set of questions on a wide range of decision-making domains was posed to men and women of the same household.<sup>12</sup>

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<sup>12</sup> The questions focused on who usually made decisions on food-crop farming, use of homestead plots, use of plots of land, trade of livestock, processing and sales of livestock products, saving, borrowing, employment of household members outside their own farm, major purchases (furniture, agricultural assets, electronic equipment, vehicles), minor purchases (food items, kitchenware, clothes), schooling children, participation of children in farm work and household diet.

Regarding potential changes in decision-making with respect to the previous year, the quantitative results indicated that only a few households experienced any changes in decision-making. Only 27 households reported changes; these were spread out over different activities, and there was no clear pattern. Women reported changes more often. However, they also constituted a larger share of respondents, as respondents of both genders were not interviewed in all households. Furthermore, respondents in only a handful of households reported a clear change of decision-making in favour of women. This highlights the persistence of gender roles and decision-making patterns, which are unlikely to change as a result of a short-term pilot that had no particular gender focus.

## 5.2 Microsimulation

A microsimulation analysis was used to assess the potential of similar interventions applied at scale to reduce rural poverty and enhance the consumption of food based on animal protein. In the simulations based on nationally representative household data, rural households were presumed to receive either one cow or raspberries and 30 chickens, as in the pilot. In addition to targeting the FB recipients, simulations were carried out for different coverage options: extremely poor, moderately poor and poor.

In addition to belonging to the target group, the selected households had to satisfy additional eligibility criteria: having children under 18; being able to access land, for households receiving chickens and raspberries; having or having had a cow (proxy for having a barn), for households receiving a cow; and no more than two individuals unfit for work for each individual fit for work. This section reports the results for only those scenarios where the beneficiaries were (1) FB beneficiaries or (2) had consumption levels below the high poverty line.<sup>13</sup>

These additional eligibility criteria did not greatly reduce coverage compared with the coverage provided by the criteria based on poverty or social assistance beneficiary status. The poverty rate in rural areas was 30.4 percent and the share of FB recipients<sup>14</sup> was 15.8 percent. The poverty rate among FB recipients was 50.3 percent. Out of these populations, the share of people living in households qualifying for an intervention similar to the pilot<sup>15</sup> was hypothetically 92 percent among poor people and 93 percent among FB recipients. In both instances, approximately one-third of those eligible satisfied the conditions set to receive one cow.

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<sup>13</sup> In 2015, the poverty lines per adult equivalent were the following: extreme poverty line – AMD 24 109; lower poverty line – AMD 34 234; upper poverty line – AMD 41 698. The results for other poverty lines are available on request from the authors. When the coverage was all households below the higher poverty line, this figure also covered extremely poor people and those below the low poverty line; thus, the impacts on extreme poverty and on the population below the lower poverty line were similar to those in the scenario whereby all households below the high poverty line were covered. The impact on population below the high poverty line was milder when only extremely poor people or those below the lower poverty line were targeted.

<sup>14</sup> Those who reported receiving the FB and also satisfied the condition of having children under 18 years of age, which is also a condition for being eligible for the FB. Without the child condition, the share of households reporting receipt of the FB was 17 percent.

<sup>15</sup> The condition of having small children was not considered in the simulation.

### 5.2.1 Arithmetically simulated reduction in poverty

Figure 17 shows the changes in poverty rates as a result of a nationwide policy, with different assumptions about how the policy impacts were passed to total consumption. As expected, the impact was highest when the value of production from the intervention was fully added to total consumption per adult equivalent, i.e. there was no saving, investment or waste of the additional production. The reduction in poverty was as high as 18.6 percent when poor households were targeted. When FB beneficiaries were targeted, the resulting reduction in poverty was 4.3 percent. The lower value of the latter figure reflected both the lower coverage of the FB and the fact that not all FB beneficiaries were poor – that is, their actual consumption was not below the poverty line. It must be noted that perfectly targeting poor households is difficult in practice, not only because of the obstacles in observing the households' actual incomes or consumption, but also because of continuous changes thereto. The aim of these results is to highlight that in optimal circumstances, where poor rural households are identified and provided with production support that is correctly used, the livestock package can potentially generate large reductions in poverty.

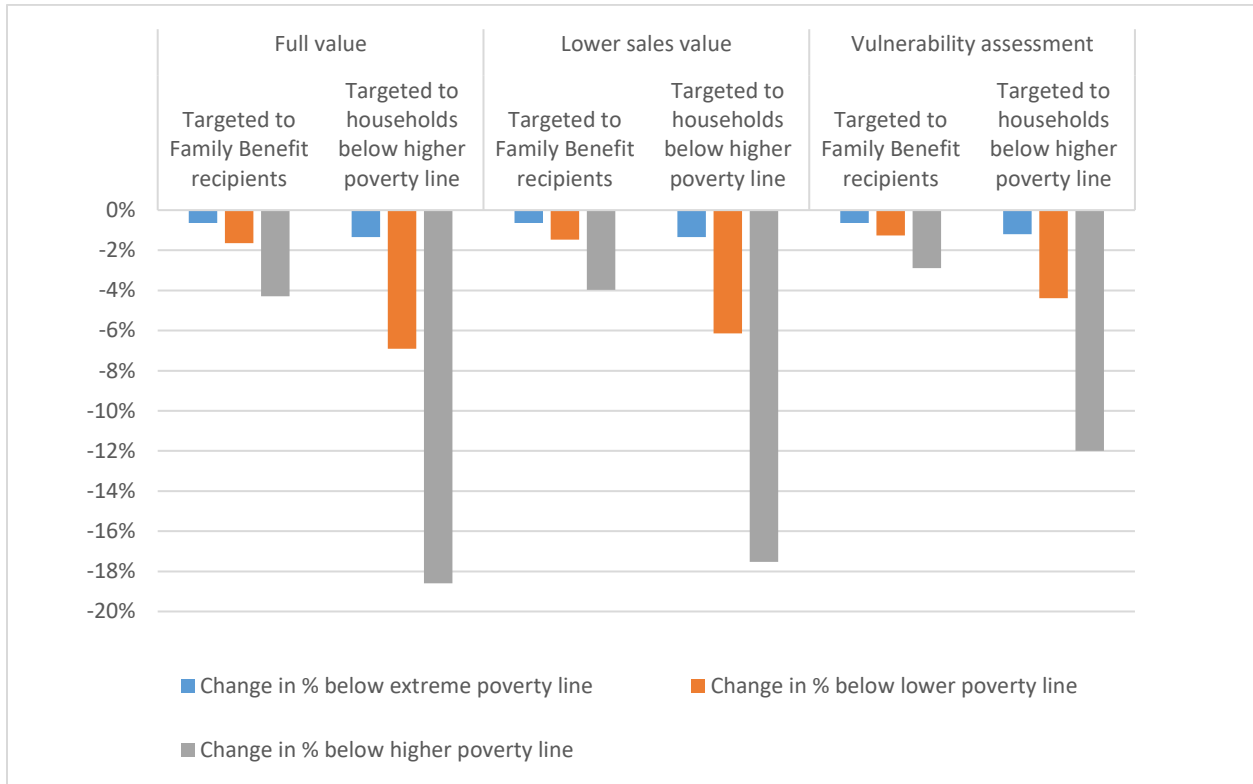
It was unlikely that all the livestock produce would be channelled into own consumption. Also, it was unlikely that produce could be sold at the market prices used to calculate the value of additional consumption in the first scenario. Furthermore, selling even at a below-market price provided an opportunity to consume other desired goods, including non-food and durable goods. The chosen consumption basket could provide a higher utility despite its lower value. Reduction in the assumed value of the packages to approximated sales value, considering realistic sales prices in the localities, reduced the poverty impact to some extent. This could also be understood to be the approximate impact on long-term consumption, because in the longer run the households were more likely to adjust their consumption patterns and find channels for marketing their products.

The assumptions pertaining to the simulations and details of the methodology used are described in Table 1 and Annex 1. In case of lower sales value using the typical sales prices of the locality, the poverty impact was 17.2 percent. Applying the estimated sales income value used in the vulnerability assessment, it was 12 percent, still over one-third of the rural poverty rate. The qualitative study revealed that the recipient households consumed most of their production and sold an insignificant part of it and did not face major constraints in finding markets although the sales prices were generally not high throughout the year. This supported the view that the actual poverty impact would be lower than the optimal impact arising from the full value of the projected production, also considering that there may be difficulties in attaining optimal production. At the same time, the package did provide a fairly consistent stream of additional consumption possibilities.

Targeting FB beneficiaries again resulted in a lower poverty impact – 4 percent with the lower sales value and 2.9 percent with the estimated income based on the vulnerability assessment. It has been noted in research that it is difficult to improve targeting the FB as such (Tumasyan, Harutyunyan and Hakobyan, 2016); this highlights the general difficulties of targeting social assistance in the absence of reliable information on incomes. However, higher coverage of the FB or selection of further beneficiaries for livelihood support using

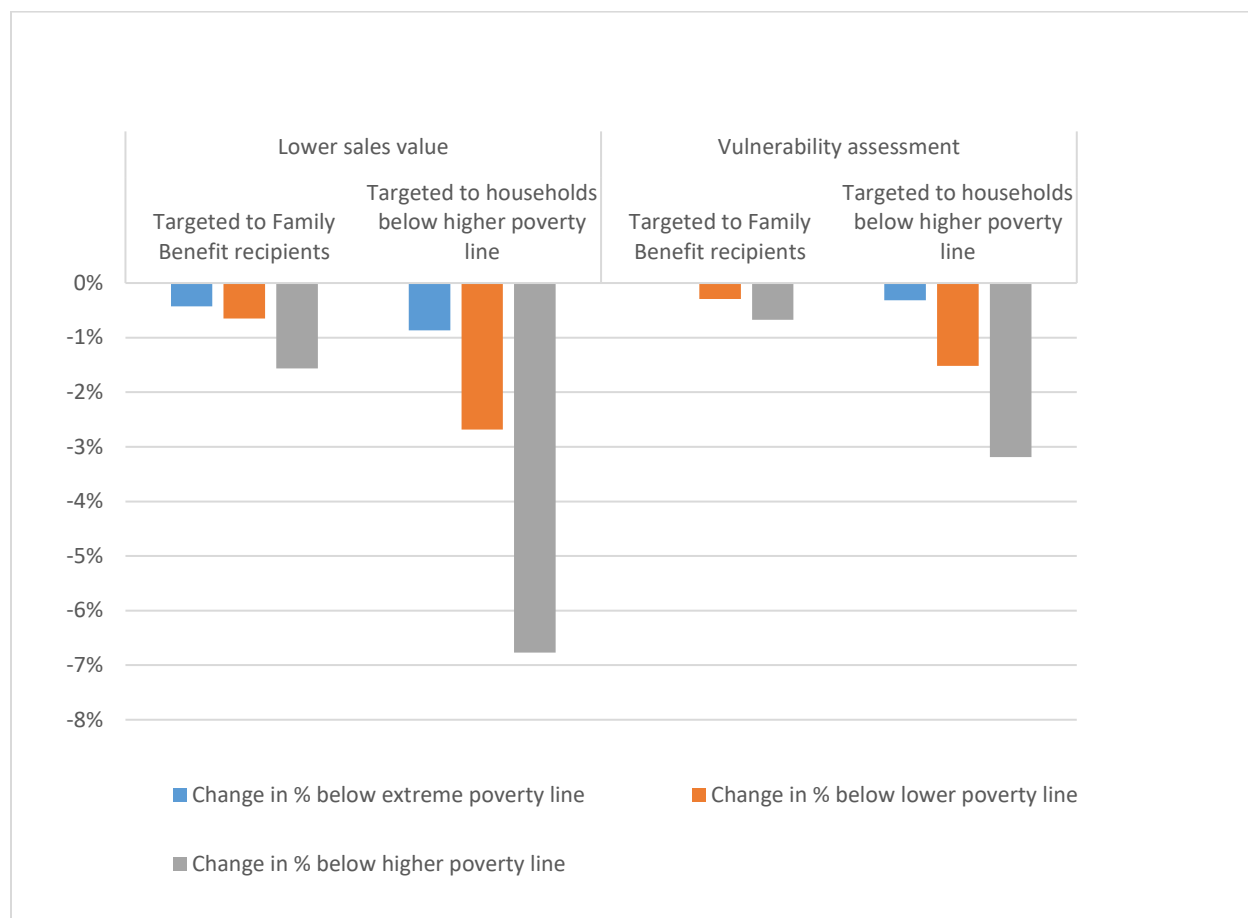
the same mechanism could have brought about larger reductions, even if there was an inclusion error in the mechanism.

**Figure 17. Changes in overall poverty rates in different scenarios**



Source: Authors' elaboration of Households' Integrated Living Conditions Survey 2015 (Statistical Committee of the Republic of Armenia, 2024. Household's Integrated Living Conditions Survey anonymised microdata database (by households). In: *ARMSTAT – Statistical Committee of the Republic of Armenia*. Yerevan. [Cited 14 March 2024]. <https://armstat.am/en/?nid=205>).

**Figure 18. Changes in overall poverty rates in model-based simulated scenarios**



Source: Authors' elaboration of Households' Integrated Living Conditions Survey 2015 (Statistical Committee of the Republic of Armenia, 2024. Household's Integrated Living Conditions Survey anonymised microdata database (by households). In: *ARMSTAT – Statistical Committee of the Republic of Armenia*. Yerevan. [Cited 14 March 2024]. <https://armstat.am/en/?nid=205>).

### 5.2.2 Model-based simulated reduction in poverty

When a model was used to estimate increase in consumption corresponding to increase in incomes, the impacts were smaller throughout (Figure 18). When all poor households were targeted and the income impact of the package corresponded to the estimated sales value of the produce at the lower sales prices, the reduction was of 6.7 percentage points. With FB targeting, it was 1.6 percentage points. When the additional income from the vulnerability assessment was used, the corresponding values were 3.2 percentage points and 0.7 percentage points. The latter values may have been underestimated, as the estimated coefficient for the link between income and consumption was relatively low. The measurable linkage between household income and consumption may have been weak for various reasons, such as unpredictability of income or indebtedness, income seasonality or a larger share of consumption not accounted for in the income measure. Furthermore, measurement errors in the data could have contributed to a biased estimate. The income from the packages in these simulations was included as average additional income per month, rather than allocated to the months when it was actually received. In the case of a snapshot of seasonal income, there was likely consumption

smoothing as such predictable additional income could feed into consumption more directly. Thus, the estimated consumption propensity most likely underestimated the impact on consumption. The quantitative rapid assessment showed that saving was not particularly common among the studied households and found, in the qualitative study, that households largely consumed the additional produce and income. This suggested that these estimates represented a lower bound to the impact on poverty. Furthermore, as before, the low coverage of the FB among the poor partly explained the small gains.

However, yet another factor remained unexplained: the provision of additional income may have very different implications depending on the conditions of the households. In the long run, households might change the allocation of their labour and resources to different income-generating activities. Evidence generated by FAO has shown that, contrary to common beliefs, cash transfers are often invested in income-generating activities rather than reducing household labour supply (Daidone *et al.*, 2019). In the case of production support, it should be ensured that the production potential of the households is genuinely enhanced instead of (partially) replacing other sources of income or households losing their social assistance benefits. On the other hand, as shown by the qualitative study, in a system with stringent eligibility rules for social assistance, the fear of losing the benefit also risked obstructing productive activities,<sup>16</sup> which may have led to weaker effects than expected.

### 5.2.3 Consumption of food rich in animal protein

For consumption of food rich in animal protein, the rapid assessment did not provide a numerical estimate of the increase in consumption of animal-based protein for the household or different members thereof. The results of the microsimulation showed that the potential impact of the packages was very high, if the households completely consumed the additional production themselves. The increase was as much as 110 percent for FB recipients and 154 percent for eligible poor households, which also reflected their low initial consumption of such items.

Based on the results of the rapid assessment, it seemed that a part of the livestock production was directly channelled into consumption. However, the produce was also frequently sold to obtain money to cover other expenses. As discussed in the context of the results of the qualitative assessment, the FGD participants estimated that 15 to 30 percent of the produce was sold or bartered and the rest consumed, sometimes in a processed form. Therefore, the increase through own consumption could be relatively large; for example, for FB, a sales rate of 25 percent would have meant an 87.5 percent increase in the consumption of food based on animal protein. However, in effect, the additional consumption of livestock produce could entail a lower value for the household than the hypothetical market value because, in the presence of perfect markets, the households' consumption choices may have been different. Nevertheless, these results highlight the strong potential impact of provision of livestock, as done in the pilot packages.

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<sup>16</sup> Unemployment benefit disincentive effects are another example.

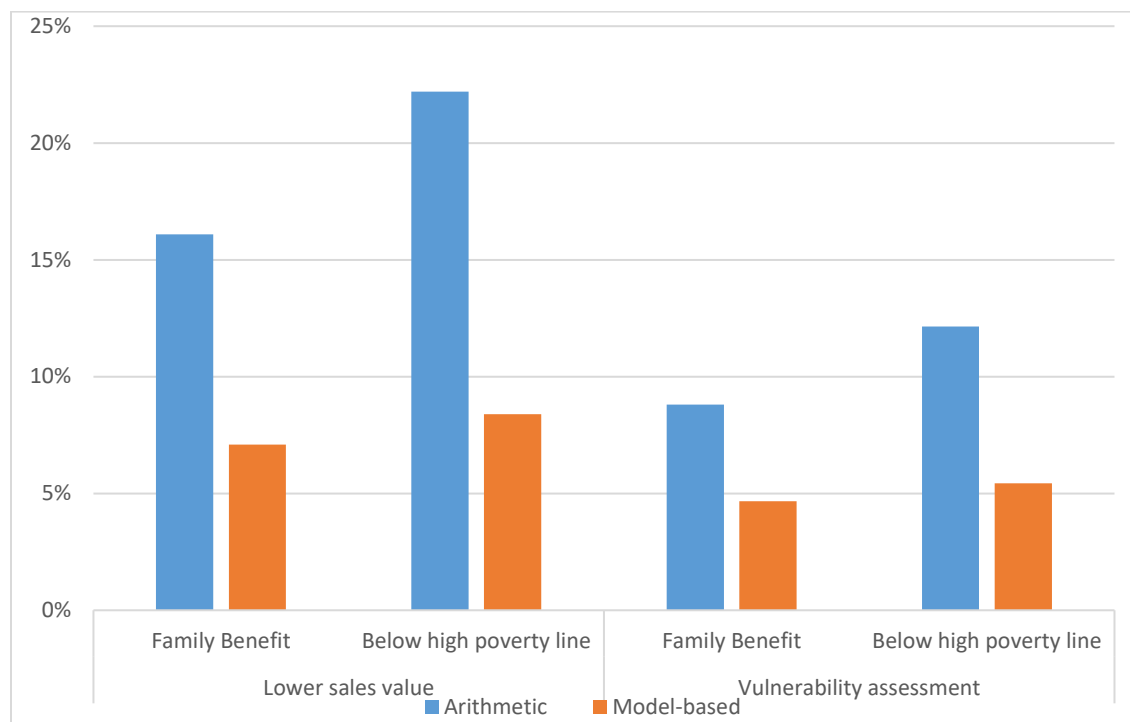
Assuming that households simply generated additional income at lower sales prices and channelled it towards consumption of foods rich in animal protein in the same proportion as before, the increase was much lower, but still not negligible: for FB recipients, the increase was 16 percent, while for the eligible poor it was 22 percent, reflecting the proportional increases in total consumption. With the estimated value of additional income based on the vulnerability assessment, the figures are lower: 8 percent and 12 percent, respectively. Even in the absence of direct effect and low sales prices, the intervention would have clearly increased the consumption of food based on animal protein, although self-consumption clearly increased the impact – as was also the pilot’s ultimate aim. In the actual outcomes of such interventions, there would likely be heterogeneous impacts, because preferences and market access and other background factors would vary.

In the modelling exercise, it was estimated how consumption of foods rich in animal protein depended on household income and livestock holdings, in addition to other explanatory factors. Predictions were generated to assess the overall impact. The model predicted lower increases in the consumption of foods rich in animal protein in the two targeted groups (7 and 8 percent respectively, when FB beneficiaries or poor households were targeted) (Figure 19). When the approximate additional income from the vulnerability assessment was used, the values were even lower, although broadly similar (4 percent and 5 percent for FB beneficiaries and poor households, respectively). Although the actual impact was likely to be higher for many households as per the arithmetical results and high degree of self-consumption, the fact that the model indeed found a significant relationship between both income and livestock holdings and consumption of food based on or rich in animal protein<sup>17</sup> further corroborated the perception that livestock interventions are generally capable of increasing the consumption of animal-protein-based food.

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<sup>17</sup> Growth in income of 1 percent generated roughly an increase in consumption of food rich in animal protein of 0.30 percent. Each livestock unit increased consumption of food rich in animal protein by 1.8 percent.

**Figure 19. Estimates of change in expenditure on food rich in animal protein**



Source: Authors' elaboration of Households' Integrated Living Conditions Survey 2015 (Statistical Committee of the Republic of Armenia, 2024. Household's Integrated Living Conditions Survey anonymised microdata database (by households). In: *ARMSTAT – Statistical Committee of the Republic of Armenia*. Yerevan. [Cited 14 March 2024]. <https://armstat.am/en/?nid=205>).

When contrasted with the impacts of social protection interventions alone, the productive intervention could provide a significant enhancement. In 2018, the FB reduced the overall poverty rate by 2.4 percent and, among the beneficiaries, from 65.6 percent to 48.3 percent (Statistical Committee of the Republic of Armenia, 2019). The analysis showed that when the full value of the packages was considered, poverty among rural FB beneficiaries could be reduced from 53 percent to 26 percent in the 2015 scenario. At the lower value of the package, the poverty rate could be reduced to 28 percent; with the vulnerability assessment values it could be reduced to 35 percent. In relative terms, such reductions were larger than those achieved through the impacts of the FB.

The comparison highlighted that the Cash+ package can have a potential impact similar to or even larger than that of the actual FB, although it must be noted that households should be able to continue their income-generating activities sustainably and not significantly reduce them or lose the FB. Furthermore, issues limiting the expansion of agricultural activities could hinder its potential effects and their sustainability.

## 6. Conclusions and policy recommendations

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This report describes the results of a rapid assessment and microsimulation analysis of a Cash+ pilot in Armenia, including an assessment of the impacts of the COVID-19 pandemic. The Cash+ pilot complemented the existing national social protection programme, particularly the FB, with agricultural activities and training to improve the food security and nutrition of the beneficiaries through livestock production and indirectly through enhanced cash availability. By strengthening households' agricultural activities and asset base, the pilot sought to build their resilience when encountering severe agricultural, economic or other kinds of shock.

The households that participated in the pilot showed a positive trend in their diets, with the frequency of animal-protein-based meals for children and women increasing in the pilot group. The microsimulation showed that such an intervention has the potential to improve the diets of the poorest people, through increased consumption of animal protein at a large scale. Overall, this points to the direct impact pathways from agriculture and social protection on diets, especially for rural poor smallholders.

There also seemed to be improvements in food security, observed through the relatively better trends highlighted by reductions in the frequencies of experiencing certain elements of food insecurity. The COVID-19 follow-up survey, however, showed that the pilot households could not be completely protected from food insecurity in the case of a large idiosyncratic shock having an impact on all economic activities. Still, they maintained a slightly higher dietary diversity than the comparison households and seemed to source food from their own production in the face of the emergency. This highlighted the importance of supporting the agricultural production of poor rural households.

The pilot participants also reported improved income generation from agricultural production and livestock activities. The qualitative rapid assessment confirmed that, generally, the FB provided for the household's survival needs and was usually complemented by temporary or casual labour and, when possible, with agricultural production. The pilot strengthened income from agriculture, and the COVID-19 follow-up survey suggested that the pilot participants had relatively more positive predictions regarding a drop in their income during the COVID-19 crisis. Although it is not known whether the expectations materialized, this suggested that such households had slightly more confidence in withstanding the shock, possibly because they received a regular income.

Despite relative improvements in the pilot participants' outcomes, barriers to expanding agricultural production were still present. This showed the need to provide broader services and complementary activities to support agriculture as a sustainable productive activity. Agricultural production was sufficient to support households' own consumption and minimal income generation. However, the current levels of agricultural production were considered too low to allow these households to effectively participate in local markets and wider income generation and would have required further support to move into a next phase of production. This highlighted the need for a phased approach to the support given for poor small rural households in order to build up their agricultural capacities to yield a sustainable and regular income. This focus on agricultural

support may have been optimal for poor smallholders. However, this may need to be adjusted for other poor rural households, potentially in combination with other income-generation options.

The perceptions of the pilot participants regarding agricultural activities obtained through the qualitative rapid assessment showed that there were a number of challenges in making a sustainable exit from poverty through agriculture. The quantity of agricultural products sold was limited, and local barter exchange instead of cash sales was common. Several barriers – including access to inputs and financial resources, natural disasters and uncertain prices – prevented expansion of agricultural production. While there were discernible relative improvements in some of the key outcomes, the changes were not radical.

Issues that required further attention included nutrition information and intrahousehold dynamics. The FGDs highlighted that no particular change in knowledge had been experienced. Attitudes regarding the intrahousehold distribution of food and resources were considered persistent, although the quantitative survey did show that children and women had increased their intake of animal protein. This, however, was not yet reflected in any major changes in intrahousehold distribution, with increased production likely to have similar impacts on all household members. Existing cultural constraints in intrahousehold dynamics persisted, favouring the nutrition requirements of men in the households.

The pilot yielded important lessons and recommendations and highlights areas for improvement. This type of integrated support can deliver results, although with some reservations. To scale up the project and to attain meaningful and sustainable impacts on poverty, it would be necessary to address the barriers to expanding agricultural production and sales. There must be emphasis on policies aimed at enhancing agricultural production, such as beneficiaries of social assistance having access to the necessary services and markets. The sustainability of similar interventions also requires consideration of agroecological conditions and other local specificities. Some elements of programme design would need to be strengthened in the face of a scaled-up initiative, such as establishing overarching principles for eligibility and type of support provided, matched to the needs and capacities of the beneficiaries. It is essential that the support itself does not create a greater divide between households with different levels of income-generating capacity.

A further recommendation is to pay more attention to the gender aspects. There is a need to incorporate greater support for women's empowerment in the design and to contribute to the equitable intrahousehold distribution of food and resources that have strong implications for women. Similarly, enhancing knowledge of nutrition would require a more intensive intervention, which could be linked to wider strategies of healthy diet promotion.

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# Annex 1

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## Microsimulation methodology and assumptions in different microsimulation scenarios

In the microsimulation analysis, new consumption aggregates were calculated for each household deemed eligible to participate in the intervention. Three different scenarios were simulated, varying in their assumptions about how the additional production from the inputs generated impact on consumption. The scenarios vary according to whether the additional production is consumed or sold, and the price obtained from the sales thereof. For scenarios in which the produce is sold, there are further assumptions on how the additional monetary income affects consumption overall or consumption of food rich in animal protein.

The simplest case, Scenario 1 (Table 1), is based on the assumption that the additional produce is completely channelled towards additional consumption, either through self-consumption or sale at market price and subsequent additional expenditure on other goods, and that there is no waste of produce. The new consumption aggregate is calculated by simply adding the value of the expected production to the total consumption per adult equivalent, using the same prices that are used for calculating consumption aggregate. These prices are available from the supplementary files provided by the Statistical Commission of the Armenian Republic the additional cost of animal keeping is subtracted from this consumption.

For protein consumption, the assumption in Scenario 1 is that the household completely consumes their own produce and does not reduce the consumption of items purchased before receiving the package. This is of course unlikely to be realistic. However, it presents an upper bound to the impact on consumption of animal-based products for the cow package. In the case of the package with chickens, the eggs are consumed completely and the income from raspberries is assumed to be spent on food rich in animal protein, in the same proportion as the share of consumption of such products of total consumption in the original consumption basket. In case of high-income elasticity of protein, the value of protein-rich foods might increase even more. However, it can be considered a reasonable assumption that full self-consumption reflects the upper limit of additional consumption, as households are likely to consume a part of the produce and sell the rest to obtain cash for other expenses.

It is assumed that the calf born is sold and the value of milk used to feed the calf is subtracted from the total amount generated. The estimated veterinary cost is subtracted in the same proportion as the consumption of protein-rich food as a share of total consumption. Thus, in the case of protein consumption, the deduction is made assuming that the share of the cost absorbed by other goods is the same as the share of such expenditure out of overall consumption before the intervention.

The rapid assessment revealed, however, that the effective price of milk was often much lower than the actual market price in 2015. In Scenario 2, the households generate income from the package by selling produce, although at lower prices. This income is then fed into a similar scenario whereby the net value of the produce sold is fed into total consumption. The value of foods rich in animal protein is calculated as the household's

spending of additional income on such produce in the same proportion as before. As consumption of such foods is often sensitive to income and consumption of expensive food items increases with income, this is likely to reflect the lower bound of the impact on their consumption, in terms of arithmetical calculation.

In the arithmetical scenarios with full increase in consumption, the household does not experience the full costs of maintaining the animals. During the pilot itself, they received feed for the animals. Therefore, the results in scenarios 1 and 2 reflect the situation during the initial pilot. Also, in scenarios 1 and 2 the returns relating to the raspberries were equal to the approximate amount generated in the first year. Production in the second year was likely to be much larger, subject to establishment being successful. In the long term, the beneficiaries must provide feed for the cow and the chickens themselves. The cost of purchased feed can be approximated based on the amount needed and the prices of feed. However, in reality, households often use their own grass or pastures to feed the animals and it is unlikely that they will need to bear the full monetary cost. To assess longer-term impact, Scenario 3 selects the estimated net income used in a vulnerability assessment, which estimates the income from a cow as AMD 150 000 per year and from a calf as AMD 90 000.<sup>18</sup> The income from raspberries was set to the estimated income from the second year of raspberry cultivation. In the arithmetical simulations of Scenario 3, the increase in overall consumption and protein consumption were calculated as in Scenario 2.

Scenarios 2 and 3 also entailed the calculation of model-based scenarios. Model-based scenarios use a regression analysis to estimate the impact of additional income on total consumption and consumption of animal-based protein (the models are presented in Annex 2). Total consumption is commonly used to measure the living standards of households in developing countries. For a number of reasons, consumption does not necessarily equal income at any given time. There is seasonal variation in income and households tend to smooth their consumption over time. Income can be used for saving or paying off debts, in addition to consumption. Durable objects are purchased only occasionally but generate user value throughout their lifespan. Furthermore, there are likely to be measurement errors in both variables, although income is often considered less reliable in this context (Statistical Committee of the Republic of Armenia, 2016). As in these data, the measure of consumption includes all consumption, irrespective of source. It also includes durable goods and housing as well as self-consumption of home-produced goods. The income variable, instead, includes only the actual income and in-kind remittances. A model for household consumption was estimated whereby the actual income was used to explain total consumption, with further explanatory variables such as household characteristics, access to land, distance to markets and livestock.

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<sup>18</sup> These values are from 2018. However, because they represent an approximated value, they were not deflated. According to the consumer price index, prices were only 3.5 percent lower in 2015, which means that inflation correction would have made only a marginal difference to the results. Similarly, according to the agricultural prices collected by the Statistical Commission of the Armenian Republic, the average price of diagnostic services for animals had increased by 7 percent from 2015 to 2018; however, at the same time, the price of inoculations had declined by 13 percent. Thus, the approximated cost of veterinary services was kept at the value estimated in 2019.

For the model-based scenarios 2 and 3, income was increased as explained in the arithmetical scenarios. Livestock holdings changed as a result of the pilot, and a new value for total consumption was calculated using the model parameters. The random residual term remains the same as in the initial estimation based on actual values, such that the simulation does not take into account year-on-year random variation in consumption. It is notable that income only partially explains consumption; the other variables are also significant.<sup>19</sup> This is consistent with the idea that households smoothen their consumption over time and also provides a justification why it is necessary to simultaneously control for other factors, such as livestock holdings. Nevertheless, it is possible that the strength of the relationship is underestimated because of measurement errors. However, for the purposes of this study this provides an interesting comparison. A similar model was estimated for consumption of food rich in animal protein. Increased consumption of the value of protein-rich animal-based products is modelled as taking place through increased income and increased presence of livestock.<sup>20</sup>

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<sup>19</sup> Although the whole potential sales value of the production is included, having livestock may still influence consumption because the sales value is considered to be lower than the prices at which the consumption aggregate is calculated. In case of excess production, self-consumed produce would contribute to consumption more than income generated from sales. Furthermore, households may opt to sell more of their other products instead of milk to generate the same income and to consume the milk produced.

<sup>20</sup> Another option would be to estimate a full demand system for different types of goods. However, for the purposes of this study, a simpler approach was considered adequate.

## Annex 2

### Models of total consumption and consumption of animal-based protein-rich food

|   | Ln (total consumption per adult equivalent) | Ln(consumption of animal-based protein-rich food per adult equivalent) |
|---|---|--|
| Ln (total income per adult equivalent)                    | 0.308***<br>(0.016)                         | 0.301***<br>(0.020)  |
| Female-headed household                                   | -0.013<br>(0.018)                           | -0.050*<br>(0.021)   |
| Number of members under 5 years of age                    | -0.048***<br>(0.013)                        | -0.03<br>(0.019)   |
| Number of members 5 to 17 years of age                    | -0.025**<br>(0.010)                         | 0<br>(0.012)   |
| Number of members 18 to 61 years of age                   | -0.036***<br>(0.009)                        | -0.043***<br>(0.012)   |
| Number of members 62 years of age and above               | -0.075***<br>(0.013)                        | -0.061***<br>(0.015)   |
| Number of members with disabilities                       | -0.02<br>(0.015)                            | -0.061**<br>(0.020)  |
| Number of female members                                  | -0.02<br>(0.011)                            | -0.024<br>(0.015)  |
| Highest level of education in household, primary          | 0.198<br>(0.333)                            | 0.123<br>(0.305)   |
| Highest level of education in household, lower secondary  | 0.339<br>(0.329)                            | 0.18<br>(0.296)  |
| Highest level of education in household, upper secondary  | 0.531<br>(0.326)                            | 0.448<br>(0.283)   |
| Highest level of education in household, higher education | 0.626<br>(0.327)                            | 0.547<br>(0.284)   |
| Cultivated land, hectares                                 | -0.009<br>(0.009)                           | 0.004<br>-0.011  |
| Employed members  | -0.037***<br>(0.011)                        | -0.038**<br>(0.014)  |
| Self-employed members                                     | 0.015<br>(0.013)                            | 0.050*<br>(0.020)  |
| Livestock units   | 0<br>(0.004)                                | 0.018**<br>(0.006)   |
| Livestock units squared                                   | 0<br>(0.000)                                | -0.000**<br>(0.000)  |
| Total available land                                      | 0.011<br>(0.006)                            | 0<br>(0.008)   |
| Distance to markets to sell produce                       | -0.003***<br>(0.001)                        | -0.003**<br>(0.001)  |
| Constant  | 7.375***<br>(0.370)                         | 5.392***<br>(0.361)  |
| R-squared   | 0.334                                       | 0.241  |
| N   | 5 164                                       | 5 163  |

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

The models also include dummies for interactions of rural/urban localities and regions.

Source: Authors' elaboration of the Households' Integrated Living Conditions Survey 2015 (Statistical Committee of the Republic of Armenia, 2024. Household's Integrated Living Conditions Survey anonymised microdata database (by households). In: *ARMSTAT – Statistical Committee of the Republic of Armenia*. Yerevan. [Cited 14 March 2024]. <https://armstat.am/en/?nid=205>).



## Enhancing diets and resilience

### Results from a rapid assessment and microsimulation study of a Cash+ pilot in Armenia

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The Cash+ approach entails provision of a combination of cash and productive inputs, including training. It aims to improve household food security, nutrition and resilience and to strengthen both access to food and generation of household income.

This study describes the results of a rapid assessment of the results of an FAO Cash+ pilot in Armenia, combining both qualitative and quantitative data collected in 2019, and an assessment of the potential impacts of a scale-up of the modality using a microsimulation methodology.

The quantitative rapid assessment suggests that the households that received the complementary intervention experienced relative improvements in food security and in the frequency of children's consumption of animal-based protein, fruits and vegetables. The qualitative study corroborates this. The microsimulation results also highlight the potential for significant increases in the consumption of animal-based protein across the target population.

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