WFP EVALUATION

Resilience Learning in Niger

Impact evaluation endline report

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Acknowledgements

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Key personnel for the evaluation

WFP Office of Evaluation

Director of Evaluation	Anne-Claire Luzot
Deputy Director of Evaluation	Sarah Longford
Head of Impact Evaluation Unit	Dr Jonas Heirman
Evaluation Officer (Impact)	Dr Jennifer Waidler
Evaluation Analyst	Ola Eltoukhi

World Bank Development Impact Evaluation (DIME) Department

Principal Investigator	Dr Patrick Premand
Senior Economist	Dr Paul Christian
Research Officer	Chloe Fernandez
Research Officer	Eric Jospe
Research Assistant	Pulkit Bajpai
Research Assistant	Hersheena Rajaram
Field Coordinator	Abdoul-Aziz Adama
Field Coordinator	Emilien Akotenou
Field Coordinator	Ibrahim Lanignan

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Executive summary

1. Niger's rural population grapples with high exposure to climate-related crises, particularly droughts. As climate change progresses, the frequency and intensity of these shocks are anticipated to rise, posing a significant threat. Approximately 80 percent of the nation's employment relies on subsistence agriculture, and production is heavily influenced by rainfall, with limited abilities to withstand climatic shocks. A cyclic pattern intensifies as vulnerable populations continually witness their income-generating activities being hampered by shocks, preventing them from attaining sufficient earnings to prepare for future crises.

2. The concept of resilience has gained attention because it recognizes the importance of addressing shorter-term humanitarian needs, while simultaneously supporting communities in their efforts to cope with future crises induced by climate change, conflict, and other factors. Many institutions, including the World Food Programme (WFP), have increasingly adopted a resilience-based approach in their programming. In 2018, WFP and the governments of Burkina Faso, Chad, Mali, Mauritania, and Niger launched the Sahel Integrated Resilience Programme, an integrated approach to boosting communities' resilience and ability to adapt to ecosystem degradation, climate change and other vulnerabilities (WFP, 2023).

3. This impact evaluation investigates the impact of integrated resilience programming, including food assistance for assets (FFA), lean season support (LSS) and accompanying livelihood activities, on household resilience. Taking resilience as a household's ability to adapt to their environments, absorb shocks and stressors, and transform their capacities, this impact evaluation combines detailed baseline and follow-up data, covering broad household capacities, with high-frequency data, measuring food security and well-being dynamics. It focuses on household or individual level outcomes. Therefore, it does not measure impacts on ecosystems, nor system-level impacts on soil restoration or food value chains. Impacts are estimated up to two years after the start of programme implementation, between the years 2021 and 2023, and so this evaluation does not record potential improvements in food security and well-being driven by improvements in the ecosystem which may take longer to materialize.

4. The evaluation uses a robust randomized controlled trial (RCT) design to compare households in villages that implemented the integrated resilience programming to other similar villages where the programming was not delivered. The evaluation finds that the programme moderately increases food security and subjective well-being after two years. The investigation of the adaptations that households made during this period to achieve these impacts, found that households intensified their participation in the most common livelihoods in these areas. Specifically, the impact evaluation shows an increase in land area cultivated and in the production of agricultural staple crops. These effects are most concentrated among relatively poorer households eligible for FFA and LSS, and in the primary villages closest to the FFA sites where assets were built or land restored. This is consistent with assets (and not just cash transfers) contributing to the observed impacts on agricultural production.

5. Results from the high-frequency data suggest that the programme does not improve food security during the lean season – that is, in the months between the main planting and harvest periods. This is consistent with the finding that participants increase their agriculture production, and thereby their food stocks when additional food is newly available, and so improve food security in post-harvest months. These seasonal improvements in food security do not sustain throughout the year.

6. In summary, these findings offer some encouraging results on the impact of integrated programmes encompassing initiatives such as FFA, while also highlighting the scope to adjust programming to further enhance impacts on resilience. Participation in these programmes improved food security, particularly benefiting the intended recipients. These positive outcomes correlated with improved subjective well-being as well as capacities to increase agricultural production and mobilize social support.

7. However, the evaluation suggests that further programmatic adjustments could enhance the ability of households to manage ongoing stressors, such as lean seasons. Programme improvements could also further strengthen households' ability to deal with shocks, including by facilitating the smoothing of impacts throughout the year rather than immediately after harvest periods when new food is available.

Additional measures – such as savings group facilitation, household budgeting support, stronger support to off-farm livelihood and diversification, or modifications to transfer methods and timing to make them more predictable, or suitable for "lumpy investments" (those that are difficult to divide or sell in parts) – could significantly improve the potential for resilience-building within these programmes.

8. The Niger impact evaluation is part of a broader research initiative focusing on resilience in the Sahel region known as the *Impact Evaluation for Resilience Learning in the Sahel*. This initiative is funded by Germany's Federal Ministry for Economic Cooperation and Development (BMZ) and shares a similar impact evaluation framework and resilience measurement strategy with Mali. Both the Niger and Mali impact evaluations fall under the Climate and Resilience Impact Evaluation Window (Climate and Resilience Window), established by the WFP Office of Evaluation in collaboration with the World Bank's Development Impact Evaluation (DIME) department. The primary objective of the Climate and Resilience Window is to conduct a series of impact evaluations across various countries using comparable designs to allow the findings to be generalized.

9. The Climate and Resilience Window aims to establish portfolios of impact evaluations across a series of countries using the same (or similar) designs to generalize the results. The first round of impact evaluations aims to understand how WFP FFA or integrated programming layered onto FFA activities (depending on the country) contribute to resilience. The Niger impact evaluation results are the first from the Climate and Resilience Window.

1. Introduction

10. This impact evaluation is part of the Climate and Resilience Impact Evaluation Window (Climate and Resilience Window), which has been created by the WFP Office of Evaluation, the WFP Livelihoods, Asset Creation, and Resilience Unit, in partnership with the World Bank's Development Impact Evaluation (DIME) department.

11. The Climate and Resilience Window aims to establish portfolios of impact evaluations across a series of countries using the same or similar designs to allow the results to be generalized. The first round of impact evaluations aims to understand how WFP food assistance for assets (FFA), or integrated programming layered on FFA activities (depending on the country) contribute to resilience.

12. The concept of resilience has gained attention because it recognizes the importance of addressing shorter-term humanitarian needs while supporting communities in their efforts to cope with future crises induced by climate change, conflict, and other factors.

13. In 2018, WFP and partners launched the Sahel Integrated Resilience Programme, which aims to strengthen the socioeconomic resilience of smallholder farmers and vulnerable populations. The programme aims to build the resilience of food systems and livelihoods of targeted communities, while also strengthening community structures to support social cohesion, and so contribute to conflict prevention and prospects for peace.

14. Against this backdrop, World Bank DIME and WFP, with support from Germany's Federal Ministry for Economic Cooperation and Development (BMZ), set up an impact evaluation to identify the impact of WFP's Integrated Resilience Programme on resilience capacities. This Niger impact evaluation report is the first from the Climate and Resilience Window.

15. The report begins by describing the country context and the programme itself. This is followed by a discussion on the evaluation methodology and design, limitations, and ethical considerations.

16. It then describes the stakeholders, different data sources and tools used. This is followed by a discussion of project implementation. The report then presents the results, combining findings from high-frequency surveys (over 20 months of programme implementation) and endline (two years after programme started) data using regression analysis on key pre-specified outcomes variables. The report concludes by discussing the main findings, conclusions and considerations for future programming.

Country context

17. Niger is a land-locked and food-deficit Sahelian country with a total population of 27.2 million people in 2023[1] and annual demographic growth of 4 percent,[2] the highest in Africa. It is also one of the poorest countries in the world in terms of gross domestic product (GDP). In the 2021/2022 United Nations Development Programme (UNDP) *Human Development Report*, Niger ranks 189th out of 191 countries in the Human Development Index (HDI).[3] Food and nutrition insecurity are driven by poverty, environmental degradation, and other recurring shocks. According to the March 2023 *Cadre Harmonisé*, 3.3 million people were expected to be acutely food insecure during the June–August agricultural lean season. This is the second highest number since the start of the *Cadre Harmonisé* analysis in Niger in 2012.[4]

18. Niger's rural population is highly exposed to climatic shocks such as droughts, and the incidence and severity of these shocks is expected to increase because of climate change. Employment is highly concentrated in subsistence (rain-fed) agriculture, which more than 80 percent of the labour force is engaged in. Cereal crops, such as millet and sorghum, are the most common, and agricultural production is correlated with rainfall variation. Agricultural production is constrained by a short rainy season and limited access to irrigation. Climate-related shocks are particularly frequent in Niger and

[1] UNFPA. 2023. World Population Dashboard: Niger. United Nations Population Fund.
[2] World Bank Group. 2022. Population growth (annual %) – Niger. World Bank DataBank.
[3] UNDP. 2024. Human Development Insights 2023/2024. Human Development Reports. United Nations Development Programme.
[4] WFP. 2023. *WFP Niger Country Brief*. May 2023.

have detrimental effects on rural households. Annan and Sanoh (2018) estimate that Niger's household consumption declines by 31–48 percent when households are exposed to extreme shocks – leading to a wide range of costly coping strategies. Weather shocks are also found to have a negative affect on the adoption of technology and use of modern inputs (Asfaw et al., 2018), and to be associated with large movements in food prices (Aker et al., 2016).

19. Niger has received substantial humanitarian assistance over the years. A range of interventions has been implemented in response to shocks and seasonal food insecurity, including cash and food transfers during the lean agricultural season. Over time, policymakers and development stakeholders have made efforts to design better emergency responses to shocks, and support more permanent approaches to strengthen households' ability to protect themselves against future shocks. These efforts include expanding the coverage of a government-led national safety net programme, as well as layering behavioural change interventions and multi-faceted economic inclusion or livelihood support interventions to promote economic diversification and households' resilience while participating in the national cash transfer programme (Premand & Stoeffler, 2022; Premand & Barry, 2022; Bossuroy et al., 2022).

20. Consistent with these broader efforts at the national level, a major focus of WFP's Country Strategic Plan (2020–2024) in Niger has been to implement integrated resilience activities to protect livelihoods and foster long-term recovery. WFP has established a resilience programme that layers a set of integrated interventions on FFA, including school feeding, health and nutrition interventions, lean season support, and market access. This impact evaluation for Niger identifies the short- to medium-term impacts of WFP's programme on welfare and resilience, as measured by people's capacity to maintain food security while experiencing shocks and stressors.

2. Programme description

21. The WFP Integrated Resilience Programme in Niger aims to promote communities' capacities to absorb "shocks, adapt to risk, transform livelihoods and, more broadly, achieve sustained food security".[5] The programme includes five main components: (i) food assistance for assets (FFA); (ii) school feeding; (iii) preventive and curative nutrition/health measures; (iv) Smallholder Agriculture Market Support (SAMS); and (v) implemented in parallel with lean season support (LSS) through seasonal cash transfers to address the immediate needs of the most vulnerable people in the targeted communities. FFA differs from other forms of delivering food assistance (such as Food for Work or Cash for Work programmes) due to its strong emphasis on asset creation and enhancement, and its impacts on people and communities. Below we describe the pre-intervention programme components as designed. [6]

    - **FFA** is the entry point of the Integrated Resilience Programme. FFA aims to meet the immediate food needs of households while restoring degraded landscapes, improving water harvesting, reducing the risk of environmental disasters, and creating productive assets to secure ecosystem services. These activities are intended to support socioeconomic development by increasing productivity, food production and incomes. They also aim to strengthen social ties between community members and villages by reducing conflict over natural resources. People eligible to participate in FFA receive cash transfers in exchange for working on community assets. New assets are selected through a community-wide participatory process and are built through asset-creation activities tied to cash or in-kind support. Some of the assets are built by households from several surrounding villages. Villages that may benefit from the assets and restored landscapes are identified within the sites. Most sites in the impact evaluation area include activities related to land rehabilitation for agricultural and/or pastoral purposes – for instance, through soil and water conservation activities, protective measures and land restoration Soil Conservation and Soil Defence and Restoration (CES/DRS) activities and assisted natural regeneration activities. Typical examples of related assets include half-moons, stone bunds, dune fixations, grazing areas, and some activities to limit the proliferation of the pest pergularia/cordifolia. Half of the sites include activities to increase access to water for domestic, fishing, and agricultural purposes, mainly through pond restoration. Beneficiary households within an asset site are targeted using the Household Economy Analysis (HEA) approach. Households are categorized into four socioeconomic groups: Very Poor, Poor, Average, and Well-off. Households in the Very Poor and Poor categories are eligible to participate in FFA activities. They are paid FCFA 26,000 (West African Franc) or USD 43 per month to work on the assets, typically for two or three months between March and May, with a few exceptions that are context-specific (for example, some FFA activities can start in November/December or continue in July for tree planting and eradication of invasive species). The cash transfers offer incentives for engaging in these asset-building activities, enabling intended recipients to meet their immediate needs while constructing or restoring assets that will enhance their long-term resilience. To select sites, WFP, government technical services, local authorities and the community make an inventory of the potential and constraints for natural resource development based on a geographical approach[7] and community-based participatory planning (CBPP). Once sites have been identified, surrounding villages participate in the community-based participatory planning process, which serves to identify the priority interventions, including the assets that communities will build. This provides a platform for inclusive community engagement, where the most vulnerable, marginalized and disempowered have a voice in community decisions. Participatory planning facilitates agreements for access to land and water resources for women's groups, youth, refugees, internally displaced persons, the very poor, and returnees (refugees or internally displaced people who have returned, but are not fully reintegrated into their community of origin).

[5] WFP. 2023. *Preliminary Resilience Evidence from Niger*. August 2023.
[6] WFP. 2022. *Impact Evaluation for Resilience Learning in Sahel: Niger Inception Report*. October 2022.
[7] Given the nature of these interventions, geographic targeting is done through the watershed approach to identify intervention sites, which consist of village clusters sharing common water resources. Depending on the region, a site can include two to eight villages.

- **The school feeding component** intends to increase access to education and school retention rates by providing nutritious school meals, take-home rations, and scholarships to adolescent girls.[8] Complementary activities include school gardens, school herds and the installation of grain mills to reduce the burden of chores on women and girls. School feeding activities contribute to dietary diversification and are an entry point for gardening, nutrition, and income generation. These activities also leverage schools as a platform to contribute to food diversification, and to deliver messages on hygiene, family practices, and environmental stewardship. In the villages around the sites, schools and their students benefit from the school feeding component. Girls aged 10–19 years in FFA households are eligible to benefit from an additional school scholarship programme.
- **The preventive and curative nutrition/health component** uses a holistic approach, combining various measures for preventing malnutrition and treating moderate acute cases. This involves distributing nutritional supplements to children, pregnant women, and caregivers, while also integrating nutrition-sensitive strategies into broader resilience initiatives. The programme promotes behavioural shifts by incorporating community-based nutrition initiatives and educational campaigns on essential family practices, gender dynamics, and nutrition. WFP implements the following activities within the resilience programme in Niger:
    - Screening and provision of food supplements to children aged 6–23 months through the seasonal Blanket Supplementary Feeding Programme;
    - Supporting moderately acutely malnourished children (aged 6–59 months) through the Targeted Supplementary Feeding Programme;
    - Providing Specialized Nutritious Food and/or cash transfers to pregnant or lactating women and girls at each prenatal consultation;
    - Campaigns on improving maternal, infant and young child nutrition and feeding practices for better nutrition outcomes; and
    - Promoting the use of crops with high nutritional value in restored areas.

  Specifically, the following support is provided for households with high malnutrition levels participating in FFA activities: (i) distribution of Super Cereal and Super Cereal Plus for each child aged 6–23 months in the household; (ii) malnutrition diagnosis, treatment, or referral to services for children aged 6–23 months; and (iii) and distribution of iron–folic acid for pregnant or lactating women and girls. WFP also supports health centres to run awareness campaigns and to systematically diagnose, treat, or refer to specialized services children aged 6–23 months.

- **SAMS** aims to support the development of value chains and improve the sustainable management of FFA assets through a set of complementary activities, such as storage for reduction of post-harvest loss, support for food processing, capacity building, support for the organization of small producers into farmers' organizations, and market access facilitation. The SAMS component targets farmers' organizations and is seen as a crucial pathway to assign value to assets and increase their returns to local communities. The goals are to: intensify and improve farmers' smallholder production; contribute to women's empowerment; promote sustainable management of community assets and natural resources; improve the livelihoods of small producers (food production, trade, and so on); support farmers' organizations, especially women's groups, to have better access to markets; and increase small producers' incomes. SAMS purchases can typically be used for nutrition, school feeding, or FFA activities. In Niger, one of the main activities is the purchase of cereals (millet) and legumes (cowpeas) between November and February from farmer organizations with a production surplus.
- **LSS** comprises unconditional cash/food assistance provided to very poor and poor households (as per HEA classification, with targeting similar to FFA) to offset the peak hunger and malnutrition period. It amounts to an average of FCFA 30,400 (USD 52) per month for two or three months between June and August. LSS aims to help households to meet gaps in their food needs during the lean season.
- As part of the integrated package, WFP provides technical assistance and strengthens the capacity of local actors to help create a conducive environment for resilience and support investment

[8] This also encourages adolescent girls' attendance and retention in primary and secondary schools, and reduces the risk of early marriage.

sustainability. This includes training decentralized national technical services, municipalities, local management committees and partners, support for policies and guidance at the national level, or cooperation with local universities. More specifically, WFP Niger focuses on strengthening programme quality and enhancing government ownership of resilience programmes by supporting technical ministries (agriculture, environment, education, health) and working with local universities.

3. Evaluation design and methodology

22. The Niger impact evaluation aims to understand how the WFP's Integrated Resilience Programme in Niger contributes to household well-being, livelihoods, and ultimately resilience. The impact evaluation is also part of a broader research agenda – the *Impact Evaluation for Resilience Learning in the Sahel* initiative funded by Germany's Federal Ministry for Economic Cooperation and Development (BMZ), which includes a similar impact evaluation design and resilience measurement strategy in Mali.

Evaluation theory

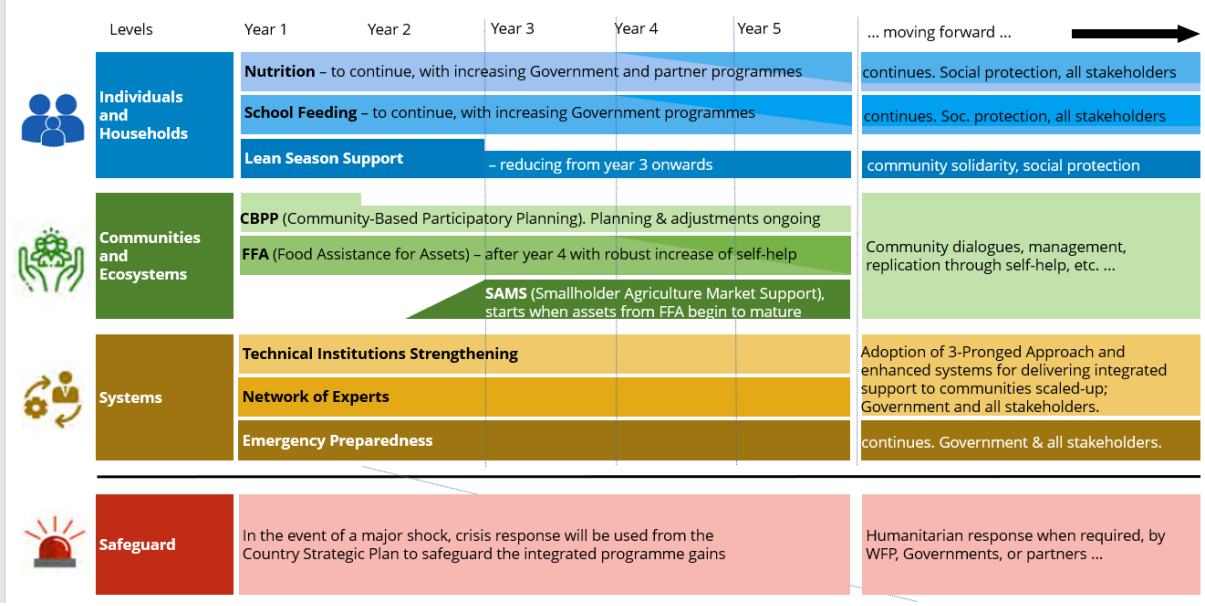
23. The theory of change for the resilience programme assumes that supporting communities through multiple activities focusing on various outcomes will: 1) support people to ensure their short-term well-being; and 2) enhance people's capacity to maintain and improve well-being while facing shocks and stressors. **Figure 1** summarizes the key intermediate outcomes and the impact the programme focuses on. This is a simplified version of the full programme theory of change.

24. The resilience impact evaluation in Niger aims to test the following hypotheses:

- **Hypothesis 1**: In the short term, the WFP resilience programme would support people to maintain their food security by meeting households' immediate food needs, including those that may arise during a shock or during the lean agricultural season.
- **Hypothesis 2**: In the medium term, the WFP resilience programme is expected to support households by strengthening capacities to improve food security more permanently, including when exposed to multiple or recurring shocks. These capacities include:
    - livelihood activities;
    - household assets;
    - financial outcomes (such as savings); and
    - sustained improvements in food consumption over time.

25. This report documents impacts up to two years after the start of programme implementation, covering the initial short-term impacts and medium-term impacts. It is an empirical question whether and when WFP's Integrated Resilience Programme may start to have medium-term impacts on resilience capacities, and the impact evaluation sheds light on this question. Discussions about the timeline of impacts over the longer term are further elaborated on in the conclusion. The established impact evaluation strategy could be leveraged to document long-term impacts (from year 3 onwards) in the future by fielding additional surveys, as further discussed in the section on "Considerations for future programming" below.

Figure 1: Theory of change for the WFP resilience programme in Niger[9]



Evaluation questions

26. The impact evaluation's primary research question is: What is the impact of the integrated WFP resilience package (Food Assistance for Assets (FFA), school feeding, nutrition/health, Smallholder Agriculture Market Support (SAMS), lean season support (LSS) on the resilience of recipient households and communities?[10] The priority is to document households' ability to maintain and improve food security and well-being in the face of shocks. The impact evaluation also assesses how the effectiveness of the WFP resilience package varies by households' eligibility for FFA and LSS support (i.e., their initial poverty or food security levels within targeted communities), as well as by distance to FFA sites (i.e., whether they are located in a village closest to the site or further away). This provides additional information about the value-added aspects and targeting of programme components.

Randomized controlled trial (RCT) design

27. The impact evaluation is designed as a cluster RCT. In Niger, the FFA sites and villages are important entry points for programme targeting and implementation. Many activities critical to the programme are implemented at the village level instead of at the household or individual level. Therefore, the impact evaluation uses a clustered randomized design where FFA sites and villages are assigned to the programme group – hereafter referred to as the WFP programme group – or the "control" group. This is the comparison group not targeted for the WFP programme, allowing for estimating credible and unbiased treatment effects of the resilience package. It is important to note that households in the WFP programme group and comparison group are not prevented from receiving support from any other sources during the impact evaluation. The impacts measured represent the additional effect of participating in the WFP programme in a context where other support may be provided by others.

28. The Niger impact evaluation focuses on new sites that were being added to the resilience programme in 2021 in the regions of: Diffa (communes of Foulatari, Goudoumaria, and N'Guelbély); Dosso (communes of Falwel, Loga, and Sokorbe); and Tahoua (communes of Allakaye, Bagaroua, Bambeye, Garhanga, Keita, Tabalak, and Tebaram). WFP pre-selected sites that met the eligibility criteria for the Integrated Resilience Programme, as well as villages around each of these sites. Site eligibility was based on the programme's selection criteria, which included a vulnerability assessment and a technical assessment. Among eligible sites, the impact evaluation involved randomly selecting a subset of sites to

[9] *Scaling up for resilient individuals, communities and systems in the Sahel* – Operational Reference Note, Regional Bureau of Dakar (RBD), Dakar – October 2018.
[10] The evaluation questions have been identified in collaboration with RBD and Niger Country Office after consultations and an inception workshop with all stakeholders.

receive the Integrated Resilience Programme during the impact evaluation cycle. Respecting a sufficient sample size, the randomization eliminates any systematic differences between the WFP programme group and comparison group, and creates a valid counterfactual (Baseline balance tables are in Annex E/A1).

29. The WFP programme group and comparison group are confirmed to be similar at baseline, which allows us to estimate programme impacts through the difference in outcomes between programme and comparison groups at the follow-up stage. Since logistical difficulties and financial constraints prevented WFP from providing support to all sites that needed assistance, the random selection constituted an objective and unbiased mechanism to decide which of the eligible sites would receive the programme. The comparison sites might become eligible to receive the programme in the future, contingent on funding. Sites selected for the comparison group are therefore not prevented by WFP or the impact evaluation design from receiving any future support that may become available during or after the programme period. The design is depicted in **Figure 2**. Randomization among the pre-selected sites was stratified by communes and type of assets. The stratification ensures balance and provides some insurance against cases of non-compliance (e.g., control sites receiving the programme, or programme sites not receiving it), or possible security issues that may make some sites inaccessible over time. In this case, the affected commune could be dropped from the sample while maintaining the internal validity of the evaluation (although at the cost of diminishing statistical power).

30. The Niger sample includes 91 eligible FFA sites. The catchment areas around these sites contain 266 villages, including 91 primary villages (where the FFA sites are located) and 175 secondary villages (further away from the FFA sites, but where households are equally eligible to participate in FFA, LSS, and other resilience programme components). At the baseline, we sampled all primary villages and one secondary village in sites with multiple secondary villages. This gave us a total of 158 villages in the 91 studied sites. Sample sizes were established based on calculations which indicated that surveying about 60 households per cluster in 91 clusters provided sufficient statistical power.
Table 1 provides the breakdown of the sample by region.

31. Recipients intended for FFA are selected based on their level of vulnerability through a community targeting approach. While all households in the community can benefit from school feeding or nutrition activities, only households identified as “very poor” or “poor” (based on a community targeting exercise using the Household Economy Analysis (HEA) methodology) are selected to participate in FFA activities. The impact evaluation relies on the ability to contrast the programme with comparison groups. The community targeting approach could only be carried out in programme areas. A comprehensive community-based targeting process could not be carried out in comparison communities, given concerns that it could raise expectations about future assistance. Therefore, the impact evaluation and WFP teams developed a lighter community wealth ranking to mimic the HEA targeting exercise across the WFP programme and comparison groups before the baseline survey was carried out and prior to the WFP targeting process. This ensured that programme and comparison households had the same vulnerability levels according to the targeting criteria. Specifically, this allowed for comparison of households that were classified “very poor” and “poor”, and so eligible for FFA and LSS across programme and comparison communities.

32. The impact evaluation sampled a primary village in each of the 91 baseline sites, and one secondary village in sites with multiple secondary villages. This gives us a sample of 158 villages in the 91 sites. Within the 158 villages, the impact evaluation undertook a door-to-door household listing, leading to the identification of 23,414 households. The impact evaluation then drew a sample of 10,079 households (up to 80 households per village), which community committees ranked in a process that mimics the HEA approach used by WFP for community targeting in Niger. The goal of the pre-baseline wealth ranking was to predict which households would be eligible for FFA and LSS (typically households classified as “very poor” or “poor”), and to do so consistently across treatment and comparison areas.[11]

33. WFP and the World Bank’s Development Impact Evaluation (DIME) department worked together to develop a protocol for a household listing and community wealth ranking. The objective was to come as close as possible to the WFP targeting process without raising expectations about programme participation. The steps followed the WFP targeting protocol by creating three subcommittees to rank

[11] Pre-baseline wealth ranking is detailed further in the baseline report (WFP. 2023) and Annex H.

households using the same targeting tool as WFP implementing partners. The enumerators who facilitated the work of the subcommittees were trained by WFP trainers, using WFP content, and targeting tools. The difference was that the process was simplified: the committees ranked only a (random) sample of households instead of all households in the community. In addition, the process was not followed by a village-wide assembly with participation from commune leaders, and did not involve door-to-door verification of households for committee consensus on the ranking.

34. Among the ranked households, we drew a subsample of 54 households per site to be interviewed at baseline. The 4,892 baseline sample households included 3,057 from primary villages (62.5 percent) and 1,835 from secondary villages (37.5 percent). Out of the 4,892 sampled households, 4,714 were successfully interviewed (96%).

35. Following the baseline survey and randomization, WFP implemented a full targeting protocol in the 46 treatment sites. Specifically, DIME shared the list of 11,913 households identified during the community listing in treatment villages. Then, WFP conducted the targeting and shared the targeting datasets with DIME. Considering the broader categories of either "poor" or "less poor", 69 percent of all households were classified the same way, as either "poor" ("very poor" or "poor") or "less poor" ("moderate or well-off").

Figure 2: Randomized controlled trial (RCT) design

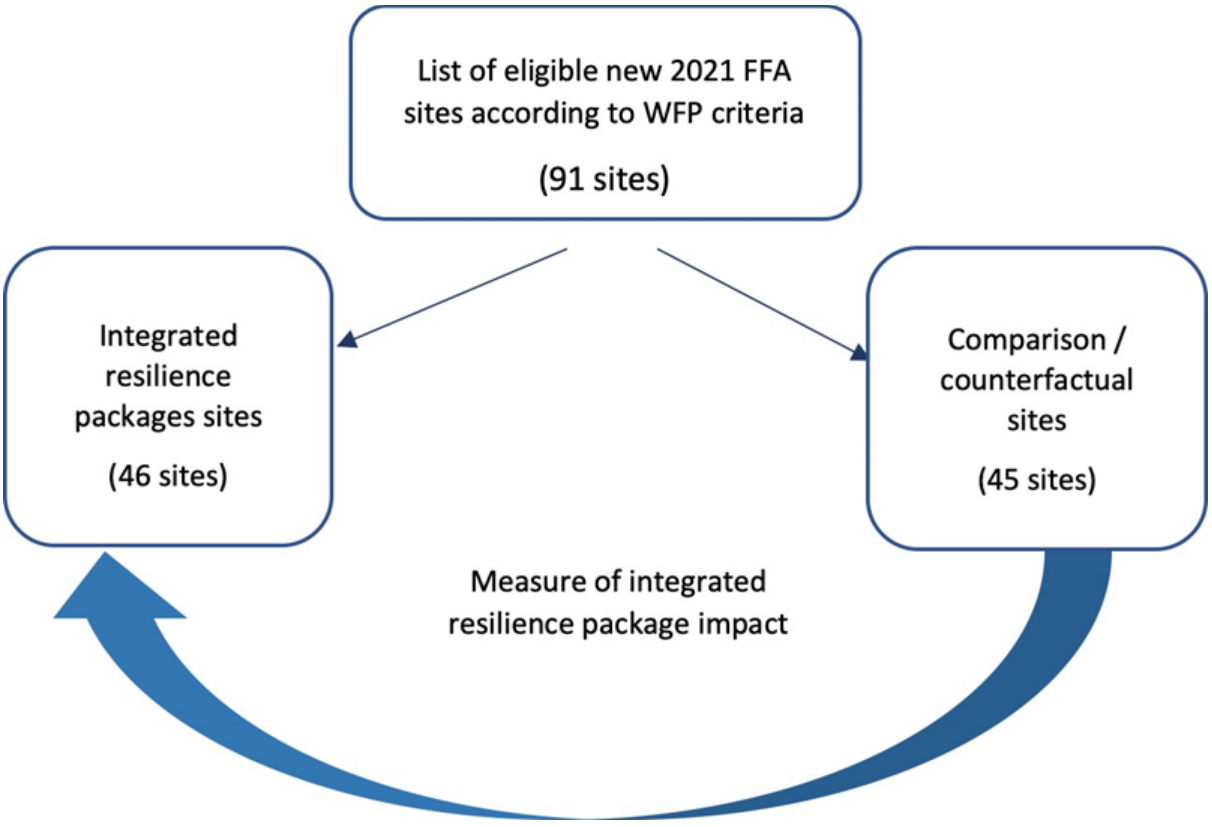


Table 1: Number of households interviewed in the baseline survey by region in Niger (comparison and treatment)

	Households	Share of total (%)
Diffa	936	19.86
Dosso	595	12.62
Tahoua	3183	67.52
Total	4 714	100.00

Limitations and notes

36. This impact evaluation focuses on outcomes at the household and individual levels. Therefore, it does not measure impacts on ecosystems, nor system-level impacts on soil restoration or food value chains.[12]

37. The evaluation uses Intention-to-Treat (ITT) estimates. ITT analysis includes every household surveyed in the programme area who were intended to be enrolled into the programme, regardless of their subsequent participation or withdrawal from the programme (to avoid introducing additional bias due to participants' self-selection during implementation). This means that the analysis includes data from households that may or may not have participated in the programme. There are many possible observable (e.g., roads) and unobservable (e.g., attitudes) reasons why people do or do not participate in programmes when offered. Therefore, to know if a programme offered to a population is effective for an average household, the evaluation needs to include all households that are invited to participate, irrespective of whether or not they effectively participated. Otherwise, we may not be estimating the impact of the programme, but instead the benefits on households already engaged in more resilience practices. The ITT estimate is the most reliable estimate of offering the programme to a population.

38. A limitation is that programme implementation data was only available from the programme monitoring system at the village level. This prevents us from knowing which components each household received, and so limits the assessment of the integration of programme components during implementation. The fact that we can compare primary villages with secondary villages (a proxy for proximity to assets), and "poor" and "less poor" households (a proxy for being eligible for FFA and LSS versus other programme components), partially solves this limitation and allow us to assess the likely contribution of various programme components.

39. Given that the community targeting approach (to identify the most vulnerable households eligible to participate in FFA activities) could only be carried out in programme areas, the impact evaluation and WFP teams developed a simplified community wealth ranking to mimic the full WFP targeting exercise across programme and comparison groups. They did this before the baseline survey was carried out, and prior to the WFP targeting process. This ensured that households in programme and comparison villages could be classified consistently in the various targeting categories. The overlap between the simplified community wealth ranking and the full targeting process was 69 percent (see broader discussion in the baseline report and in Annex H). The implication is that, when we do subgroup analysis and compare "poor"/"less poor" households (which proxies participation in FFA), to understand the added value of FFA (as compared to only receiving the other components), the estimations are less accurate than if the full targeting process had been implemented consistently everywhere, and these comparisons can be slightly less precise. However, we also present results accounting for actual participation in FFA, and show that the results are robust.

40. Although the resilience programme was designed in a gender-sensitive way, with specific activities targeting women or considering the needs of women, this impact evaluation did not randomize the

[12] For more information and evidence on the impacts of a similar programme (in particular, the half-moons that were promoted through FFA) on vegetation, see Mishra et al. (2023).

gender of participants, so we cannot estimate the causal impacts of the programme by gender. The lack of household-level participation data from the monitoring system also prevents the impact evaluation team from reporting programme participation by gender. Despite these limitations, we report heterogeneity of impacts by gender of the household head.[13]

41. Finally, the resilience programme in Niger has been implemented in phases, covering different geographical areas. The start of the evaluation project coincided with the COVID-19 pandemic, which could have contributed to delays and other complications that were not present in previous phases of the programme. In addition, a drought occurred in 2021 and was one of the most severe in many years, which is relevant when interpreting programme impacts, as discussed below. Other more general limitations of impact evaluations, and how they have been addressed, are described in Annex G.

Ethical considerations

42. The evaluation strictly adheres to ethical guidelines, including the 2020 United Nations Evaluation Group standards. Oversight and enforcement of ethical considerations are diligently managed by WFP Office of Evaluation and the DIME team at all phases of the evaluation.

43. Key ethical principles and practices were rigorously implemented:

- **Institutional Review Board approval:** The evaluation team obtained international approval (on 12 November 2020) from an Institutional Review Board for the Climate and Resilience Impact Evaluation Window design, as well as the specific design and measurement elements in Niger. The evaluation team also obtained approvals from local institutions in Niger (based at Niger's Ministry of Health). This ensured that the evaluation complied with local regulations and did not violate any local laws.
- **Informed consent:** Households participating in the evaluation initially consented to WFP programme involvement, followed by separate consent for participation in the baseline survey, each round of the high-frequency, and the endline survey. Refusing to partake in the survey had no bearing on eligibility for WFP support.
- **Privacy during interviews:** To ensure respondent privacy and comfort, interviews occurred at respondents' homes, away from others' hearing range.
- **Training and protocols:** Enumerators underwent extensive training and piloting, ensuring uniform and contextually appropriate questioning. Third-party experts trained enumerators on handling sensitive questions related to intimate partner violence.
- **Ethical oversight:** Ongoing monitoring and management of ethical issues occurred during the evaluation, with additional concerns addressed in line with established guidelines.

44. In summary, the evaluation prioritizes ethical conduct, covering informed consent, privacy, cultural sensitivity, and vulnerable participant protection. Ethical integrity was consistently upheld and monitored to safeguard participants throughout the research process.

[13] For a more exhaustive analysis of gender dynamics in FFA programmes, please see WFP-DIME. 2021. *Cash-based transfers and gender window: pre-analysis plan*.

4. Stakeholder analysis

45. The stakeholder analysis for this evaluation identifies those who may influence or be influenced by the evaluation's outcomes. Stakeholders encompass internal and external parties, including programme recipients. The primary user is the WFP Country Office in Niger, but the evaluation aims for broader use of its findings.

46. Stakeholder categories include:

    - Internal Niger-based stakeholders: key personnel within the Country Office;
    - Internal stakeholders outside of Niger: involving the WFP Office of Evaluation, the WFP Regional Bureau of West Africa (RBD), and headquarters divisions;
    - Populations in need;
    - External stakeholders: comprising international non-governmental organizations (NGOs), donors, United Nations agencies, the World Bank, and local forums; and
    - National stakeholders: including government entities at national and subnational levels, as well as local NGOs.

47. Stakeholder engagement methods differ by category but may involve reviewing and providing input on evaluation documents, actively monitoring the evaluation's design during programme implementation, participating in workshops, and offering feedback on evaluation reports.

48. The engagement aims to ensure that diverse perspectives are considered, and that the evaluation's results are effectively used by stakeholders. A richer stakeholder analysis is presented in the inception report.

5. Data collection

Quantitative surveys

49. Quantitative data for this impact evaluation was collected in several rounds (more details are presented in Annex A). The baseline data collection was completed between January and March 2021.[14] High-frequency data was collected between April 2021 and December 2022 in a subsample of the baseline sample. Finally, the endline data was collected in March 2023 in the full baseline sample, using a household survey covering outcomes of interest for the Climate and Resilience Window and other project-specific indicators.

Table 2: Timeline of data collection

Round	Dates	Households surveyed	Round	Dates	Households surveyed
Baseline	Jan–Mar 2021	4 714	HF6	Mar–April 2022	1 577
HF1*	Apr–May 2021	1 595	HF7	May–June 2022	1 570
HF2	June–July 2021	1 608	HF8	July–Aug 2022	1 553
HF3	Aug–Sept 2021	1 584	HF9	Sept–Oct 2022	1 568
HF4	Oct–Nov 2021	1 595	HF10	Nov–Dec 2022	1 538
HF5	Dec 2021–Jan 2022	1 602	Endline	March 2023	4 706

* HF = high-frequency

50. Of the full sample of 4,892 households, 4,714 households were successfully surveyed at baseline (96 percent), while 4,507 were surveyed at endline (96 percent of the baseline sample). High-frequency surveys targeted a subsample of 1,638 households from baseline, and all rounds achieved a completion rate of 95 percent or greater. Similarly high response rates were achieved in the treatment and comparison group thanks to high-quality field procedures.

Qualitative surveys

51. Before quantitative data collection of the endline, qualitative data collection was carried out in January 2023. The main objective was to inform the development of the endline survey. Ten focus group discussions (FGDs) were organized to gather insights that could complement and/or explain the main results observed from the quantitative analysis from the high-frequency data (more details are presented in Annex B).

[14] WFP. 2023. *Niger, Resilience Learning in the Sahel: Impact Evaluation Baseline Report*.

6. Outcomes of interest and resilience measurement

52. A growing body of the literature on resilience has relied on measuring programme impacts at a single point in time, and documenting positive gains in well-being, sometimes by comparing household in communities exposed or not to shocks (Gunnsteinsson et al., 2019; Marcours et al., 2022; Barrett and Constas 2014, Premand and Stoeffler, 2022). This impact evaluation considers the fact that the capacities needed to improve and sustain well-being are likely to evolve over time, depending on the type and severity of shocks encountered. Therefore, evaluating the effect of programmes on resilience requires measuring well-being over time, including across seasons, before and after shocks, as well as absorptive, adaptive, and transformative capacities. Building on proposals from Barrett and Constas (2014) and Cissé and Barrett (2018) to see resilience as avoiding poverty in the face of shocks and stressors, each evaluation in the Climate and Resilience Window directly measures welfare dynamics to understand resilience outcomes. These measures were calculated from a minimum set of indicators collected at higher frequencies in each country supported.

53. The indicators were selected in collaboration with the WFP Country Office, the Regional Bureau of Dakar (RBD) and the WFP Livelihoods, Asset Creation, and Resilience Unit in Rome. Three factors were considered: (i) operational relevance and importance to the programme components; (ii) a review of relevant literature; and (iii) evidence generation across the portfolio of Climate and Resilience Window evaluations. The primary set of outcomes were measured using food security indicators, including the Food Consumption Score (FCS), Food Insecurity Experience Scale (FIES), and household food consumption. Intermediary outcomes related to livelihoods (such as agricultural production, asset ownership, off-farm income-generating activities) helped us understand the mechanisms of impacts in terms of resilience capacities. We also measured psychological and social well-being, which recorded other benefits beyond the food security and economic impacts of the intervention package.

54. 4 in Annex A summarizes the main outcomes for the impact evaluation in Niger.

55. Outcomes were measured at baseline and endline through a multi-module household survey covering the domains below, which are aligned with the evaluation objectives, impact evaluation inception report, and Window pre-analysis plan. Meanwhile, the high-frequency survey (bi-monthly surveys following the baseline) collected data on a subset of indicators, including food security outcomes, coping strategies, and shocks, as well as the self-reported programme participation over time. An important feature of the resilience measurement approach is reliance on high-frequency data to explore the dynamics of well-being throughout the evaluation period. This approach differs from previous resilience indices, which are static, and measure resilience at one point in time, or before and after an intervention.

Main outcomes

- Food security: FCS and FIES;
- Consumption (food and non-food);
- Income-generating activities (livelihoods): agriculture and livestock, wage employment, non-agriculture business: this includes both participation and income generated;
- Coping strategies: number and types of coping strategies used; and
- Financial outcomes.

Additional outcomes

- Social capital;
- Psychosocial well-being; and
- Migration.

7. Project implementation

56. As explained in Section 2, the Integrated Resilience Programme in Niger includes five main components – (i) food assistance for assets (FFA); (ii) school feeding activities; (iii) nutrition/health support; (iv) Smallholder Agricultural Market Support (SAMS); and (v) implemented in parallel with lean season support (LSS).

57. The amount that participants received through FFA in exchange for their work on the assets is FCFA 26,000 per month for three months in 2021, and five months at the beginning of 2022. People are paid based on the number of days worked (FCFA 1,300/day). Typical examples of related assets include half-moons, stone bunds, dune fixations, grazing areas, and some activities to limit the proliferation of the pest pergularia/cordifolia.

58. The graphs below show how different components of the Integrated Resilience Programme were implemented, expressed as the percentage of total sites (out of the total eligible) receiving the intervention. This data was based on administrative information provided by WFP Niger sub-offices.

59. Programme implementation varies over time. This can affect the programme's ability to improve outcomes, and on the timing when changes might be observed. There is also variation in the integration of programme components. Across 2021 and 2022, nearly all WFP programme sites received two components, and 83 percent received three components, but only 59 percent received four components, and none of the sites received all five components.

60. FFA implementation started in March 2021 in 35 percent of villages, and all participating sites implemented FFA in April and May. In 2022, the FFA programme started in January and was more consistently implemented through May.

61. The school feeding component was implemented in 22 percent of eligible villages through October 2021, when implementation rate increased to 83 percent. In 2022, the proportion of villages benefiting from this component varies between 58 and 67 percent.

62. Activities for the nutrition component started in January 2021; during the first months of the year, around 65 percent of the WFP programme sites were receiving the package. From April to December 2021, 89 percent of WFP programme sites received the nutrition component, which continued in 2022.

63. The SAMS objective is to help smallholder farmers reduce risks such as post-harvest losses. The initiative provides them with market information, facilitates training on cooperative governance and agribusiness, and creates market access. Between October 2021 and December 2022, SAMS activities were implemented in 65 percent of WFP programme sites.

64. LSS involves distribution of cash three months a year, usually between June and August, with monthly payments of FCFA 26,000. Most WFP Programme sites received LSS support in June and in July 2021, continuing between June and August 2022.

Figure 3: Share of WFP Programme sites receiving the resilience interventions in 2021

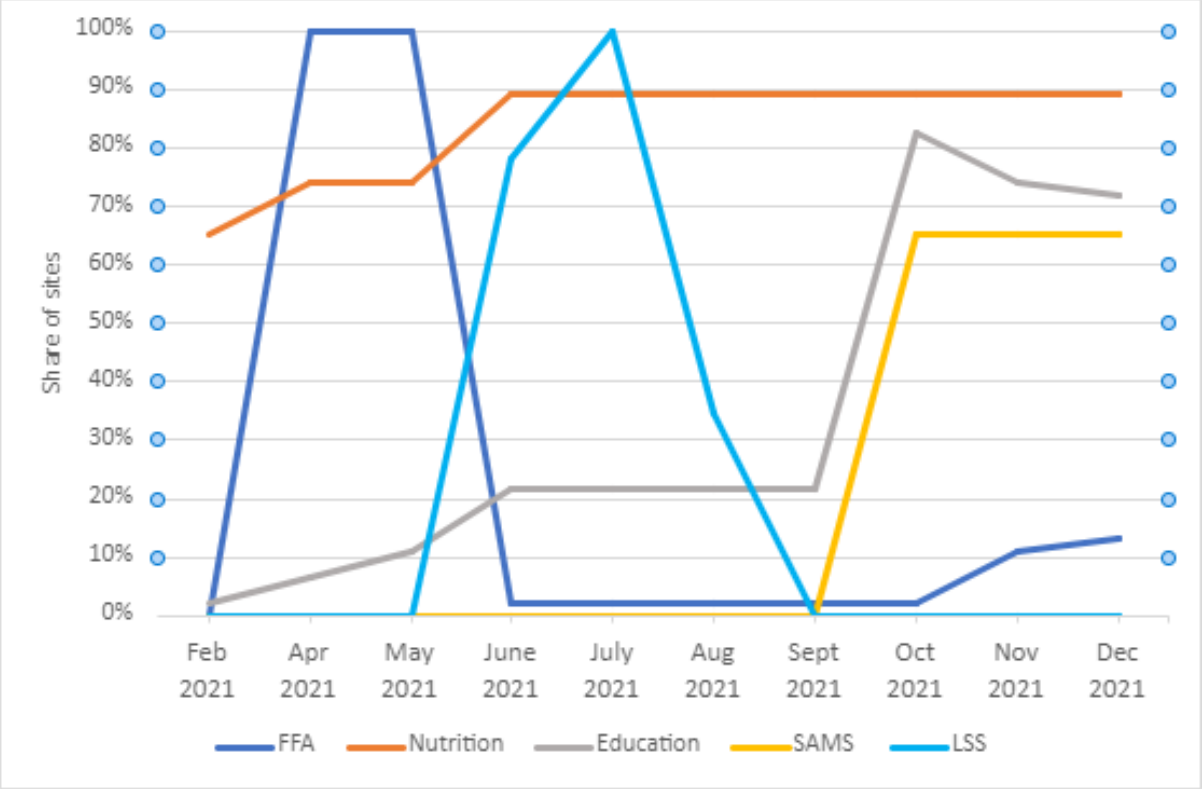
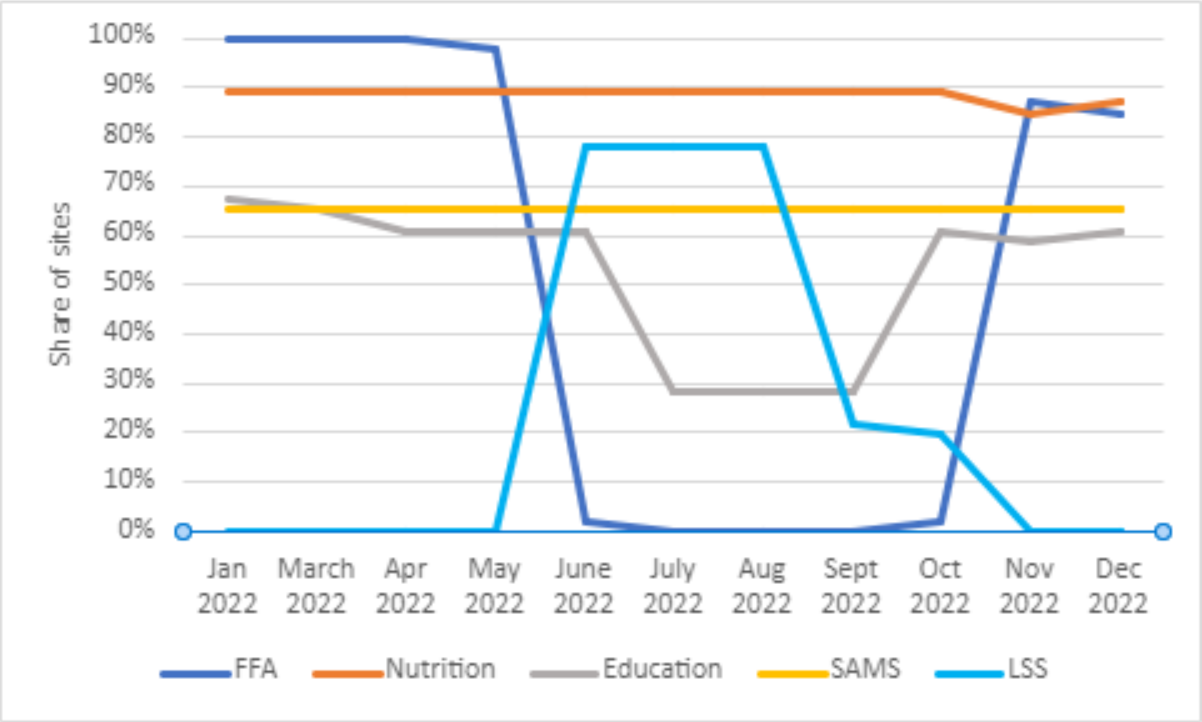


Figure 4: Share of WFP Programme sites receiving the resilience interventions in 2022



Programme implementation insights from qualitative data

65. Before the start of the endline data collection, the evaluation team conducted focus group discussions (FGD) in ten impact evaluation villages (eight in programme villages and two in comparison villages) to better understand recipients' perceptions of the programme and its implementation. Below we summarize the information gathered during the interviews.

Food assistance for assets (FFA) implementation

66. The duration of FFA activities in the programme villages varies across communities from five months to eight months. In many villages, FGD participants mentioned that activities paused in the rainy season when households worked on their lands.

Cash duration and amount

67. Cash transfer duration varies across programme villages, depending on the length of programme implementation. The average transfer amount is FCFA 26,000 per month. FGD participants mentioned receiving transfers, even during the rainy seasons, while the FFA was paused, in line with LSS distribution. The modalities of transfer varied, with some receiving transfers on-site, while others collected cash transfers at central locations such as village chiefs' offices, or mosques. Although most respondents expressed satisfaction with the amounts provided, some of the groups mentioned that there had also been delays in FFA payments and transfer distribution.

Asset creation activity

68. The FGDs shed light on the diverse range of assets that were constructed, revealing their contribution to agriculture, water accessibility, and livelihoods. Participants reported a diverse range of assets. Some assets were public goods such as half-moons designed for soil and water conservation, community gardens, gardening materials, warehouses, pumps, or sheds. Others were more private assets, such as carts for transporting materials, machines for salt production and oil extraction, sewing machines, agriculture tools, and livestock. The status of asset completion varied across villages, with some having fully realized assets, and others reporting uncompleted or completed but non-functional assets.

Community participation

69. Communities actively engaged in the selection process for the assets to be constructed. Some assets – notably pumps – showed the potential to extend benefits to neighbouring villages as well. Overall, the assets were already perceived as valuable at the time of the FGD, with half-moons and community gardens being highlighted as contributing to agricultural practices and food production.

School feeding

70. The school feeding component was only mentioned by FGD participants in programme villages. The frequency of school meals varied widely among villages, with some receiving school meals once a day, and others receiving it twice a day. However, a few villages did not receive school meals.

Nutrition support

71. Almost all villages in both programme and comparison groups received Plumpy Nut nutrition supplements for children. There was a common consensus across the villages that the supplements received were not entirely aligned with the nutritional needs of their children. All villages expressed a need for more nutritious food, such as potatoes, rice, biscuits, milk, wheat flour, vitamins, cereals, millet, eggs, sugar, and beans.

72. Participants in the FGD, especially women, mentioned receiving training from agriculture organizations in skills such as sewing, peanut oil production, and nutrition awareness for undernourished children.

Lean season support (LSS)

73. When the FGD participants were asked if they received any transfers as part of LSS from WFP, none mentioned receiving any transfers from the cooperating partners or WFP.

8. Main findings

74. This section presents the main findings from the impact evaluation. Subsection 8.1 presents the average impacts at endline (after two years of programme implementation) on the main outcomes, including food security, psychological and social well-being, livelihoods and income-generating activities, assets, and financial inclusion. The main results are complemented with detailed statistical tables in Annex E tables 7-25. Subsection 8.2 analyses the impact of programme components by subgroup, including for households that were eligible or ineligible for food assistance for assets (FFA) and lean season support (LSS) (classified as "poor" at baseline), and for households in primary villages where FFA sites are located, or in secondary villages further away from FFA sites and assets. Annex E/A3-A5 contains the related statistical tables. Annex E/A6 presents statistical tables for results accounting for participation in FFA. Subsection 8.3 presents high-frequency results on the dynamics of food security, as well as impacts on shocks, coping strategies, and subjective resilience at endline. Annex E/A7 contains the statistical results.[15]

Average impacts after two years

Food security

75. We start by presenting impacts for the two main food security outcomes, including the Food Consumption Score (FCS), and Food Insecurity Experience Scale (FIES). The WFP standard indicator is the FCS, which is a composite score based on households' dietary diversity, food consumption frequency, and relative nutritional value of different food groups. The FCS is calculated by asking how often households consume food items from the eight different food groups (plus condiments) during a seven-day reference period. The FIES[16] scale records the number of different food insecurity experiences a household had over 12 months, including being worried about not having enough food, being unable to eat healthy and nutrition foods, eating only a few kinds of food, having to skip a meal, eating less than required, running out of food, being hungry and not eating, and going a day without eating. The scale is reversed so that a maximum score of 8 indicates that a household has not had any of these experiences, and a score of 0 indicates that it has experienced them all. On average, a comparison household has a score of 1.8 at endline, indicating they have experienced 6.2 out of eight experiences over the last 12 months.

76. **The WFP's Integrated Resilience Programme in Niger improved the household FCS at endline, two years after its start.** Figure 5 illustrates that the mean FCS in the comparison group at endline is 19.2, and the mean FCS in villages assigned to the programme is 20.7, hence an impact of 1.5 FCS points that is significant at the 5 percent level (Table 7 in Annex E). This represents a 7.9 percent increase in relative terms – a moderate effect. The effect of 1.5 FCS points is equivalent to households consuming fruit or vegetables on an additional 1.5 days in the previous week.

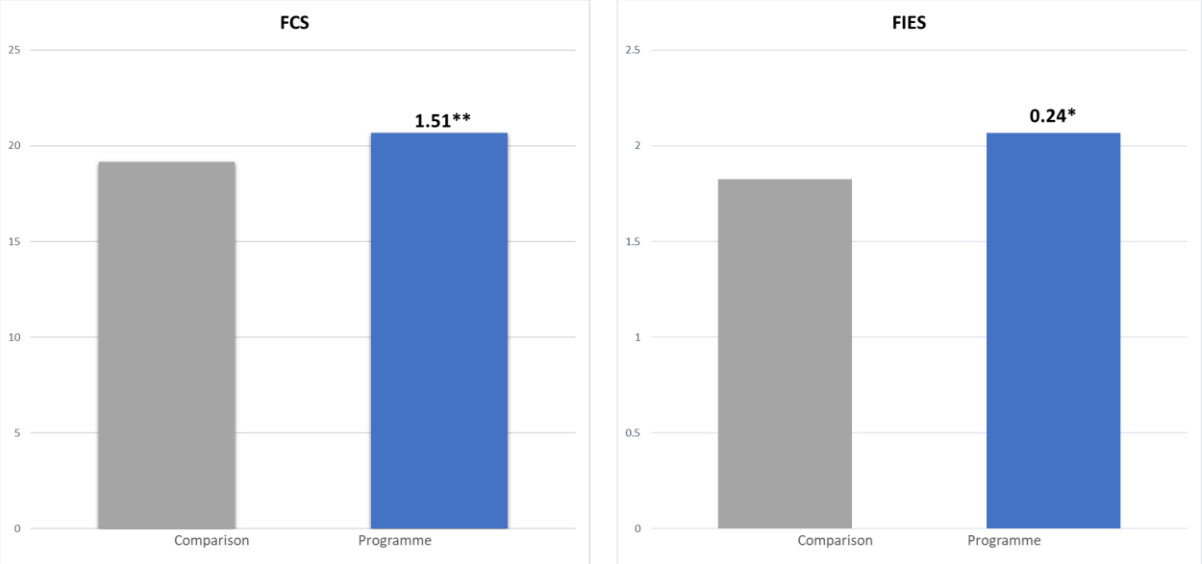
77. **The coefficient of the FIES indicator was also positive and statistically significant.** The coefficient for FIES is 0.24, from a comparison mean of 1.83 – a relative increase of 13.1 percent (significant at the 10 percent level). Overall, the results point to moderate improvements in food security.

78. Improvements in food security were not observed for all food security indicators, including those measured for women and children (Table 8 in Annex E). At the household level, the Household Dietary Diversity Score (HDDS), records dietary diversity through the number of different food groups consumed over the past seven days,[17] using the same food groups as the FCS. The coefficient for HDDS is 0.003, from a comparison mean of 4, an effect that is not statistically significant. An indicator of minimum dietary diversity for women, and another indicator of minimum dietary diversity for

[15] Results are reported with standard levels of statistical significance: the 10 percent level is the minimum; and higher levels indicate greater confidence. Levels are indicated by the stars in graphs and tables, with the 10 percent , 5 percent , and 1 percent levels represented by 1, 2, and 3 stars next to the result.
[16] FIES is not a WFP standard indicator, but the evaluation followed the same measurement as the Food and Agriculture Organization of the United Nations (see FAO. 2018. Food Insecurity Experience Scale (FIES). FAO Statistics.
[17] Please note that HDDS measurement in this study is different to WFP research, where the WFP standard indicator is based on households' self-reporting of the 12 food groups consumed in the previous 24 hours.

children[18] were unaffected by the programme. This suggests that the moderate gains in food security at the household level did not necessarily improve food security for all household members.

Figure 5: Impacts on food security indicators

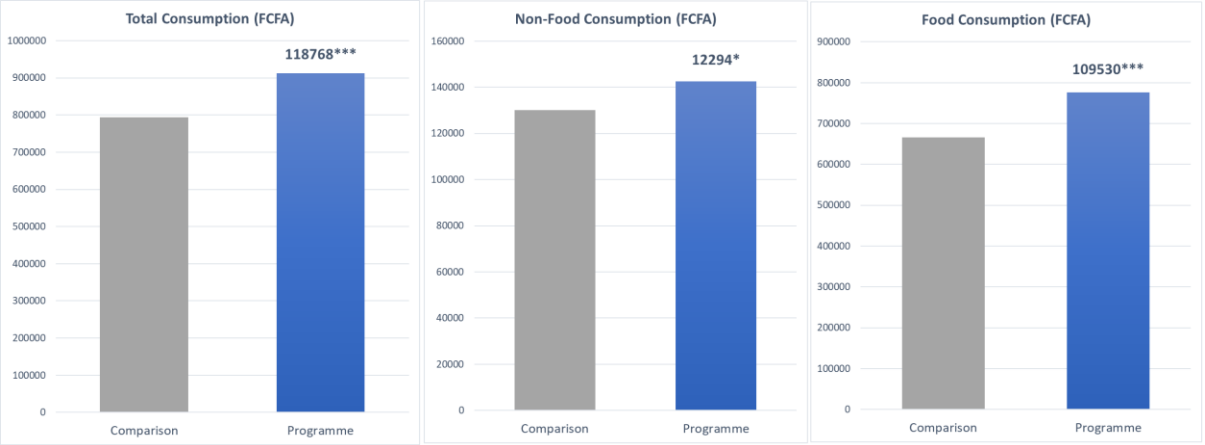


Note - The y-axis shows the average Food Consumption Score (FCS) and average Food Insecurity Experience Scale (FIES - reversed). $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

79. Results on food security were complemented by results on food and non-food consumption over the 12 months prior to the endline survey. The programme also increased total consumption, partly driven by an increase in food consumed from households' own production, and partly by an increase in food purchased (Table 9 in Annex E). Figure 6 shows the impacts on (yearly) total consumption, including non-food items purchased by households, as well as food items that were either purchased or obtained from own production, gifts, or exchanges. Results show that total consumption increased by an estimated FCFA 118,768 per household per year, from a mean of FCFA 790,092, a 15 percent increase relative to the control group. Results on non-food consumption expenditure suggest an increase of FCFA 12,294 per year that is statistically significant at the 10 percent level. However, food consumption increased by FCFA 109,530 per household per year, from a mean of FCFA 666,441 in the control group – a substantial 16 percent increase. The rise in food consumption includes an increase in purchased food, as well as in food consumed from own production. The latter is consistent with an increase in agricultural production, as we further document below.

[18] The children indicator was collected for a smaller number of households with children, hence the estimation has lower statistical power.

Figure 6: Impacts on consumption



Note - The y-axis shows the average value of food, non-food and total consumption in FCFA per year. p < 0.10 (*), p < 0.05 (**), p < 0.01 (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

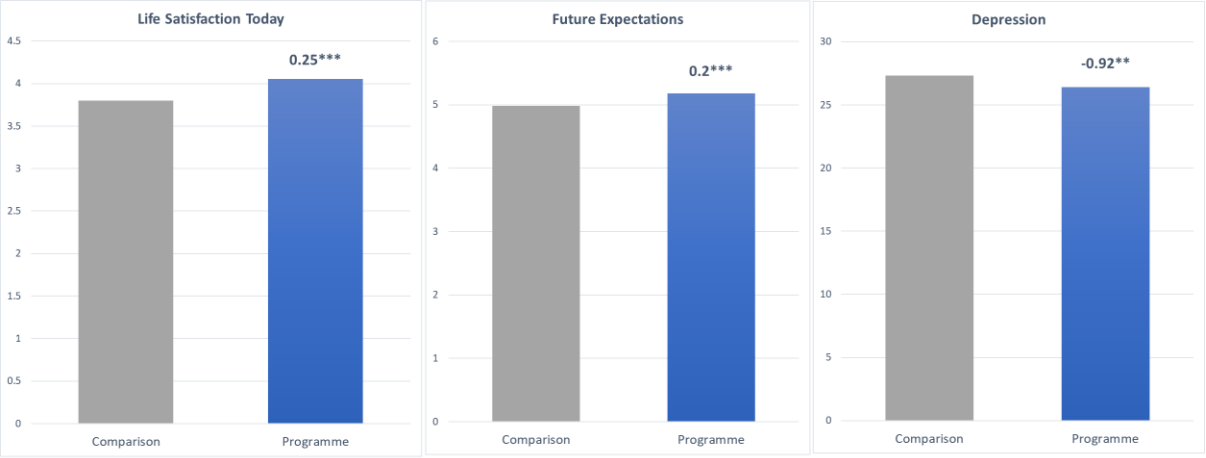
Psychological well-being and social capital

80. We documented impacts on psychological well-being through a range of scales that were previously adapted to Sahel and translated in local languages in Niger by Bossuroy et al. (2022). It includes a MacArthur Scale of Life Satisfaction (on a scale from 1 to 10, with 1 being the worst possible life and 10 being the best possible life), MacArthur Scale of Subjective Social Status (again on a ladder from 1 to 10) and an Index of Future Expectations (measures of life satisfaction and social position for respondents and their children in two years, also on a scale from 1 to 10). It contains a self-efficacy scale, reporting on the respondent's ability to solve problems or overcome difficult situations (minimum of 8 and maximum of 32, with higher numbers indicating higher self-efficacy). It also includes the Center for Epidemiologic Studies Depression Scale (CES-D) built from ten questions (such as the number of days over the last week the respondent felt bothered, sad, without energy, alone, etc.), with a minimum of 0 and a maximum of 70 (higher values meaning more depression).[19] Another related measure proxies disability due to symptoms of depression – such as not being able to do daily work, having a headache, or digestive problems – with a minimum of 0 and maximum of 28. For both the depression and disability proxy scales, a high value is associated with more symptoms of depression. The last measure is a stress index based on ten questions on the frequency of feelings of stress in life events, with a minimum of 0 and maximum of 40, with higher numbers meaning more stress.

81. **The WFP resilience programme in Niger improved several dimensions of psychological well-being**. Beneficiary households' psychological well-being improved, including their subjective life satisfaction (from 3.8 in the comparison group to 4.05 in villages assigned to the programme), social standing (from 3.59 to 3.78), and expectations about the future (from 4.98 to 5.18) – all statistically significant at 5 percent or more. Households in villages assigned to the programme were also less likely to exhibit symptoms associated with depression. Estimates point to improvements in satisfaction with life and self-efficacy, and a decrease in the stress index, though those differences are not statistically significant. Overall, the results suggest that programme participation and improvements in food security are associated with improvements in psychological well-being (figure 7; and Table 10 in Annex E).

[19] The indices related to depression are proxy measures and should not be understood as clinical measures.

Figure 7: Impacts on psychological well-being



Note - The y-axis shows the average McArthur scale of life satisfaction today (1-10), the average index of future expectations (1-10) and the average index of the CES-D depression scale (0-70). p < 0.10 (*), p < 0.05 (**), p < 0.01 (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

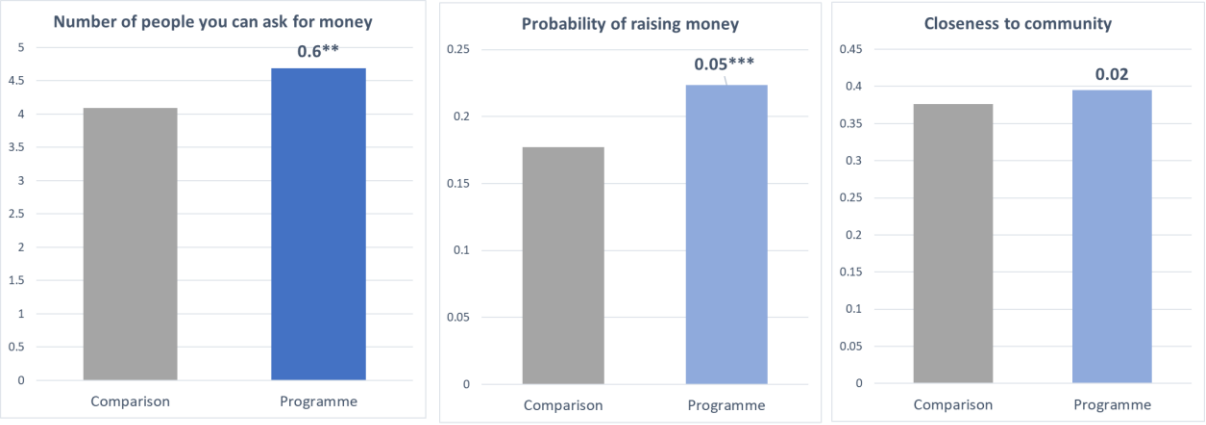
82. We further measured impacts on dimensions of social well-being, which could also proxy some aspects of households' social capital that link to resilience capacities. These recorded households' ability to mobilize financial support, including the number of people the respondent can ask for money in case of need, whether the household can raise FCFA 30,000 if needed, and whether the respondent feels that they can count on the community for financial or personal help. Other variables relate to social cohesion, including trust in other community members, whether there are tensions in the community, or whether the community is perceived as close. The last measure relates to collective action, including the number of groups the respondent is a member of the number of days spent volunteering for the community, and whether the recipient contributed to community projects.

83. **Some dimensions of social well-being improved, in particular, households' ability to mobilize financial support from others**. Beneficiary households reported a greater ability to mobilize financial support from members of their community at times of need: they were able to ask more people for financial help, and were more likely to be able to raise money if needed. **Results were less clear on facets of social cohesion, with changes that are not statistically significant on trust and tensions within the community, as well as on whether respondents report the community as "close".** [20]

84. In terms of collective action, households in communities assigned to the programme were members of more groups, spent more time volunteering in community activities and working on community projects, which may include the FFA assets[21] (Figure 8; and Table 11 in Annex E).

[20] A case study conducted by the International Food Policy Research Institute (IFPRI) in Burkina Faso and Niger suggests that resilience activities, including community planning processes, facilitated meaningful interactions and reduced stereotypes and mistrust. Resilience activities also enhanced relationships with community leaders and local services, while improving the natural resource base and economic prospects of communities and promoting intergenerational trust (IFPRI, 2023). The qualitative data collection conducted for this impact evaluation also highlighted that participants believed that the community planning process actively engaged communities in the decision of the asset to be constructed, which can contribute to reduced tensions.

Figure 8: Impacts on social well-being and capital



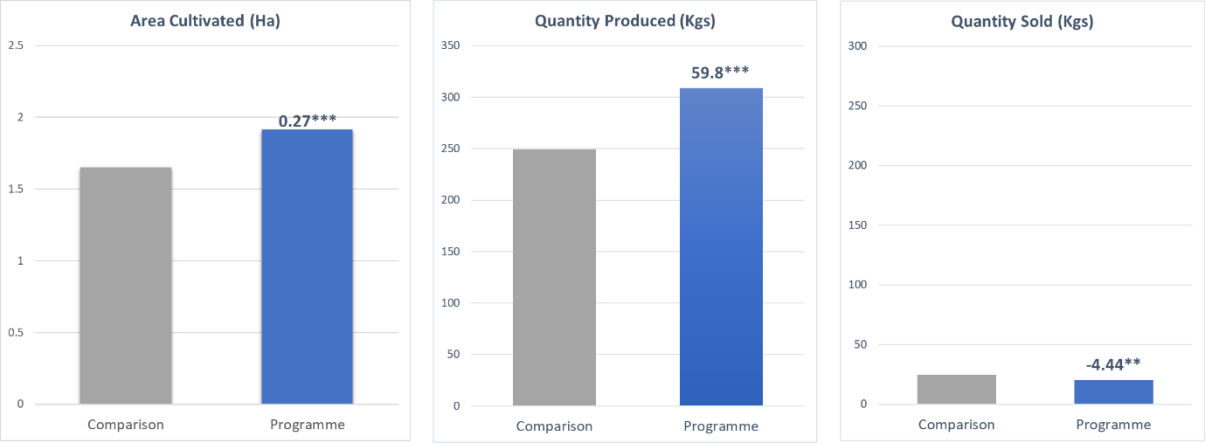
Note - The y-axis shows the average number of people you can ask for money, average probability of raising money and average share of people reporting they are close to their community. p < 0.10 (*), p < 0.05 (**), p < 0.01 (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

Income-generating activities and livelihoods

85. To analyse how the WFP's Integrated Resilience Programme affected households' income-generating activities and livelihoods, we started with agriculture, including participation in agriculture, use of inputs, area cultivated, quantity harvested, value of production, the share of households selling on the market, quantity sold, and value of sales. We examined the results between staple and non-staple crops, and analysed livestock activities, including whether households hold livestock, how much, and of what type. We also assessed involvement in off-farm household business activities, including whether households operated off-farm businesses, how many, for how long during the year, and how much monthly revenues and profits they generate. Lastly, we looked at participation in wage employment and revenues, separately in and outside agriculture.

86. The main effect of the programme on livelihoods was to increase agricultural production. The overall quantity of crops harvested increased by 60 kg (total average of 309 kg) in WFP programme villages, from an average of 249 kg in the comparison group (a 22 percent increase). The area cultivated also increased by 0.27 hectares (total average of 1.91 hectares), compared to an average of 1.6 hectares in the comparison group. The increase in production came primarily from staple crops, in particular, millet. Households were less likely to sell to the market, with lower quantities sold and reduced value of sales. This suggests a lower need for beneficiary households to generate revenues to meet basic food needs, possibly due to having larger food stocks through their higher production, or given the transfers they received from the programme. The decrease in the value of sales mostly came from non-staple crops, in particular, sesame (Figure 9; and Table 13 in Annex E).

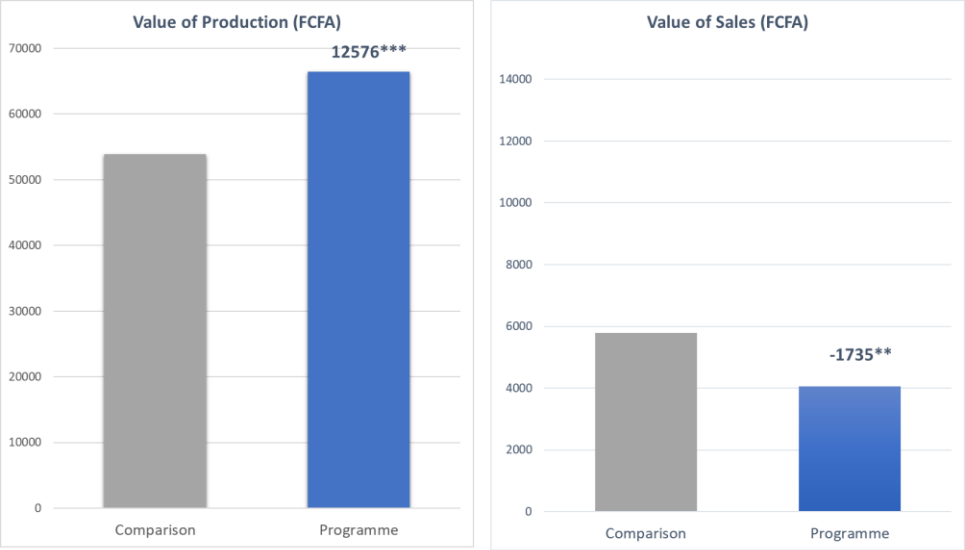
Figure 9: Impacts on agricultural production



Note - The y-axis shows the following outcomes: average area cultivated in hectares per household, average quantity produced in Kg per household and average quantity sold in Kg per household. $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

87. Households participating in the programme reported increases in the value of agricultural production and a reduced value of sales. The increase in the value of production was larger than the decrease in sales, representing an overall improvement to households' ability to provide for their food needs, equivalent to FCFA 10,842 (Figure 10; and Table 13-15 in Annex E).

Figure 10: Impacts on value of agricultural production and sales



Note - The y-axis shows the average value of production in FCFA and average value of sales in FCFA per year. $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

88. Qualitative analysis provides additional insights consistent with the mechanisms highlighted in the quantitative impact evaluation. A recent review by the United States Agency for International Development (USAID) based on qualitative interviews and field observation in 13 WFP resilience sites points to increased tree and grass cover in the sites, increases in millet and sorghum yields, of 30 bushels on average using zaï (tradition method of growing in dry conditions) or half-moon bund techniques (Mahaman et al., 2023).

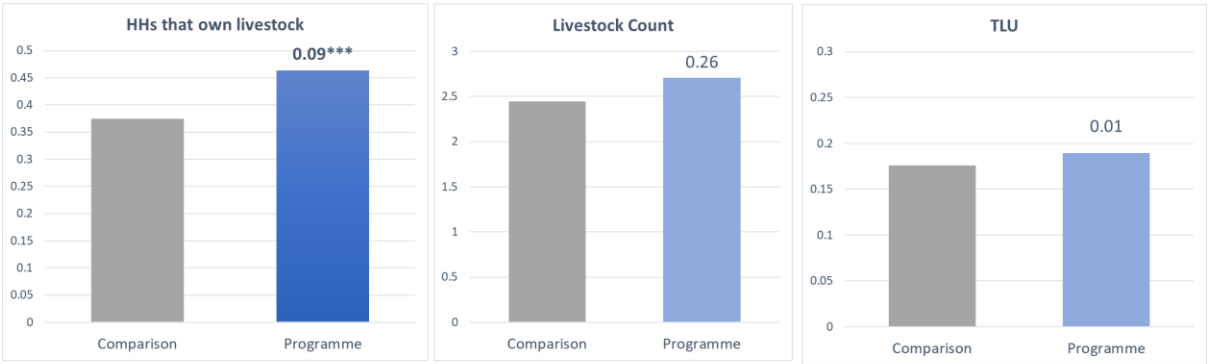
89. The results agree with perceptions gathered during the impact evaluation's qualitative focus group discussions (FGDs). For instance, one respondent summarized that the programme helped recipients on many levels, especially on the agriculture and social aspects:
« Ce programme nous a beaucoup aidé sur plusieurs plans, notamment sur le plan agricole et social ».

90. Participants in other FGDs reported using part of the assistance for their immediate food needs and having higher agriculture production thanks to community gardens established by the programme:
« Avec les différents travaux que nous avons apporté le projet, nous avions pu recevoir les assistances alimentaires qui nous ont permis de déposer une certaine partie de nos vivres et aussi avec les jardins qu'ils nous ont faits, nous sommes arrivés à avoir certaines récoltes qui ont servi à surmonter ce moment de famine »
[With the various works that the project brought us, we were able to receive food assistance, which allowed us to save a certain part of our food, and with the gardens that they made for us, we managed to have better harvests which were used to overcome this moment of famine].
Other respondents highlighted the benefits of the programme in terms of agricultural production*:*
« Ce programme consiste à nous enseigner de nouvelles techniques agricoles afin d'obtenir de bonnes récoltes et à nous rendre utile pendant la période de soudure.»
[This programme consists of teaching us new agricultural techniques in order to obtain good harvests and to make us useful during the lean period].

« Pour la culture de contre saison par exemple qu'on nous a amené c'est pour qu'on apprenne les différentes techniques de pratique agricole et pour nous instruire pour des travaux pour qu'on puisse trouver à manger et répondre aux besoins de nos familles. »
[For off-season cultivation, for example, that we were brought to learn the different farming techniques and to instruct us to do some work so that we can find food and meet the needs of our families*].*
« Ma situation financière a vraiment changé aussi car je demande plus aux autres de m'aider pour manger ou pour satisfaire un besoin. Je m'en sors bien financièrement maintenant depuis ma participation dans ce programme de résilience.»
[My financial situation has really changed too because I do not ask others to help me to eat anymore or satisfy a need. I am doing well financially now since participating in this resilience programme].

91. The programme increased the share of households with livestock, but did not have much effect on the quantity of livestock held. In the Sahel, livestock often serves as a savings mechanism and can also represent an income-generating activity (Kazianga & Udry, 2006). The share of households that own livestock increased by 9 percentage points, which is substantial since 37.4 percent of households hold livestock in the comparison group. However, there was no change in the number of heads of livestock, or on the overall index of livestock held by households – nor was there a change to livestock sales. The increase in the share of households owning livestock was explained by households being more likely to own a few more chickens, not accumulating large livestock (Figure 11; and Table 16 in Annex E).

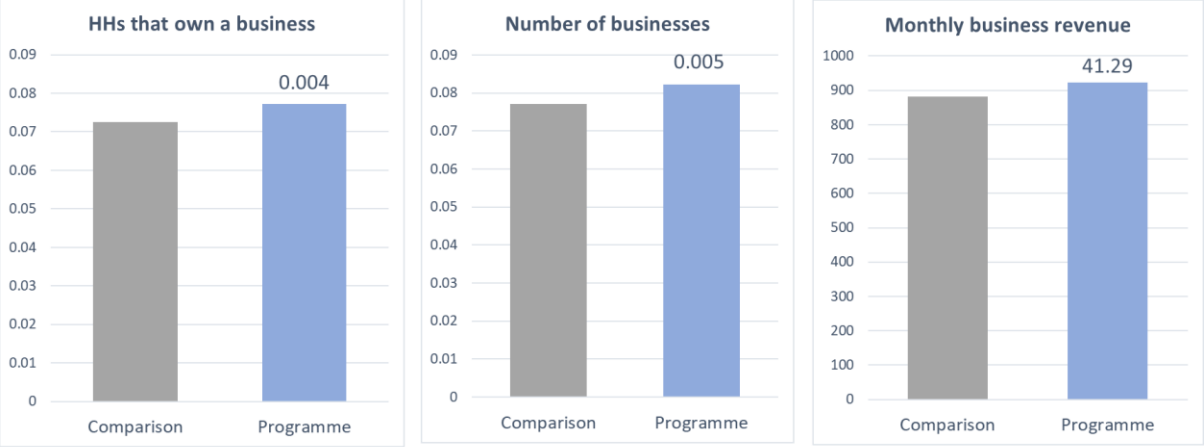
Figure 11: Impacts on livestock



Note - The y-axis shows the average share of households owning livestock, the average number of livestock held and the average of the Tropical Livestock Unit (TLU) index. p < 0.10 (*), p < 0.05 (**), p < 0.01 (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

92. **The programme had no impact on off-farm income-generating activities**. There was no change in the share of households operating an off-farm business (which was low at 7 percent of the comparison group), average business revenues or profits, which were also very low in the comparison group, given the small share of households operating such businesses (Figure 12; and Table 17 in Annex E). While off-farm diversification was not a direct programme objective, these results are noteworthy as other evidence from Niger has shown that off-farm diversification can be a pathway to increase earnings and resilience (Bossuroy et al., 2022; Premand and Stoeffler, 2022).

Figure 12: Impacts on off-farm income-generating activities



Note - The y-axis shows the average share of households owning a business, average number of businesses and average monthly business revenue in FCFA. $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

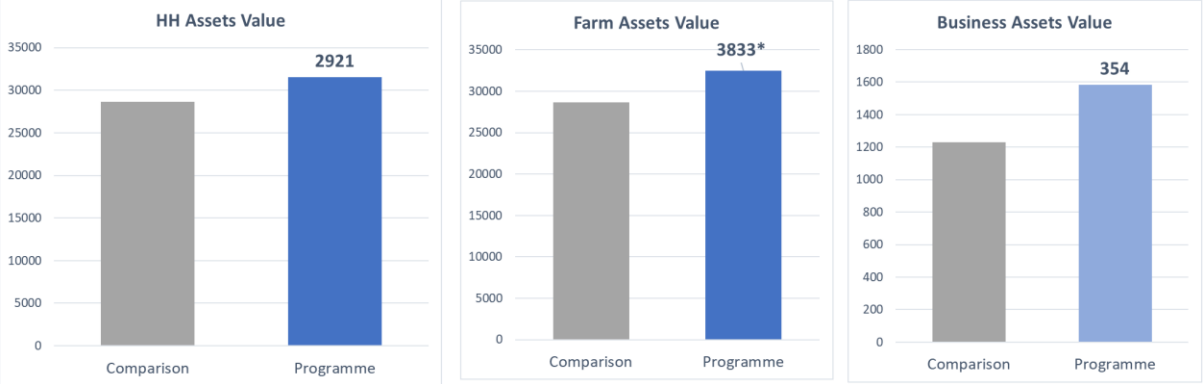
93. The programme led to higher participation in wage employment, but we could not rule out that this was directly due to participation in FFA. There were increases in the percentage of households with wage employment (by 10 percentage points), both in agriculture and outside, as well as monthly wage earnings (by FCFA 2,203). However, some of these effects may be due to participation in FFA rather than additional employment in activities outside the programme – local labour markets remain thin, and corresponding increases in the use of labour inputs in agriculture and income-generating activities were not observed[22] (Table 18 in Annex E).

Assets and financial outcomes

94. **The programme also led to some increases in assets, mostly stemming from farm assets**. Household assets include durable items such as furniture or electronic devices. Farm assets include farming equipment such as axes, sickles, and mowers. Business assets include materials and equipment. The share of households owning household durable assets (57.1 percent in comparison group), the number of those assets (1.2 in comparison group) and their value (FCFA 28,871.6) remained stable. However, while the share of households with farm assets (87.2 percent in control) and the number of these assets remained stable, their value increased by FCFA 3,833 (from a mean of 28,336 in control), significant at 10 percent level. There was no impact on business assets, in line with results on off-farm business activities mentioned above (Figure 13; and Table 19 in Annex E).

[22] Wage employment is defined as working for another household for a wage, and is commonly measured in evaluations of cash transfer programmes, as increased income may result in hiring casual labour for household business or farming activities. In this case, we do not see corresponding increases in the use of labour on farms, so it could be that households reported working more as wage employed because they also considered FFA activities.

Figure 13: Impacts on household, farm and business assets



Note - The y-axis shows the average value of household assets in FCFA, the average value of farm assets in FCFA, and the average value of business assets in FCFA. $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

95. The programme impacted on financial outcomes, in particular, as households received larger transfers from other households. Households in WFP resilience programme communities were not more likely to receive transfers from others, but received larger transfers by FCFA 2,260 on average (from a mean of FCFA 11,659 in control). This is in line with the result mentioned above of a greater reported ability to mobilize financial support when needed. Effects on savings and borrowing were smaller in relative terms. There was a small (2 percentage point) increase in the share of households with any savings, compared with 4 percent of households in the comparison group. The magnitude of the related impact on amounts saved remained very small, at FCAF 101. There was no impact on loan applications or amounts borrowed (Figure 14; and Table 20 in Annex E).

Figure 14: Impacts on financial activity

Note - The y-axis shows the average amount saved in FCFA in a year, the average amount borrowed in FCFA in a year and the average value of transfer received in FCFA in a year. $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

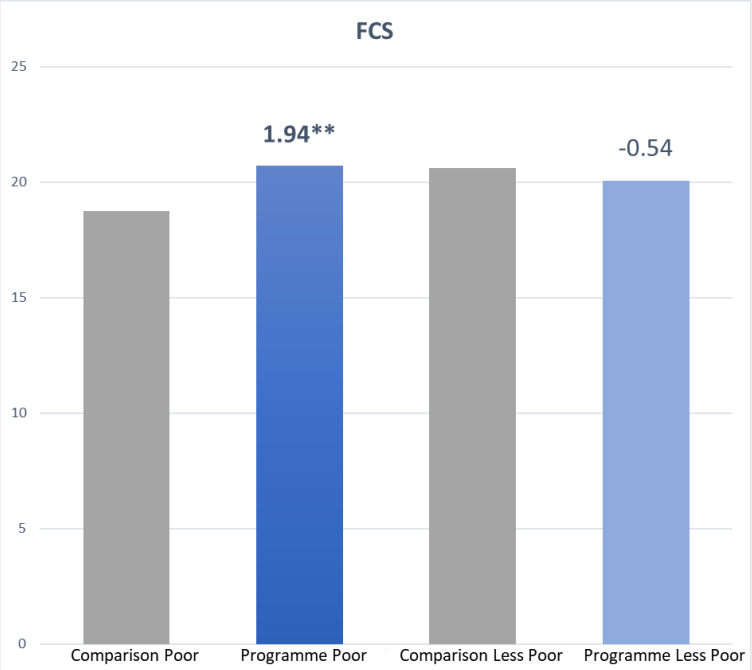
Analysing programme components

96. While the evaluation was not designed as a multi-arm impact evaluation to formally measure the value-added aspects of specific programme components or their integration, some aspects of the design can provide information on the likely contribution of various components. This includes: disaggregation of results by poverty status, which distinguishes between "poor" households eligible for FFA and LSS, and "less poor" households not eligible for those components (Annex E/Table 26); and disaggregation by primary village closest to the FFA sites, and assets and secondary villages further away (Annex E/Table

27). It also includes additional analysis that shows that results are robust when accounting for actual participation in FFA (Annex E/Table 30). Additional information can be found in Annex E/Table 28.

97. **Impacts on food security were driven by the poorest households which were eligible for FFA and LSS.** Results show that impacts on the FCS are driven by those eligible for FFA and LSS (Table 26 in Annex E). Figure 15 shows the differential impact on "poor" and "less poor" households at endline: the impact is higher and only statistically significant for the poorest households, which benefit from an increased FCS by 1.94 FCS points. In contrast, the FCS decreases by 0.54 for the "less poor", which is not statistically significant. This result is consistent with the FFA and LSS programme components influencing the impacts on food security. It also suggests that other programme components delivered to the "less poor" do not contribute to direct improvements in food security.

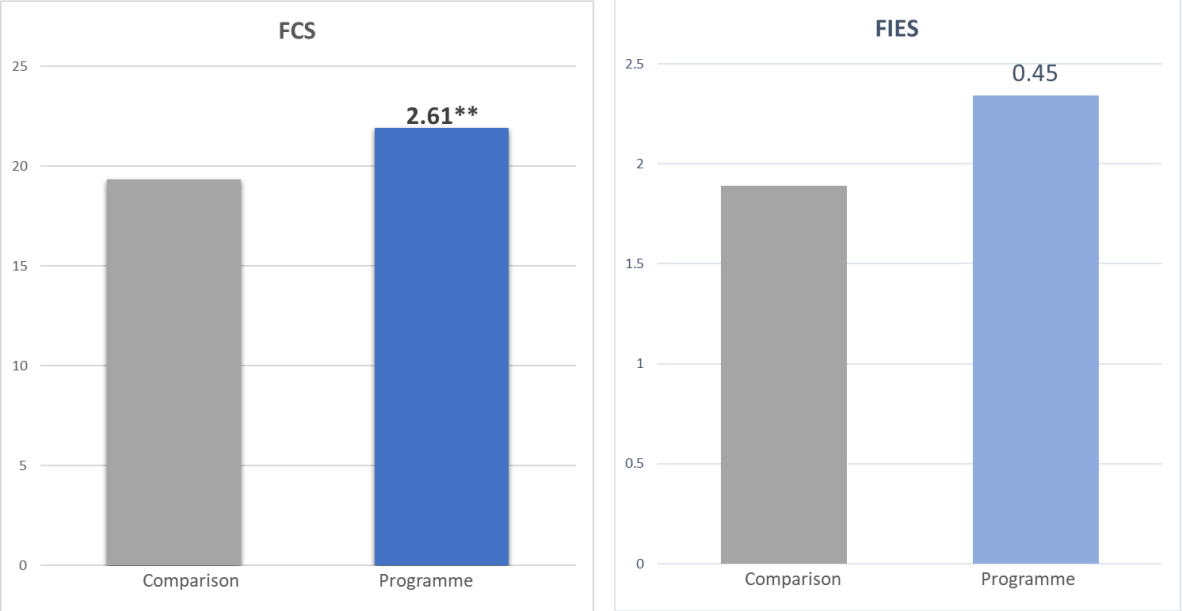
Figure 15: Impacts on food security by poverty status



Note - The y-axis shows the average Food Consumption Score (FCS). $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***). Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

98. Impacts on food security were robust when accounting for actual participation in FFA. When comparing results for "poor" and "less poor" households at baseline, the evaluation compared a sample of households that were to participate in FFA against a sample of households that were not expected to participate, based on predicted WFP targeting (as discussed in Section 3). In practice, there might be variations in the specific households that participated in the programme due to barriers in access or implementation challenges. While the programme monitoring system was not designed to document household-level participation in each programme component, or the amounts and timing of transfers received by each household, we used the high-frequency sample and data to identify households that reported participating in FFA in at least two rounds. Factoring in self-reported participation in FFA results in an average impact of 2.6 FCS points, which is statistically significant at the 10 percent level (Table 30 in Annex E). This corresponds to about 2.6 additional days during which households eat fruit or vegetables per week. The coefficient for FIES is also positive, though not statistically significant (Figure 16; and Table 30 in Annex E).

Figure 16: Impacts on food security among FFA participants

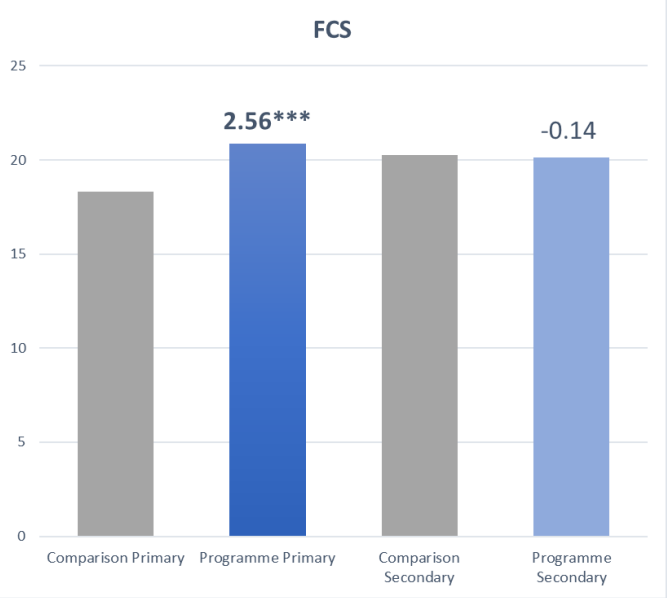


Note - The y-axis shows the average Food Consumption Score (FCS) and average Food Insecurity Experience Scale (FIES - reversed). $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

99. **Impacts on food security were influenced by households in villages closest to the FFA sites**. If the FFA and LSS seem to contribute to impacts, does that impact derive more from the transfers or from the assets themselves? Impacts disaggregated by location of the village relative to the FFA site gives an indication – households in both primary and secondary villages had access to FFA and LSS transfers, while those in primary villages live closer to FFA sites and are therefore more able to benefit from the assets. Results show that the increase in the FCS is significant in villages closest to where the FFA sites are located, with an impact of 2.6 FCS points in primary villages. In contrast, the impact in secondary villages is -0.1 FCS point, which is not statistically significant. While long-term follow-up surveys would be needed for a fuller understanding of the value of assets, this suggests that assets contribute to impacts beyond the value of transfers after two years (Figure 17; and Table 27 in Annex E).

100. The statistical data in Annex E provides additional analysis to show how programme impacts on food security indicators vary between households headed by women and those headed by men, between households cultivating land at baseline or not, and by households' livestock ownership or savings levels. Results are not clear-cut, but impacts on the FCS tend to be influenced by households owning land, and tend to be larger for households that own more livestock. Impacts on FIES are larger for households with higher savings levels. There is no clear pattern in terms of difference in impacts between households headed by women or men.

Figure 17: Impacts on food security by village type



Note - The y-axis shows the average Food Consumption Score (FCS). p < 0.10 (*), p < 0.05 (**), p < 0.01 (***). Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

Resilience and high-frequency results

101. This section shows the results from high-frequency surveys, which operationalize resilience measurement by documenting impacts on food security indicators over time, including across seasons and exposure to shocks. The statistical results are displayed in Annex E/Table 31. This analysis includes additional information on shocks, coping strategies, and subjective resilience at endline. These outcomes combine to show the extent that the programme strengthened resilience and complemented the results on resilience capacities in Section 8.2.

102. The FCS tended to be higher in communities assigned to the WFP resilience programmes relative to comparison communities in the months after harvest. Specifically, impacts on the FCS are shown between October and November 2021, with an average impact of 1.65 FCS points;[23] September to October 2022, with an average impact of and 1.78 FCS points; and November to December 2022, with an average impact of 1.71 FCS points. Impacts are mostly concentrated during the post-harvest period, and there is no significant impact on the FCS during the lean season.[24] These findings from the high-frequency data show that the programme improves food security during the post-harvest season. Although there are other times in the year where programme recipients appear to have higher levels of food security, differences in the FCS between the programme and comparison groups are only statistically significant during the post-harvest period (Figures 18 and 19; and Table 31 in Annex E).

[23] The largest impact is observed during the first year of programme implementation in 2021, and is at the margin of statistical significance (with a p-value of 0.122).
[24] Patterns for the FIES indicator are less clear, with significant impacts only in May to June 2022, the period going into the lean season, but with consistently small coefficients throughout.

Figure 18: Food Consumption Score (FCS) across months

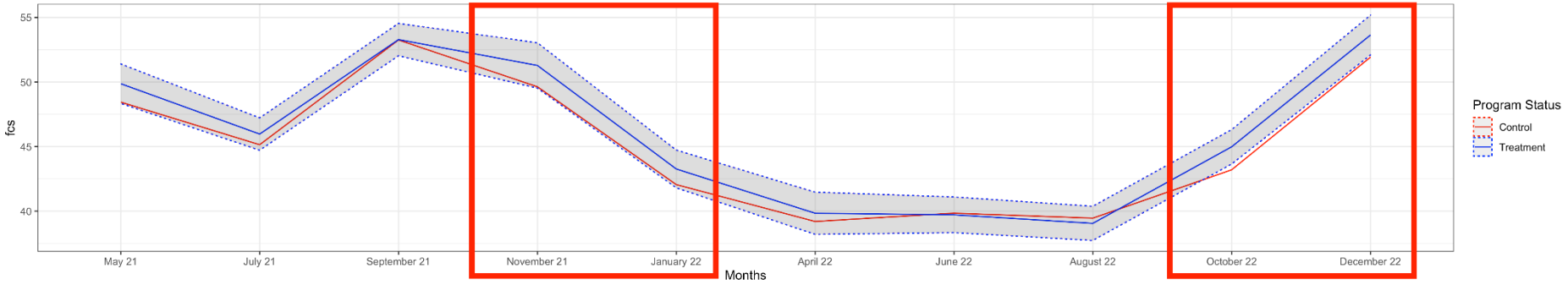
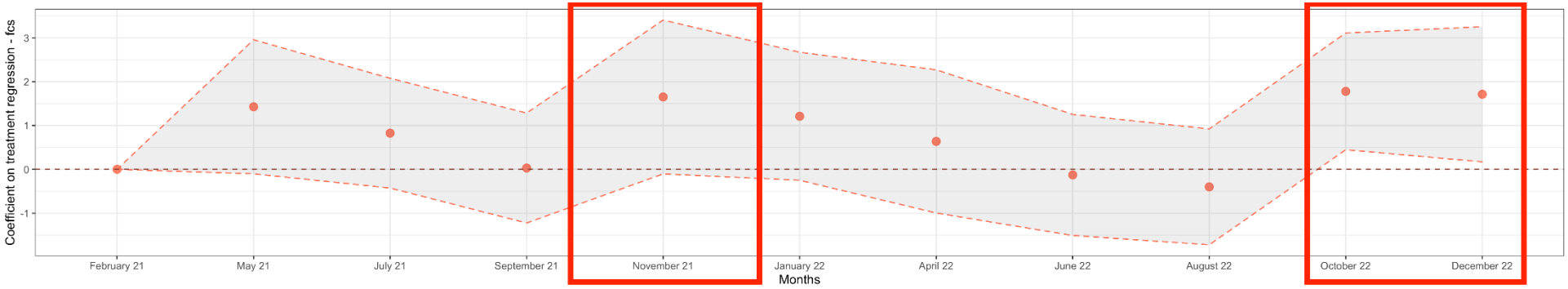
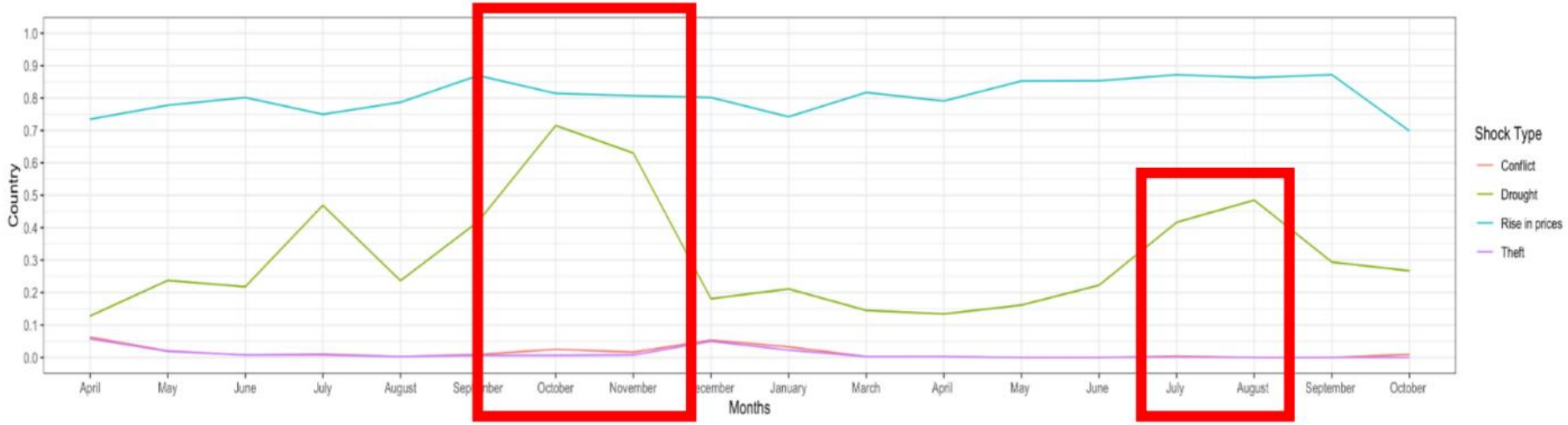


Figure 19: Impacts on Food Consumption Score (FCS) across months



103. Drought shocks reported in high-frequency surveys were particularly acute in 2021. There was a large increase in the reported incidence of drought by households in October to November 2021. Seventy percent of households reported experiencing a drought due to rainfall failures just before harvest (Figure 20). In 2022, a lower share of households reported shocks, though still around 50 percent. In 2021, it is quite remarkable that food security rapidly deteriorated after the (failed) harvest. Specifically, Figure 19 shows that FCS dropped quickly after harvest in early 2022, with the FCS achieving its lowest level in April 2022, a few months before the lean season already. Figure 19 shows that the programme partly helped households absorb this shock. Food security went down slightly less quickly in programme villages compared to those not in the programme. While the programme appeared to mitigate the early effect of the shock on food security, the levels of food security in programme and comparison villages converged again going into the lean season.

Figure 20: Shocks reported in high-frequency surveys

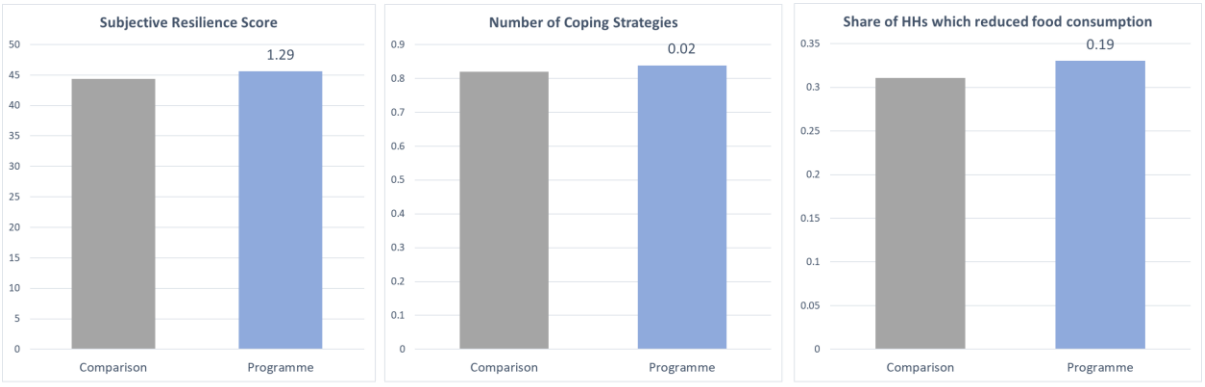


104. The programme's impact patterns appeared seasonal, with FCS changes mostly concentrated post-harvest in 2021 and 2022, and not observed throughout the year. These patterns cannot solely be explained by the programme improving households' ability to absorb the 2021 drought shock, because they were also observed in 2022 when drought shocks were not as prevalent. These patterns are consistent with improvements in agricultural production influencing food security results. Households consume more immediately after harvest, but impacts on food security are not sustained at other times of the year. This suggests that, while households may have been able to increase their food stocks after harvest, they did not do so sufficiently or develop other strategies to smooth the effects on food security throughout the year. It also indicates that the interventions provided during the lean season were not sufficient to have any impact on food security (Figure 19; and Table 31 in Annex E).

105. **We found no significant improvement in the subjective resilience score.** The subjective resilience scale was developed by the Niger Country Office and integrated in the endline survey. It shows whether households feel more resilient along ten dimensions, including feeling like they can bounce back from challenges, deal with hardship, rely on support from family and friends, or are prepared for future threats. The scale generates a score between 0 and 32 recording low resilience, a score between 33 and 65 showing medium resilience, and a score above 66 indicating high resilience. The programme does not improve the resilience score significantly after two years, with an average score of 45.6 for households in villages assigned to the programme compared to 44.34 in the control group – a 1.29 points difference that is not statistically significant. Similarly, the share of households with low resilience (27.6 percent in control), medium resilience (57.2 percent in control) and high resilience (15.2 percent in control) does not significantly change in programme villages. This is consistent with the programme having seasonal impacts on food security rather than leading to broad-based improvements in resilience capacities after two years.

106. **We did not find changes in the type of coping strategies used by households in response to shocks.** Comparison households use 0.82 coping strategies on average, with 31 percent reducing food consumption, 10 percent selling livestock, 8 percent using saving, 5 percent cutting health or education expenditures. Coping behaviours remain unchanged in programme communities. Similar results are obtained when aggregating individual behaviours into a coping strategy index. These patterns suggest that programme impacts are not influenced by households' enhanced ability to cope with shocks. This is consistent with the seasonal impact patterns highlighted above.

Figure 21: Subjective resilience and coping strategies



Note - The y-axis shows the average subjective resilience score, average number of coping strategies and average share of households which reduced food consumption. $p < 0.10$ (*), $p < 0.05$ (**), $p < 0.01$ (***).
Stars indicate the statistical significance of the difference between outcomes in the programme and comparison groups. A p-value below 0.10 indicates that we can reject the null hypothesis that outcomes are the same in the two groups, indicating that the programme led to changes in the outcome.

9. Key highlights

107. The impact evaluation investigates the impacts of WFP's Integrated Resilience **Programme in Niger – including food assistance for assets (FFA), lean season support (LSS), Smallholder Agriculture Market Support (SAMS), nutrition/health, and education – on the welfare and resilience of households in target communities.** Using a robust randomized controlled trial (RCT) design, the impact evaluation compares households in villages where the integrated resilience programming was implemented to a counterfactual sample of villages that were similar at baseline but where resilience programming was not delivered. The impact evaluation also explores how the effectiveness of the WFP resilience package varies by households' eligibility for FFA and LSS support (i.e., their initial poverty levels within targeted communities), as well as by distance to FFA sites/assets. This provides additional information about the value-added aspects of programme components, assets and the geographical village targeting strategy.

108. Taking resilience as a household's ability to adapt to their environments, absorb shocks and stressors, and transform their capacities, this impact evaluation combines detailed baseline and **follow-up data, covering broad household capacities, with high-frequency data, measuring food security and well-being dynamics.** Specifically, we use high-frequency data to analyse impacts on food security indicators over time, including across seasons and by exposure to shocks. We further measure a broad set of household capacities related to livelihoods (such as agricultural production, asset ownership, off-farm income-generating activities) to understand the mechanisms of impacts on food security dynamics and resilience. We also measure psychological and social well-being, which illustrate other benefits beyond the food security and economic impacts of the intervention.

109. Based on the programme theory of change, we hypothesized that, **in the short term, the WFP resilience programme would support people maintain their food security** by meeting households' immediate food needs, including those that may arise during a shock or during the lean agricultural season**. In the medium term, the WFP resilience programme was expected to start strengthening households' capacities to improve food security more permanently**, including when exposed to multiple or recurring shocks. For instance, these capacities include livelihoods, assets, savings, and social support. The full programme theory of change goes beyond the two-year period of the evaluation, and measuring longer-term effects would require additional follow-up surveys, as discussed below in the "Considerations for future programming" section.

110. The evaluation finds that the **programme increases food security after two years.** Improvements in food security are observed for the Food Consumption Score (FCS) at endline, which increases by 1.5 points, a result consistent with households consuming fruit or vegetables 1.5 more days per week, a moderate effect. The Food Insecurity Experience Scale (FIES) indicator also improves, though impacts are not observed for other food security indicators showing the minimum dietary diversity for children and women.

111. These food security impacts in Niger are on par with results from other similar WFP **programmes in the Climate and Resilience Window.** The results from Niger show an average impact of 1.5 FCS points after two years. Preliminary results (that are not always statistically significant) indicate increases after one to two years of 0.4-0.7 FCS points in Mali, Rwanda, and South Sudan, putting Niger slightly higher than the average impacts of other programmes in the Window.[25]

112. Findings from the high-frequency data show that the programme improves food security at specific times during the year, mostly in the post-harvest season. Yet, results suggest that the programme does not improve food security during the lean season – that is, in the months between the main planting and main harvest periods. This result is consistent with the finding that participants increase their production in agriculture, and thereby increase their food stock when additional food is newly available – thereby improving food security in post-harvest months. **The improvements in food security do**

[25] Impact evaluations under the Climate and Resilience Window used the same approach to measure the impact of resilience programmes in Niger, Mali, South Sudan, and Rwanda. While there are similarities in the programme design between these four countries, the Integrated Resilience Programme in the Sahel is fundamentally different in terms of context and implementation approach.

not sustain throughout the year, which suggests that increases in food production were not sufficient, or households did not develop other strategies to smooth the effects on food security throughout the year.

113. The programme tended to improve food security in the post-harvest season for two consecutive years, even if agricultural conditions were different. The programme partly helped households cope with rainfall shortages and a drought that occurred immediately before harvest in 2021. As a consequence of this drought shock, comparison households saw a rapid deterioration of food security, which was slightly slower among households in programme villages. This suggests that the programme can help households partly cope with specific drought shocks, even though impacts remain lowest during the lean season (when food security is also at its lowest). Similar patterns of impacts on food security immediately post-harvest were also observed in 2022 when drought shocks were not as acute. This suggests that **impacts are seasonal more than solely driven by an increase in households' ability to absorb shocks**.

114. Investigating the adaptations households made during this period, we find that the main impact of the **programme on livelihoods or households' productive capacities after two years is to increase agricultural production**. The fact that impacts on agricultural production were the main observed change in terms of livelihoods is consistent with the timing of impacts on food security and its concentration in the post-harvest period. The increase in agricultural production also aligns with the contribution of the FFA assets. A relatively smaller decrease in sales of non-staple crops was also observed, suggesting that households may not have needed as much cash income to cover their basic needs.

115. In contrast, the **programme induces little change in off-farm livelihood activities.** There is an increase in livestock ownership (but not in the number of livestock owned) and no change in off-farm income-generating activities. Even though livelihood diversification was not a programme objective, off-farm livelihood diversification can offer another pathway to strengthen households' productive capacities and resilience, as well as provide income at other times of the year. Finding no effect on off-farm livelihoods is consistent with the patterns of seasonal impacts on food security.

116. The programme also improves subjective well-being and social support. Households participating in the programme are more likely to feel a higher satisfaction with life, feel better about the future, and exhibit fewer symptoms of depression. The programme also improves households' perception of their social status in the community and social support, including their ability to mobilize financial support in case of need, which links to resilience capacities.

117. The impact evaluation did not find that WFP's Integrated Resilience Programme encourages significant improvement in subjective resilience or coping strategies after two years. Results on self-reported resilience capacities and coping strategies to deal with shocks are broadly consistent with food security improving only at certain points in time and not more generally throughout the year. It is also consistent with the fact that changes in livelihoods are concentrated in agriculture, with limited off-farm diversification or increases in households' financial capacities.

118. Further examining the results, impacts on food security stem from relatively poorer households eligible for FFA and LSS. For those poorer households, the FCS increases by 1.94 points. This result is important because it suggests that the transfers to households or the assets created through FFA can have a major impact on food security.

119. The results also show that impacts on food security are driven by villages closest to where the FFA sites/assets are located. For households from those (primary) villages where the sites/assets are located, the FCS improves by 2.6 points. This result suggests that proximity to the FFA sites/assets has an important impact. This suggests that the assets/sites contribute to the observed impacts, but also that transfers are not the sole reason for impacts. This is consistent with assets (not just cash transfers) contributing to the observed impacts on agricultural production.

10. Considerations for future programming

120. The findings and key highlights reveal some encouraging impacts of the WFP resilience programme in Niger after two years. They also show that there is scope for improvement to further boost impacts on food security, livelihoods, and resilience capacities. The programme shows a range of positive impacts after two years, with nuances in terms of magnitude of effects across resilience capacities. The impact evaluation identified ways to gain further knowledge of the programme. This section highlights areas that could achieve greater impact and so should be considered when delivering similar programmes in the future.

Refining village targeting

121. There is a range of adjustments to programme implementation that could be considered for the programme to potentially achieve larger impacts. The first consideration is directly based on the evaluation results showing that the impacts on food security are influenced by the villages nearest to food assistance for assets (FFA) sites/assets.

Consideration #1. Villages close to the location of FFA sites and assets benefit most in terms of improved food security. Consider how to support villages further away from FFA sites so that they also benefit from improved food security.

122. The evaluation results show a direct way to enhance impacts by prioritizing households in villages where FFA sites are located, rather than attempting to spread benefits by also covering households in villages further away – these villages are less likely to benefit from the assets, or may face other barriers to FFA participation. This enhanced geographical village targeting and prioritization of villages very close to FFA sites could increase impacts on food security by 70 percent (from 1.5 to 2.6 Food Consumption Score (FCS) points on average). One way to implement this is to ensure that there is an FFA site close to each village participating in the programme.

Strengthening programme implementation and monitoring

123. A second tier of considerations relates to programme implementation and monitoring. These considerations are not directly based on the impact evaluation results, but link to variations in programme implementation that have been observed during the impact evaluation.

Consideration #2. Improve the programme monitoring system to more precisely monitor the households participating in different programme components, and track the timing and amount of cash transfers each household receives.

124. A strong household-level monitoring system would support more consistent implementation of programme components. Household-level monitoring processes have been successfully put in place using light electronic systems in other WFP programmes in the Climate and Resilience Window (e.g., South Sudan), as well as in Niger by the national safety nets unit. A major step would be to start from a comprehensive registry of households, each with unique identifiers. (This could be tied to efforts to build a social registry in Niger as part of establishing a national adaptive social protection system.) Once this registry of households has been made, the original list and identifiers could be used to implement targeting and document participation in programme components, and receipt of transfers over time. This could also support better tracking of programme costs per household, which has not been possible to date.

Consideration #3. Ensure more robust and consistent implementation of programme components.

125. Administrative data shows a variation in the degree of integration of programme components over time. If some components are not fully implemented or integrated as intended, programme impacts may be diluted. Although this is not guaranteed, a more consistent quality of programme implementation may enhance impacts. It may also lead to higher predictability for households on the

duration of FFA and lean season support (LSS) and timing of related transfers. Something that could help is communicating an implementation plan – including the different programme components and their duration – to all relevant partners, including beneficiary communities.

Considering and testing options to improve the content of the Integrated Resilience Programme package

126. The impact evaluation suggests that additional programmatic adjustments could enhance households' ability to manage ongoing stressors, such as lean seasons. This would also strengthen their ability to deal with shocks, including smoothing the impacts throughout the year, rather than immediately after harvest periods when new food is available. To do so, a range of adjustments to programme content could be considered to potentially achieve larger, more permanent, or sustained impacts. Further testing and refinement of these adjustments would be worthwhile to maximize their effectiveness.

Consideration #4. Carefully re-examine some of the Resilience Programme content, including whether some components are necessary to meet specific resilience objectives, and if some innovations could be introduced to achieve larger/faster impacts at lower cost. Changes should be tested on a pilot basis with impacts documented before proceeding with a broader rollout.

127. Following are some suggestions based on broader evidence from similar programmes in Niger and other relevant settings. These suggestions are an invitation to WFP programme teams to reflect on the results and identify a subset of potential improvements that could be tested on a pilot basis before being introduced more systematically. Some of these suggestions refer to programmes or components that WFP may implement in partnership with other agencies, depending on expertise and mandate.

128. *Suggestion #1.* The programme could include a savings component to gain stronger effects on savings, assets, and livestock, and help households smooth food security throughout the year. A Village Savings and Loan Association (VSLA) or other types of savings groups have been highly effective in the context of Niger (Bossuroy et al, 2021, Stoeffler et al. 2020). A VSLA component could be added to the programme, and the timing of savings redistribution timed with the start of the lean/planting season.

129. *Suggestion #2.* The programme could consider introducing simple tools and training for budget planning throughout the year. This could help households plan activities and resource use to sustain food security throughout the year – for instance, as was done in Zambia (Augenblick et al. 2023). This could be combined with the introduction of savings groups, as per Suggestion #1.

130. *Suggestion #3.* The programme could further enhance support to off-farm livelihoods and diversification to improve earning capacities at other times of the year. For instance, economic inclusion programmes have a stronger focus on livelihood diversification and off-farm income-generating activities, with large and sustained impacts on food security and livelihoods, including in Niger (Bossuroy et al., 2021), Afghanistan (Bedoya et al., 2023) or India (Banerjee et al., 2021).

131. *Suggestion #4*. The assets appear to influence impacts in line with the programme theory of change. However, it is not clear that the FFA approach is the optimal or most cost-effective technology to create these assets. For instance, recent results from Niger show that training on rainwater harvesting techniques or unconditional cash can encourage households to create half-moon bunds (Aker and Jack, 2021). Therefore, an adjustment of the modality to create assets could be considered – for instance, replacing FFA with a combination of unconditional transfers, and training in rainwater harvesting techniques (as found effective in Niger by Aker and Jack, 2021). This could also allow an adjustment in the modality of the transfers (Suggestion #5).

132. *Suggestion #5*. Currently, households receive a few months of transfers through FFA before the lean season, and a few months of LSS. The timing and modality of transfers could be adjusted to: (i) be more predictable throughout the year; (ii) further promote investment; or (iii) be larger during the lean season. For instance, small regular unconditional cash transfers can be spread over a couple of years. Some transfers could be grouped into a larger lump sum, either at beginning of the agriculture season or after (as is being tested by WFP in Ghana). A one-off grant layered on top of small regular cash transfers delivered for two years has proved effective for livelihood diversification in Niger (Bossuroy et al., 2021).

133. *Suggestion #6*. The lack of impact on food security for "less poor" households and in villages further away from FFA sites raises questions about the additional impacts of other components – school feeding, nutrition and Smallholder Agriculture Market Support (SAMS) – in the resilience programme. It also questions whether targeting "less poor" households with those additional components is essential as part of the resilience programmes and for contribution to food security and resilience capacities. These components could have benefits in other dimensions – for instance, school feeding is the subject of another window of the collaboration between WFP's Office of Evaluation and the World Bank's Development Impact Evaluation (DIME) department. Nevertheless, the current impact evaluation does not find impacts on children's nutrition or education outcomes. The programme teams could consider documenting the value-added aspects of these components more specifically. This is something that was not possible during the current impact evaluation in Niger. However, the current results do not provide direct evidence that the components contribute to food security or resilience-building in the short and medium term. This might be relevant for SAMS – for example, an enhanced version could be developed and formally tested (see also Suggestion #3).

134. As results from other countries become available, the Climate and Resilience Impact Evaluation Window will likely update its policy learning priorities for the future. Therefore, the suggestions can inform the next phase of learning as part of the Window and, more generally, in formulating resilience policy.

Measuring long-term impacts and impacts on the ecosystem

135. The evaluation highlights the impacts after two years of programme implementation. A longer timeframe would be needed to assess whether these impacts will sustain, increase or diminish in the longer term. One assumption behind the WFP resilience programme in the Sahel is that a multi-year engagement is needed to achieve sustained effects. One reason for this is that, through changes in the ecosystem, the programme could enhance household food security, which may take longer than two years to materialize. At this stage, the evaluation cannot confirm if this assumption holds. One of the longer-term impacts of the WFP resilience programme is that the returns from assets may increase over time. However, other recent evidence from Niger shows that assets similar to those promoted by FFA (half-moons) achieve their returns after two to three years (Aker and Jack, 2021). The timeframe for this impact evaluation is similar, and has comparable patterns that are consistent with meaningful returns from assets. Overall, there is limited evidence on programmes resulting in impacts that substantially or rapidly increase over time, though this has been observed in a few cases for "graduation/economic inclusion" programmes (e.g., Banerjee et al., 2021).

Consideration #5. Explore the possibility of a follow-up sample survey of households after four to five years, ensuring consistent programme implementation until that time.

136. To formally assess whether programme impacts grow over time, a follow-up survey after four years (between December 2024 and February 2025) or five years (between December 2025 and February 2026) of the start of the programme could address open questions around long-term impacts and cost-effectiveness. This would also enable a more thorough assessment of the impacts of assets.

137. As a caveat, the evaluation cannot at this stage undertake a formal cost-benefit analysis and assess if the programme offers "good value for money". Programme costs could not yet be precisely estimated. Total costs would continue to increase (even if marginal costs go down) as implementation continues, so that programme impacts would likely need to increase rapidly and sustain after programme completion for benefits to become greater than costs. While this may be possible, the results raise questions on how to further boost short- to medium-term impacts by optimizing the programme. Also, not all possible benefits of the Integrated Resilience Programme are recorded in this evaluation – in particular, the environmental and ecosystem-level outcomes (Mishra et al. 2023)[26] are beyond the scope of this report. In future impact evaluations, cost data collection will be planned from the beginning so that cost-benefit analysis can be conducted.

[26] Mishra et al. 2023. Assessing impact of agroecological interventions in Niger through remotely sensed changes in vegetation. *Scientific Reports*, 13: 360 (2023).

Annexes

Annex A: Quantitative surveys

138. The questionnaires were developed with input from the World Food Programme (WFP) Country Office and extensively piloted with local communities in Niger to ensure that questions were gender sensitive and relevant to the context. The duration of the endline survey was approximately two hours. Data was collected using Android tablets running the SurveyCTO data collection software.

139. The impact evaluation team formulated extensive protocols to guide data collection for the enumerator teams. Training for enumerators was conducted in a classroom over two weeks and included field pilots. The training protocols included gender considerations such as involving female enumerators in the data collection process. Also, the pilot testing of the instruments made sure that the questions were gender sensitive.

140. During the data collection, high-frequency consistency and performance quality checks were conducted daily. These checks included flagging missing observations, duplicate observations, unusual survey duration, unusual number of "no-consent" responses, and other inconsistent patterns in the data. Any anomalies were immediately pointed out to the data collection team for correction. To ensure that data collection met the highest data quality standards, the team also performed a set of back-checks. This refers to drawing a random sample of 10 percent to 20 percent of households, and revisiting them to validate some of their answers. Cross-checking the data allowed us to provide immediate feedback to the field teams in case of divergences or other problems. The data collection followed the agreed timeline with the country office, and no significant challenges were faced.

141. Of the total 4,714 households surveyed (and kept in the sample at baseline), 4,507 (or 96 percent) were surveyed at endline. This high response rate was achieved thanks to thorough data quality checks and field protocols.[27]

Table 3: Survey sample sizes

Phase	Sample frame	Surveyed	Response rate (of sample frame)
Baseline	4 892	4714	96%
High-frequency survey	1 638	1579	95%
Endline	4 706	4507	96%

142. The team did not find significant differential attrition between the WFP programme and comparison groups.

143. While specific outcomes are discussed in detail in the results section, the main outcome categories of interest for the impact evaluation are as follows:

[27] In the baseline report, there are 4,892 households for which results are reported.

Table 4: Main outcomes of interest

Outcome type	Outcome name	Definition	Measurement level	Source
Primary	Consumption and food security	Food Consumption Score (FCS)/Food Insecurity Experience Scale (FIES)/consumption	Household/ individual	Baseline, endline, and high-frequency surveys
Secondary	Assets	Number and value of assets owned by the household from a contextually pre-defined list	Household	Baseline and endline surveys
Secondary	Income-generating activities	Participation in non-farm business, agriculture and livestock, or wage employment and revenue from these activities	Household/ individual	Baseline, endline, and high-frequency surveys
Secondary	Shocks and coping mechanisms	Shocks encountered by the household, including the severity of shocks, and coping strategies used, and selection of shocks from a pre-defined list	Household/ individual	Baseline, endline, and high-frequency surveys
Secondary	Financial outcomes	Current savings levels, the number of loans they have taken and their current outstanding debt, insurance products currently owned, and cash transfers undertaken, including remittances	Household/ individual	Baseline and endline surveys
Secondary	Migration	Migration of household members	Household/ individual	Baseline and endline surveys
Secondary	Psychosocial well-being	Stress, life satisfaction, self-efficacy, aspirations, Center for Epidemiological Studies Depression Scale	Household/ individual	Baseline and endline surveys
Secondary	Women's empowerment	As defined by cash-based transfer (CBT)/Gender window (normative and positive time use and agency)	Household/ individual	Baseline and endline surveys
Secondary	Social capital	Social cohesion, closeness of community index, financial support index, collective action index	Household/ individual	Baseline and endline surveys

Annex B: Qualitative surveys

144. Before endline data collection, qualitative data collection was carried out in January 2023, approximately one month after the last round of high-frequency data collection. The evaluation team conducted ten focus group discussions (FGDs), to inform the endline questionnaire design and gather insights that could complement and/or explain the main results observed from the quantitative findings.

145. FGDs were organized in the regions of Dosso and Tahoua; two were conducted in comparison communities and eight in WFP programme communities, and were organized according to the types of food assistance for assets (FFA) that villages were engaged in: four FGDs with assets related to agriculture/soil management; two FGDs with assets related to water resources or fishing; one FGD with assets related to reforestation, pastoral land, or other; and one FGD with assets related to agriculture/soil management.

146. Eight FGDs were composed of both males and females, while for gender inclusion, two FGDs consisted of female participants only. For WFP programme villages, each FGD featured a group size of 6–8 participants, with the condition that all participants in WFP programme communities came from households registered for FFA.

147. The evaluation team avoided conducting FGDs in communities with a high risk of conflict. Incentives for participants were aligned with what was provided during high-frequency surveys.

148. Teams conducting FGDs consisted of the impact evaluation field coordinator and a note-taker from the survey firm.

149. The interviews focused on the following thematic areas: awareness of, or experience participating in the integrated resilience programme; participation in FFA; targeting, timing, frequency and modality of lean season support; nutrition and school feeding interventions; resilience capacities; and changes in beneficiaries' activities and outcomes. In addition, in WFP programme communities, the evaluation team asked about the assets built, and how participants were benefiting from the assets.

150. All FGDs were transcribed in French.

Annex C: Estimation

151. The impact evaluation analysis is aligned with the pre-analysis plan (PAP)[28] registered with the American Economic Association's registry for randomized controlled trials. The pre-analysis plan includes detailed information on primary outcomes, research design, randomization method, randomization unit, clustering, sample size (total number, number of clusters, and units per intervention arm), and regression specifications. The purpose of the PAP is to outline the set of hypotheses and analyses that will be performed on the data before it is collected, ensuring transparency of the process.

152. To estimate the impacts of the resilience programme on the different outcomes of interest (primary and secondary outcomes), we run the following specification:

$$Y_{ht} = \beta_0 + \beta_1 \text{TREATMENT} + X_{h0} + \varepsilon_{ht} \quad (1)$$

153. Where Y_{ht} is the outcome variable, "Treatment" is an indicator for whether a village is mapped to a site that was assigned to receive the integrated resilience program; X_{h0} is a vector of controls which includes baseline variables (including the baseline outcome when available and other baseline controls selected through a double-selection Lasso procedure), and randomization strata (commune and asset type). The primary coefficient of interest is β_1 which captures the estimated impact on households in villages assigned to the resilience programme. We cluster standard errors at the community level, given sampling was stratified per village.

154. We then consider the heterogeneity of programme impacts on two dimensions. First, we estimate whether programme impacts are different among households classified as "poor" at baseline – hence eligible for food assistance for assets (FFA) and lean season support (LSS) – and households not classified as "poor" (hence not eligible for FFA and LSS). We do so by estimating the following specification:

$$Y_{ht} = \beta_0 + \beta_1 \text{TREATMENT} + \beta_2 \text{TREATMENT} * \text{poor} + \beta_3 \text{poor} + X_{h0} + \varepsilon_{ht}$$

155. "Poor" captures the household poverty categorization obtained from the pre-baseline listing and classification. We also report the p value of a test that $\beta_1 + \beta_2 = 0$, i.e., the estimated treatment effect for poor households if positive. β_1 captures the estimated treatment effect for "less poor" households.

156. Second, we consider the heterogeneity of programme impacts by primary village (where the site is located) and secondary villages (further away from sites). We do so by estimating the following specification:

$$Y_{ht} = \beta_0 + \beta_1 \text{TREATMENT} + \beta_2 \text{TREATMENT} * \text{primary} + \beta_3 \text{primary} + X_{h0} + \varepsilon_{ht}$$

157. "Primary" captures whether a household resides in a primary village (at baseline). We also report the p value of a test that $\beta_1 + \beta_2 = 0$, i.e., the estimated treatment effect for households in primary villages if positive. β_1 captures the estimated treatment effect for households in secondary villages.

158. We conduct additional heterogeneity analysis – for instance, testing if programmes vary between households headed by women or those headed by men, and between households cultivating land or not.

[28] AEA RCT Registry. 2022. Climate and Resilience Impact Evaluation Window: Experimental evidence from several countries. The American Economic Association's registry for randomized controlled trials.

159. Next, we also estimate an Instrumental Variable specification that accounts for actual participation in FFA. We capture self-reported programme participation in the high-frequency data. For households in the high-frequency sample, we code “actual participation in FFA” as if a household reports participating in FFA in at least two rounds, and 0 otherwise. When then estimate a 2-Stage Least Squares (2SLS) specification where actual programme participation is instrumented by the randomized treatment assignment.

160. Lastly, we operationalize resilience measurement by collecting high-frequency data to analyse the evolution of food security indicators over time. We do so by estimating equation (1) separately for each high-frequency data collection round. We also provide estimates pooling all high-frequency rounds together, also using equation (1), but adding round fixed effects.

Annex D: Baseline characteristics

161. To document the composition of the households in the sample (e.g., age, sex, etc.) we summarize household demographic characteristics. The majority of households in the Niger sample are headed by a male with no education. Table 5 shows that 24 percent of households are headed by a female. Only 18 percent of all household heads have completed primary education. As shown in Table 5 (Panel B) there are, on average, about seven members per household. A household in the sample typically owns approximately two assets. Mobile phones, carpets, mattresses, and chairs were the most common assets owned by households.

Table 5: Household characteristics in Niger

	Mean	SD	N
Head of household			
% Female household head	23.76	42.57	4 714
% Household heads with any primary education	18.18	38.57	4 686
Household size	6.62	3.65	4 714
Household			
% household with school-age children enrolled in school	30.00	34.81	4 118
Total household assets owned by household	2.09	1.98	4 714
Total farm assets owned by household	3.04	1.92	4 714
% households with a member who migrated	18.70	38.99	4 691
Food Consumption Score (FCS)			
FCS	32.72	21.75	4 665
% FCS poor (0–28)	51.32	49.99	4 714
% FCS borderline (28.5–42)	16.97	37.54	4 714
% FCS acceptable (above 42)	31.71	46.54	4 714
Shocks and coping strategies			
Number of shocks experienced	2.81	1.96	4 714
Number of coping strategies used	1.43	1.71	4 714
Agriculture			
% households growing crops in main agriculture season	88.27	32.18	4 714

Note: Categorical variables are displayed as yes/no variables where a respondent answering "yes" ascribes a value of 1, and "no" a value of 0. The mean value represents the proportion of the sample that belongs in a given category. For example, 24 percent of the sampled heads of household are women. FCS ranges from 0 to 112. Higher FCS values imply better food security outcomes. FCS categories have been designed using the adjusted thresholds of Poor (0–28), Moderate (28.5–42) and Acceptable (above 42), following the recommendation of the World Bank country offices. For coping strategies, households were asked about 22 coping strategies. Reduction in food consumption, spending savings, selling livestock or food stock, withdrawing children from school, reducing health/education expenditure were asked about explicitly; the remaining strategies were part of a longer list that households could self-report. For more details on the main outcomes at the baseline, see the full baseline report.[29]

[29] WFP. 2023. *Niger, Resilience Learning in the Sahel: Impact Evaluation Baseline Report*.

Annex E: Baseline balance and quantitative analysis

A1 Baseline Balance Between Treatment and Control Group

Table 6: A1 Baseline Balance Between Treatment and Control Group

	Mean Treatment	SD Treatment	Mean Control	SD Control	Mean difference	T-test	P-values
HH size	6.63	3.72	6.61	3.58	0.03	(0.24)	(0.81)
% Female HH head	23.91	42.66	23.61	42.48	0.30	(0.24)	(0.81)
Total HH assets owned by HH	2.07	2.01	2.12	1.96	-0.04	(-0.75)	(0.45)
Total Farm assets owned by HH	3.10	1.96	2.98	1.88	0.12*	(2.23)	(0.03)
% of HH head employed in the last 12 months	12.27	32.81	13.93	34.63	-1.66	(-1.68)	(0.09)
% of adults employed in the HH	7.56	20.73	8.42	21.88	-0.87	(-1.39)	(0.16)
Per capita HH wage income (Monthly)	7358.94	11677.80	6648.30	12319.19	710.64	(0.80)	(0.42)
HH revenue from crops sales (Annual)	19056.07	226336.83	28324.82	391276.28	-9268.75	(-0.94)	(0.35)
Livestock count	8.26	9.74	8.42	10.21	-0.16	(-0.41)	(0.68)
Profit from livestock and products (last 6 months)	5478.99	33942.57	7189.58	38619.77	-1710.58	(-1.61)	(0.11)
Food Consumption Score (FCS)	32.87	21.39	32.57	22.11	0.30	(0.47)	(0.64)
Household Dietary Diversity Score (HDDS)	3.45	1.89	3.47	1.93	-0.03	(-0.45)	(0.65)
Food Insecurity Experience Scale (FIES)	1.67	2.39	1.81	2.56	-0.14	(-1.95)	(0.05)
% Minimum Dietary Diversity for Women (MDD-W)	3.35	18.01	4.27	20.22	-0.92	(-1.17)	(0.24)
% Minimum Acceptable Diet (breastfed children)	0.41	6.38	0.44	6.65	-0.04	(-0.06)	(0.95)
% Minimum Acceptable Diet (non-breastfed children)	1.75	13.25	1.67	12.91	0.09	(0.04)	(0.97)

	Mean Treatment	SD Treatment	Mean Control	SD Control	Mean difference	T-test	P-values
HH total consumption - Monthly	30158.33	36827.14	31836.43	37084.35	-1678.10	(-1.56)	(0.12)
Food Expenditure Share (FES %)	50.21	32.85	51.38	32.69	-1.17	(-1.23)	(0.22)
Per-capita total consumption - Monthly	5314.67	6851.21	5585.39	6717.90	-270.73	(-1.37)	(0.17)
Life satisfaction today (1-10)	3.10	1.73	3.21	1.73	-0.11*	(-2.23)	(0.03)
Cohens stress index (0-40)	20.02	4.47	19.95	4.16	0.07	(0.54)	(0.59)
Female Locus of Control (0-10)	5.57	1.79	5.61	1.80	-0.04	(-0.33)	(0.74)
Number of shocks experienced	2.87	2.02	2.74	1.90	0.12*	(2.19)	(0.03)
Number of Coping Strategies Used	1.48	1.73	1.40	1.68	0.08	(1.65)	(0.10)
% of HHs used any savings mechanism	7.19	25.84	6.93	25.41	0.26	(0.35)	(0.73)
% of HHs applied for a loan	38.09	48.57	37.22	48.35	0.87	(0.62)	(0.54)
% HH received remittances (from HH member)	74.02	43.89	78.98	40.79	-4.96*	(-1.97)	(0.05)
% of HHs received financial and non financial-transfers	4.27	20.23	4.34	20.38	-0.06	(-0.11)	(0.91)
Financial support index (FZ-score)	0.07	0.95	0.00	1.00	0.07*	(2.32)	(0.02)
Social cohesion and closeness to community Z-index	-0.00	1.00	0.00	1.00	-0.00	(-0.05)	(0.96)
Groups and collective action index (FZ-score)	2.45	113.90	0.00	1.00	2.45	(1.05)	(0.30)
Observations	2363		2351		4714		

A2 Average (ITT) Impacts at Endline

Table 7: A2.1a Primary Food Security Indicators

	(1) FCS	(2) FIES
Treatment	1.512**	0.240*
	(0.654)	(0.136)
Observations	4217	4337
Control Mean	19.17	1.826
Lasso Controls	Yes	Yes
Block FE	Yes	Yes

This table reports treatment effects on FCS (Food Consumption Score) and reversed FIES (Food Insecurity Experience Scale. FCS is winsorized at the 99th percentile. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 8: A2.1b Secondary Food Security Indicators

	(1) HDDS	(2) FCS-N	(3) Minimum Dietary Diversity-W	(4) Minimum Dietary Diversity-C	(5) Minimum Meal Frequency	(6) Minimum Acceptable Diet
Treatment	0.00394	0.334	0.00384	0.00916	0.0318	0.000892
	(0.123)	(0.265)	(0.00801)	(0.0191)	(0.0372)	(0.00126)
Observations	4049	4245	3227	450	450	450
Control Mean	4.019	4.027	0.049	0.023	0.24	0.0008
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes

This table reports treatment effects on Household Dietary Diversity (HDDS), Food Consumption Score - Nutrition (FCS-N), Minimum Dietary Diversity for Women (MDD-W),Minimum Dietary Diversity for Children (MDD-C), Minimum Meal Frequency for children (MFF-C), Minimum Acceptable Diet for children (MAD-C). Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 9: A2.1c Consumption

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Consumption	Non-Food	Food	From own production	From gifts/exchanges	From purchases
Treatment Assignment	118768.2***	12293.9*	109529.9***	26145.0***	1462.5	68345.8***
	(29606.6)	(7226.5)	(25714.7)	(6090.5)	(1176.7)	(23603.5)
Observations	4326	4214	4507	4507	4507	4235
Control Mean	794091.8	130134.7	666441.2	70885.4	4894.4	544192.3
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01

This table reports treatment effects on annual values of food consumption, non food consumption and total consumption. Value of food consumption (in CFA) includes value of consumption from own pro- duction, consumption from gifts and exchanges, and consumption from purchases. All values are winsorized at the 98th percentile. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 10: A2.2 Psychological Well-being

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Life satisfaction today	Subjective social status	Future expectations	Satisfaction with life scale	Self-efficacy	Depression	Disability	Cohen's stress index
	(1-10)	(1-10)	(1-10)	(5-25)	(8-32)	(0-70)	(0-28)	(0-40)
Treatment	0.251***	0.206***	0.197***	0.328	0.297	-0.917**	-0.459**	-0.214
	(0.0733)	(0.0735)	(0.0705)	(0.230)	(0.226)	(0.447)	(0.211)	(0.149)
Observations	4206	4397	4507	4348	4241	4224	4288	4260
Control Mean	3.801	3.588	4.982	12.34	20.01	27.32	8.393	19.27
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The measurement scales for each psychosocial indicator have been mentioned below the indices. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table includes a MacArthur Scale of life satisfaction today (on a scale from 1 to 10, with 1 being the worst possible life and 10 being the best possible life), a scale of social status (1 to 10) and an index of future expectations (measures of life satisfaction and social position for respondents and their children in two years, on a scale from 1 to 10). The self-efficacy scale captures the respondent's ability to solve problems or overcome difficult situations (8 to 32, with higher numbers indicating higher self-efficacy). The depression scale from the Center for Epidemiologic Studies Depression (CES-D) ranges from 0 to 70 (higher values meaning more depression). The disability scale ranges from 0 to 28 and the Cohen's stress index ranges from 0 to 40, with higher numbers meaning more stress. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 11: A2.3 Social Well-being

	(1) Number of people you could ask for money	(2) Count on community for financial help (0/1)	(3) Probability of raising money (0/1)	(4) Count on community for personal help (0/1)	(5) Out of 10, how many trustworthy villagers	(6) Community wants to undermine your success (0/1)	(7) Tension between community in last 6 months (0/1)	(8) Closeness to community (0/1)	(9) N social groups member of	(10) N days spent volunteering	(11) Work towards community projects (0/1)
Treatment	0.597***	0.0261	0.0467***	0.0189	-0.0860	0.0249	0.0142	0.0193	0.0577***	0.131***	0.0342*
	(0.197)	(0.0170)	(0.0134)	(0.0166)	(0.105)	(0.0187)	(0.0176)	(0.0257)	(0.0199)	(0.0446)	(0.0177)
Observations	4326	4436	4507	4465	4416	3323	3662	4416	4507	4507	4326
Control Mean	4.088	0.460	0.177	0.502	4.692	0.491	0.222	0.376	0.138	0.261	0.548
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Number of people you could ask for money and the number of social groups have been winsorized at the 98th percentile. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 12: A2.4 Agriculture - Participation in Agriculture and Use of Agricultural Inputs

	(1) Cultivated land	(2) Cultivated in rainy season	(3) Cultivated in dry season	(4) Used fertilizers	(5) Used pesticides	(6) Used paid labor
Treatment	0.0209	0.00843	-0.00396	-0.00106	0.00583*	-0.000224
	(0.0162)	(0.0183)	(0.00644)	(0.00373)	(0.00324)	(0.00235)
Observations	4492	4507	4492	4490	4506	4507
Control Mean	0.795	0.745	0.0189	0.0104	0.00538	0.00583
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 13: A2.5 Agriculture - All crops

	(1) % HHs cultivating crops	(2) Area cultivated	(3) Quantity harvested	(4) Value of production	(5) % HHs selling crops	(6) Quantity sold	(7) Value of sales
Treatment	0.0266	0.265***	59.84***	12576.0***	-0.0412***	-4.435**	-1734.5**
	(0.0174)	(0.0750)	(14.69)	(3002.9)	(0.0126)	(2.191)	(836.5)
Observations	4492	4507	4507	4507	4492	4507	4469
Control Mean	0.773	1.650	249.1	53908.2	0.188	24.80	5786.0
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table shows values for main crops including millet, cowpeas, sorghum, sesame, peanut, green beans, and maize. Area cultivated is in hectares. Quantity harvested and sold are in kg per household. Annual values of production and sales are in FCFA. Standard errors have been clustered at the village level and block fixed effects have been included. All values are winsorized at 98th percentile.

*** p<0.01, ** p<0.05, * p<0.1

Table 14: A2.6 Agriculture - Staple crops

	(1) % HHs cultivating crops	(2) Area cultivated	(3) Quantity produced	(4) Value of production	(5) % HHs selling crops	(6) Quantity sold	(7) Value of sales
Treatment	0.0320*	0.261***	61.49***	12392.5***	-0.0227**	-1.870	-270.3
	(0.0172)	(0.0726)	(14.32)	(2906.8)	(0.0111)	(1.923)	(238.3)
Observations	4507	4507	4492	4492	4507	4507	4492
Control Mean	0.751	1.584	239.0	48792.0	0.143	16.80	1689.3
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table shows values for staple crops including millet, cowpeas and sorghum. Area cultivated is in hectares. Quantity harvested and sold are in kg per household. Annual values of production and sales are in FCFA. Standard errors have been clustered at the village level and block fixed effects have been included. All values are winsorized at 98th percentile.

*** p<0.01, ** p<0.05, * p<0.1

Table 15: A2.7 Agriculture - Non staple crops

	(1) % HHs cultivating crops	(2) Area cultivated	(3) Quantity produced	(4) Value of production	(5) % HHs selling crops	(6) Quantity sold	(7) Value of sales
Treatment	0.00355	0.0103	0.318	153.5	-0.0201*	-2.478	-1484.5*
	(0.0115)	(0.00980)	(1.830)	(914.2)	(0.0108)	(1.747)	(861.4)
Observations	4507	4471	4469	4469	4465	4465	4469
Control Mean	0.113	0.0534	10.57	5248.9	0.0584	8.082	4105.0
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table shows values for non staple crops including sesame, peanut, green beans, and maize. Area cultivated is in hectares. Quantity harvested and sold are in kg per household. Annual values of production and sales are in FCFA. Standard errors have been clustered at the village level and block fixed effects have been included. All values are winsorized at 98th percentile.

*** p<0.01, ** p<0.05, * p<0.1

Table 16: A2.8 Livestock

	(1) Owned livestock	(2) Livestock Index (TLU)	(3) Total livestock count	(4) N chickens	(5) N goats	(6) N sheeps	(7) Revenues from livestock sales
Treatment	0.0894***	0.0136	0.261	0.144**	0.121	0.0272	-113.9
	(0.0217)	(0.0184)	(0.229)	(0.0726)	(0.134)	(0.0657)	(304.5)
Observations	4494	4397	4408	4505	4397	4451	4507
Control Mean	0.374	0.176	2.447	0.677	1.106	0.592	1405.4
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TLU denotes Tropical Livestock Unit, which were calculated by assigning the following weights to each livestock category. Chicken (0.01), Cow (0.70), Goat (0.10) and Sheep (0.10). The number of animals owned was multiplied by the weights above and aggregated to formulate the Livestock Index (TLU) at the household level. Total livestock count is the total number of animals owned by a household. Revenue from livestock sales has been winsorized at 2nd and 98th percentile. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 17: A2.9 Off-farm Business Activities

	(1) Owned a business	(2) Number of businesses	(3) Number of months business operated	(4) Monthly profit	(5) Monthly revenue
Treatment	0.00470	0.00502	0.0392	20.26	41.29
	(0.00872)	(0.00953)	(0.0688)	(57.93)	(145.6)
Observations	4507	4507	4507	4507	4507
Control Mean	0.0726	0.0771	0.508	324.8	882.0
Lasso Controls	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes

Standard errors have been clustered at the village level and block fixed effects have been included. Monthly profit and revenue has been winsorized at 98th percentile.

*** p<0.01, ** p<0.05, * p<0.1

Table 18: A2.10 Wage Employment

	(1) HH with wage employment (0/1)	(2) HH with wage job oustide agriculture (0/1)	(3) HH with wage job in agriculture (0/1)	(4) Total number of days worked	(5) Monthly wage earnings (in CFA)
Treatment	0.1000***	0.0407***	0.0479***	1.951***	2259.5***
	(0.0184)	(0.00867)	(0.0117)	(0.316)	(543.1)
Observations	4476	4149	4149	4507	4476
Control Mean	0.114	0.0132	0.0814	1.673	2680.3
Lasso Controls	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes

Standard errors have been clustered at the village level and block fixed effects have been included. Monthly wage earning has been winsorized at 98th percentile.

*** p<0.01, ** p<0.05, * p<0.1

Table 19: A2.11 Assets

	(1) Owned HH asset (0/1)	(2) Number of HH assets	(3) HH asset value (in CFA)	(4) Owned Farm asset (0/1)	(5) Number of Farm assets	(6) Farm Assets value (in CFA)	(7) Owned Business asset (0/1)	(8) Business Assets value (in CFA)
Treatment	-0.00822	0.0361	2921.0	0.0132	0.0985	3833.2*	0.00634	353.0
	(0.0176)	(0.0551)	(1812.8)	(0.0101)	(0.0632)	(2046.4)	(0.00857)	(214.8)
Observations	4492	4329	4388	4440	4492	4326	4507	4507
Control Mean	0.571	1.216	28871.6	0.872	2.548	28336.4	0.0686	1228.2
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors have been clustered at the village level and block fixed effects have been included. Asset values have been winsorized at 98th percentile. HH Assets include mobile phones, furniture, TV etc., Farm Assets include cart, axe, shovels, sowing devices etc. Business assets include material and equipment used in business.

*** p<0.01, ** p<0.05, * p<0.1

Table 20: A2.12 Savings and Loans

	(1) Applied for a loan (0/1)	(2) Amount Borrowed (in CFA)	(3) Saved (0/1)	(4) Amount of Savings (in CFA)	(5) Received in-kind transfer from another HH (0/1)	(6) Value of Transfer Received (in CFA)
Treatment	0.0132	181.8	0.0189**	100.9*	0.00419	2260.3*
	(0.0172)	(860.5)	(0.00944)	(58.96)	(0.00412)	(1299.9)
Observations	4507	4377	4507	4507	4507	4507
Control Mean	0.344	12522.8	0.0453	242.7	0.0193	11658.5
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes

Table includes annual amount borrowed, amount of savings and value of transfer received in CFA. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 21: A2.13 Migration

	(1) %HHs with an internal migrant (0/1)	(2) %HHs with an external migrant (0/1)	(3) %HHs received money from internal migrant (0/1)	(4) %HHs received money from external migrant (0/1)
Treatment	0.00813	0.00178	0.0120	0.0175
	(0.0142)	(0.0123)	(0.0146)	(0.0119)
Observations	4443	4323	4486	4398
Control Mean	0.132	0.119	0.123	0.122
Lasso Controls	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes

Internal migrant refers to the case where there is any household member living elsewhere in the country whereas external migrant refers to households where any member is living outside the country. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 22: A2.14 Education

	(1) Currently enrolled (Ages 5 to 8)	(2) Currently enrolled (Ages 9 to 12)	(3) Currently enrolled (Ages 13 to 18)	(4) Education expenses (Ages 5 to 18)
Treatment Assignment	0.0130	-0.00695	0.00936	-1374.3
	(0.0203)	(0.0204)	(0.0127)	(995.0)
Observations	3718	3532	4255	2332
Control Mean	0.285	0.405	0.238	14475.7
Lasso Controls	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes

Education expenses (in CFA) include tuition expenses, school books and materials, school uniforms, and other expenses such as transportation and meals. Education expenses for the past 12 months is winsorized at the 98th percentile. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 23: A2.15 Shocks

	(1) Number of shocks experienced	(2) Drought (0/1)	(3) Food price increase (0/1)	(4) Crop/pest disease (0/1)	(5) Ag inputs price increase (0/1)	(6) Animal diseases (0/1)	(7) Floods (0/1)	(8) Serious illness (0/1)	(9) Output price decrease (0/1)
Treatment Assignment	0.129	0.0427*	0.0278	0.0203	0.0261	0.0332*	-0.00593	-0.0222**	0.00981
	(0.130)	(0.0222)	(0.0220)	(0.0236)	(0.0196)	(0.0183)	(0.0154)	(0.0109)	(0.0144)
Observations	4507	4486	4486	4305	4486	4486	4391	4486	4486
Control Mean	3.149	0.594	0.516	0.452	0.338	0.263	0.184	0.119	0.116
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 24: A2.16 Coping Strategies

	(1) LCSI	(2) RCSI	(3) Number of coping strategies used	(4) Reduced food consumption (0/1)	(5) Sold livestock (0/1)	(6) Used savings (0/1)	(7) Reduced health/education expenses (0/1)	(8) Sold food stock (0/1)	(8) Withdrew children from school (0/1)
Treatment Assignment	-0.0214	-0.0252	0.0184	0.0193	-0.0119	0.00329	-0.00279	-0.00353	-0.000348
	(0.0216)	(0.0510)	(0.0472)	(0.0161)	(0.0104)	(0.00844)	(0.00747)	(0.00534)	(0.00409)
Observations	4454	4486	4454	4328	4402	4388	4392	4390	4399
Control Mean	1.286	0.443	0.819	0.311	0.100	0.0786	0.0529	0.0370	0.0184
Lasso Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The LCSI (Livelihood Coping Strategy Index) is constructed by pooling livelihood coping strategies intro three categories of Stress, Crisis and Emergency and taking the maximum value across these three components. Reduced Coping Strategies Index (RCSI) is constructed from frequency and severity of five coping strategies that the household used in the previous 30 days. Coping strategies were inquired about over a 30 days and 12 months recall period, the above reports values from a 12 months period. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 25: A2.17 Subjective Resilience

	(1) Subjective Resilience Score	(2) Low Resilience Score (0-32)	(3) Medium Resilience Score (33-65)	(4) High Resilience Score (Above 66)
Treatment	1.289	-0.0254	0.00210	0.0229
	(1.021)	(0.0168)	(0.0196)	(0.0189)
Observations	4507	4507	4507	4507
Control Mean	44.34	0.276	0.572	0.152
Lasso Controls	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes

The Subjective Resilience score is calculated using 10 core SERS indicators and ranges from 0 to 100. These sub-indicators were selected based on consultations with OEV and other WFP staff. These included 1. Your household can bounce back from any challenge that life throws at it. 2. Your household is better able to deal with hardship compared with others in your community. 3. If threats to your household become more frequent and intense, you would still find a way to get by. 4. Would you say that you strongly agree, agree, disagree, strongly disagree or neither agree nor disagree that: During times of hardship, your household can change its primary source of income or livelihood if needed. 5. Your household can rely on the support of family and friends when you need help. 6. Was there a time when your household ran out of food because of a lack of money or other resources? 7. Your household can rely on the support of politicians and government when you need help. 8. Would you say that you strongly agree, agree, disagree, strongly disagree or neither agree nor disagree that - Your household has learned important lessons from past hardships that will help you better prepare for the future. 9. Your household is fully prepared for any future threats and challenges that may occur in your area. 10. Your household frequently receives information warning you about future extreme weather events in advance. The Subject Resilience Score in control households is 44.34, which classifies households on-average having medium subjective resilience. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

A3 Impacts by Poverty Classification (eligibility for FFA and LSS support)

Table 26: Food Security

	(1) FCS	(2) FIES
Treatment	-0.540	0.368
	(1.180)	(0.289)
Classified as Poor	-1.448	-0.296
	(0.969)	(0.219)
Treatment × Classified as Poor	2.483**	-0.169
	(1.160)	(0.274)
Observations	4373	4358
Control Mean	19.06	1.822
Lasso Controls	Yes	Yes
Block FE	Yes	Yes
P-value for the treatment effects for the poor	0.0031	0.153

This table reports treatment effects on FCS (Food Consumption Score), and reversed FIES (Food Insecurity Experience Scale. FCS is winsorized at the 99th percentile. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

A4 Impacts by Village Type (Primary nearest FFA site or Secondary further away)

Table 27: Food Security

	(1) FCS	(2) FIES
Treatment	-0.141	0.377
	(1.096)	(0.230)
Primary Village	-0.477	0.273
	(0.956)	(0.224)
Treatment × Primary Village	2.697**	-0.230
	(1.332)	(0.294)
Observations	4373	4358
Control Mean	19.06	1.822
Lasso Controls	Yes	Yes
Block FE	Yes	Yes
P-value for treatment effect for primary village	0.0007	0.411

This table reports treatment effects on FCS (Food Consumption Score), and reversed FIES (Food Insecurity Experience Scale. FCS is winsorized at the 99th percentile. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.

A5 Impacts by Other Heterogeneity Dimensions

Table 28: Food Consumption Score

	(1) FCS	(2) FCS	(3) FCS	(4) FCS	(5) FCS
Treatment	1.313**	0.105	2.330***	2.341	1.502
Female HH=1	(0.648)	(1.328)	(0.826)	(1.556)	(0.946)
	-1.524**				
	(0.720)				
Treatment × Female HH=1	1.011				
	(1.016)				
Cultivated plots=1		-0.212			
		(0.980)			
Treatment × Cultivated plots=1		1.642			
		(1.339)			
Below median TLU=1			0.302		
Treatment × Below median TLU=1			(0.675)		
			-1.600*		
			(0.889)		
Below median savings=1				1.315	
				(1.178)	
Treatment × Below median savings=1				-0.824	
				(1.679)	
Below median FCS=1					-0.531
					(1.012)
Treatment × Below median FCS=1					0.137
					(1.052)
Observations	4373	4373	4346	4373	4331
Lasso Controls	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes
P-value for treatment effect on heterogeneity dimensions	0.030	0.008	0.298	0.023	0.019

This table reports heterogeneity on treatment effects on FCS (Food Consumption Score). FCS is winsorized at the 99th percentile. Poor classifies households as the ones eligible for FFA and LSS support, Primary villages are nearest to an FFA site while secondary are further away. Female HHs are ones headed by a female member. Below median TLU (Tropical Livestock Unit) is a dummy variable for households with below median TLU livestock. Below median savings is a dummy variable for house- holds with below median savings. Below median FCS (Food Consumption Score) is a dummy variable for households with below median FCS. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Table 29: Food Insecurity Experience Scale

	(1) FIES	(2) FIES	(3) FIES	(4) FIES	(5) FIES
Treatment	0.299**	0.215	0.330*	1.301***	0.286*
	(0.148)	(0.305)	(0.182)	(0.371)	(0.158)
Female HH=1	-0.107				
	(0.134)				
Treatment × Female HH=1	-0.303				
	(0.205)				
Cultivated plots=1		0.117			
		(0.190)			
Treatment × Cultivated plots=1		0.0140			
		(0.292)			
Below median TLU=1			-0.0277		
			(0.137)		
Treatment × Below median TLU=1			-0.207		
Below median savings=1			(0.185)	0.495**	
Treatment × Below median savings=1				(0.199)	
				-1.147***	
				(0.351)	
Below median FIES=1					-0.0500
					(0.151)
Treatment × Below median FIES=1					-0.116
					(0.157)
Observations	4358	4358	4332	4358	4358
Lasso Controls	Yes	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes	Yes
P-value for treatment effect on heterogeneity dimensions	0.986	0.107	0.413	0.268	0.300

This table reports heterogeneity on treatment effects on FIES (Food Insecurity Experience Scale). Poor classifies households as the ones eligibile for FFA and LSS support, Primary villages are nearest to an FFA site while secondary are further away. Female HHs are ones headed by a female member. Below median TLU (Tropical Livestock Unit) is a dummy variable for households with below median TLU livestock. Below median savings is a dummy variable for households with below median savings. Below median FCS (Food Consumption Score) is a dummy variable for households with below median FCS. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

A6 Instrumental Variable Results (accounting for actual participation in several FFA rounds)

Table 30: Instrumental Variable Results

	(1) FCS	(2) FIES
IV	2.606*	0.453
	(1.378)	(0.287)
Observations	1461	1456
Control Mean	19.31	1.890
Lasso Controls	Yes	Yes
Block FE	Yes	Yes

This table reports treatment effects on FCS (Food Consumption Score) and reversed FIES (Food Insecurity Experience Scale. FCS is winsorized at the 99th percentile. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

A7 Impacts from High-Frequency Data Collection

Table 31: A7.1 Impacts for each High-Frequency Data Collection Round

	(1) Apr-May '21	(2) Jun-Jul '21	(3) Aug-Sep '21	(4) Oct-Nov '21	(5) Dec-Jan '22	(6) Mar-Apr '22	(7) May-Jun '22	(8) Jul-Aug '22	(9) Sep-Oct '22	(10) Nov-Dec '22
FCS	1.427	0.824	0.029	1.651	1.210	0.637	-0.128	-0.401	1.779**	1.712*
	(0.930)	(0.761)	(0.762)	(1.067)	(0.888)	(0.993)	(0.839)	(0.803)	(0.809)	(0.937)
FIES	0.003	0.168	0.124	0.045	-0.012	-0.014	0.191**	0.079	-0.136	-0.139
	(0.144)	(0.124)	(0.112)	(0.192)	(0.184)	(0.104)	(0.091)	(0.077)	(0.138)	(0.224)
Observations	1635	1635	1635	1635	1635	1635	1635	1635	1635	1635
Lasso Controls	No	No	No	No	No	No	No	No	No	No
Block FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports treatment effects on FCS (Food Consumption Score) and reversed FIES (Food Insecurity Experience Scale. FCS is winsorized at the 99th percentile. This table contains a subset of the baseline sample which was surveyed during the high frequency data collection. This sub sample was divided into two cohorts and surveyed in consecutive months. Round pooled refers to the two-monthly period where the entire high frequency sample was surveyed. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Figure 22: Trends in FCS (for each round)

Figure 23: Trends in FIES (for each round)

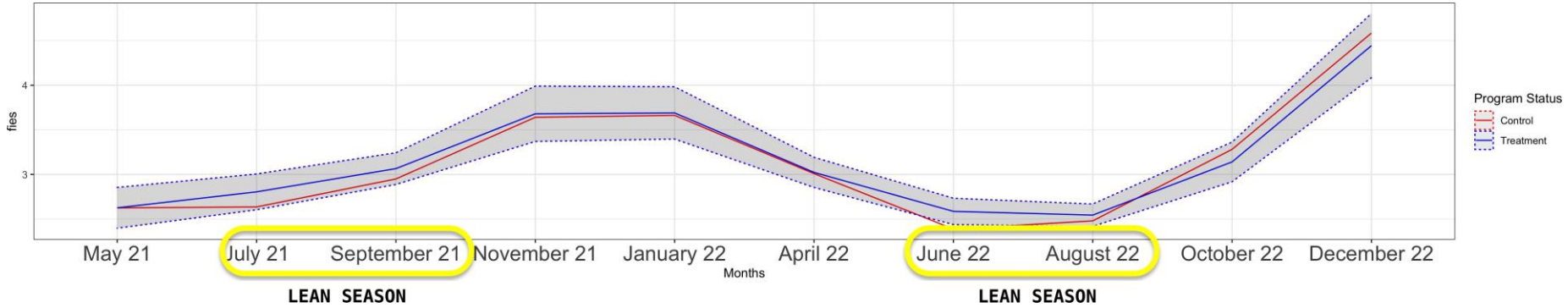


Figure 24: FCS coefficient plot (for each round)

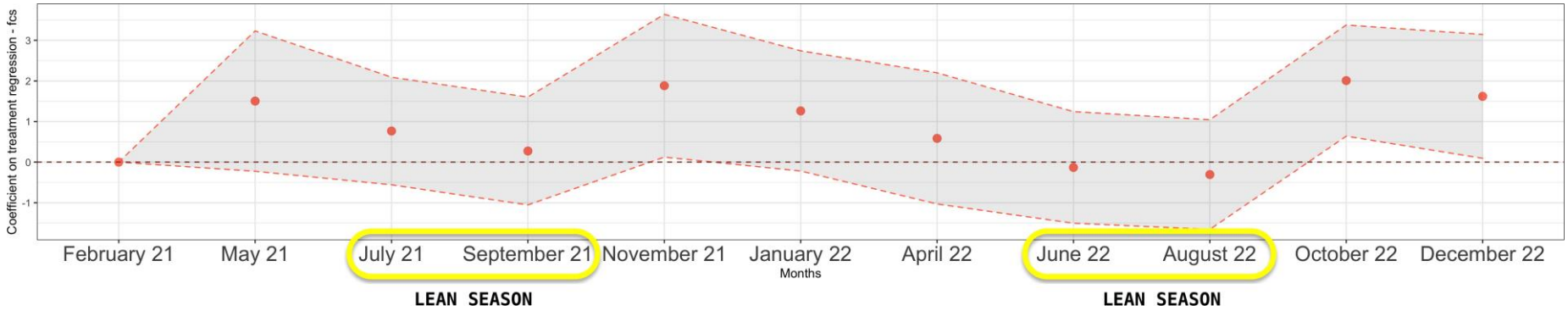
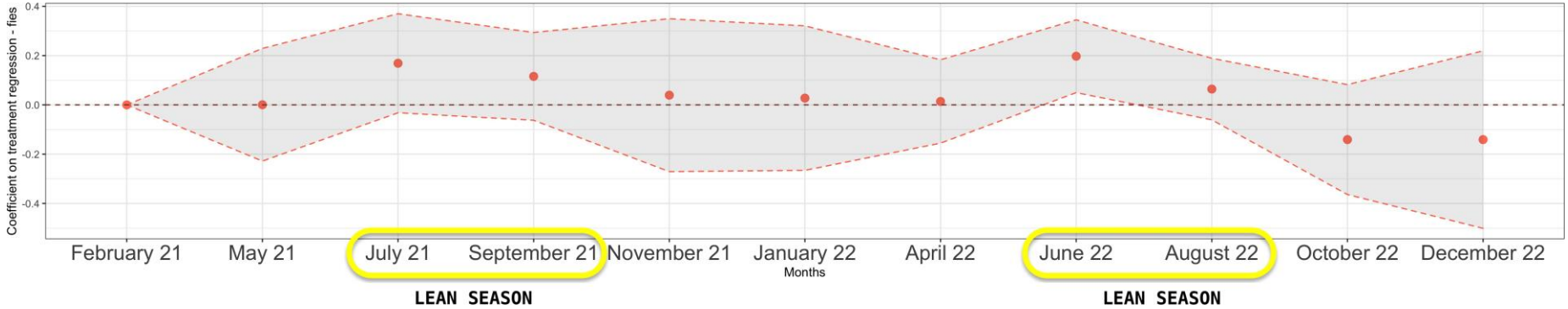


Figure 25: FIES coefficient plot (for each round)



A8 Impacts Aggregated Across High-Frequency Data Collection Rounds

Table 32: A8 Impacts Aggregated Across High-Frequency Data Collection Rounds

Outcomes	(1) All	(2) First Year	(3) Second Year
FCS	1.032**	1.505***	0.79
	(0.497)	(0.553)	(0.560)
FIES	0.014	0.078	-0.007
	(0.065)	(0.082)	(0.079)
Observations	1635	1635	1635
Lasso Controls	No	No	No
Block FE	Yes	Yes	Yes

This table reports treatment effects on FCS (Food Consumption Score) and reversed FIES (Food Insecurity Experience Scale. FCS is winsorized at the 99th percentile. Overall refers to the period from April 2021-March 2023, Year 1 refer to the period from April 2021-March 2022 and Year 2 refers to the period April 2022-March 2023. Standard errors have been clustered at the village level and block fixed effects have been included.

*** p<0.01, ** p<0.05, * p<0.1

Annex F: Ethical considerations

162. WFP impact evaluations conform to 2020 United Nations Evaluation Group (UNEG) ethical guidelines. Accordingly, the Office of Evaluation and World Bank's Development Impact Evaluation (DIME) department are responsible for safeguarding and ensuring ethics at all stages of the evaluation cycle. This includes, but is not limited to, ensuring informed consent, protecting privacy, confidentiality, and anonymity of participants, ensuring cultural sensitivity, respecting the autonomy of participants, ensuring fair recruitment of participants (including women and socially excluded groups) and ensuring that the evaluation results cause no harm to participants or their communities. During the inception phase, the following ethical issues, related risks, safeguards, and measures have been considered.

Institutional Review Board (IRB)

163. The Climate and Resilience Impact Evaluation Window design, as well as the specifics of the Niger study, received ethical approval on 10 March 2020 by Solutions IRB, which is a private commercial IRB, full accredited by the Association for the Accreditation of Human Research Protection Programs, Inc. (AAHRPP). The IRB has been renewed every year.

Programme exclusion

164. Refusing to partake in the evaluation had no bearing on eligibility for WFP support.

IRB approval

165. The evaluation team obtained international approval (on 12 November 2020) from an IRB for the Climate and Resilience Impact Evaluation Window design as well as the specific design and measurement elements in Niger. In addition, the evaluation team also obtained approvals from local institutions in Niger (based at the Health Ministry of Niger). This ensures that the evaluation complies with local regulations and does not violate any local laws.

Informed consent

166. The evaluation and survey teams ensured that enumerators were fully trained to obtain informed oral consent from all evaluation participants. Every participant must consent to take part in our surveys. We are very explicit that refusal to respond to our survey does not come with any consequences for participation in WFP's resilience programming. The head of the household is the primary respondent for the survey. While most survey questions are addressed to the head of the household, a few questions may be directed to other household members, including women (such as questions on women's empowerment and food consumption for children aged from 6–23 months). To avoid respondent discomfort during surveys, we took precautions to ensure that questions were asked bearing in mind the privacy and comfort of respondents:

- Participants may skip any questions they do not wish to answer, or withdraw from the survey at any time.
- Interviews were conducted at the participants' homes to help them to be comfortable answering questions.

167. Finally, all enumerators completed training lasting one to two weeks. Following the training, the surveys were piloted in the impact evaluation areas. The goals of the training are to ensure that enumerators follow survey best practices in terms of protocols and ethics, and that questions are asked in a uniform and contextually appropriate manner.

Confidentiality

168. The evaluation team ensured complete anonymity and confidentiality of all data collected from evaluation participants. This means that the identity of evaluation participants will remain hidden in all forms of data construction and analysis, and sensitive information will not be shared with anyone outside the evaluation team.

Transparency in evaluation designs

169. To increase the transparency of the work, the evaluation is registered through the American Economic Association's trial registry.

Considerations for rewarding participation

170. The evaluation team considered providing small cash transfers to participants in the high-frequency survey. However, following discussion with the country office, it was decided that it would be preferable to provide a small in-kind gift (a bar of soap) for each round of high-frequency data collection.

Annex G: Limitations

External validity

171. The results of a single evaluation might not generalize to other settings. However, the robustness of the findings across contexts can be assessed through a synthesis of results from all the countries that participate in the Climate and Resilience Impact Evaluation Window. See the Window pre-analysis plan for details.[30] The use of coordinated survey instruments and data collection protocols will help to ensure that the data collected in Niger is comparable to other countries in the Climate and Resilience Window and in other WFP supported evaluation windows, to maximize the potential to draw more general conclusions.

Internal validity

172. This impact evaluation limited the risk to internal validity by using the most rigorous impact evaluation method available – a randomized controlled trial (RCT). In addition, as with any in-field RCT, spill-over across communities, and differential attrition, are potential risks for the evaluation. The team worked closely with the cooperating partners on the ground to monitor potential spill-overs and collect data on exposure to the programme in both the WFP programme and comparison groups. Survey response rates were high, and we did not observe any statistically significant differential attrition, and thus no impact to the internal validity of the results.

Programme participation

173. In contexts of insecurity, participation in the programme may be reduced due to difficulties accessing activity areas (such as asset creation sites and nutrition centres). It is also possible that beneficiaries find alternative income sources that are more suitable for their needs and choose not to participate in the resilience programme. If programme participation is low, it is difficult to detect statistically significant effects of the programme based on the original survey sample.

174. The impact evaluation team worked closely with the country office to consolidate programme monitoring data to track implementation of the various programme activities at in each site. However, the programme monitoring system did not allow for precisely tracking household-level participation to programme components or payments made over time. This limited the impact evaluation's team ability to analyse and account for differences in participation in programme components at the household level, which could only be estimated using self-reported data collected in the high-frequency survey sample. Finally, detailed cost data could not be obtained to perform cost-benefit analysis.

Disability inclusion

175. As part of the 2020 Disability Inclusion Road Map, WFP is building on continued efforts to mainstream and standardize disability data collection methodologies, aligning with international standards and best practices. In 2022, the *Niger Annual Country Report* estimated that 204,745 beneficiaries had disabilities out of a total of 4,180,256 beneficiaries (4.9 percent). Based on this estimation, approximately 115 beneficiaries in the project evaluated could have had disabilities. Although this represents an important population, the size is too small for this evaluation to estimate any differential impacts for disabled beneficiaries.

[30] WFP & DIME. 2022. *Do Integrated WFP Interventions Contribute to Household Resilience Capacities?* Impact Evaluation Brief. January 2022.

Annex H: Pre-baseline wealth ranking and programme targeting

176. Within communities targeted for WFP resilience programme support, households eligible for food assistance for assets (FFA) and lean season support (LSS) are selected based on their level of vulnerability through a community targeting approach. While all households in the community benefit from school feeding or nutrition activities, only households identified as "very poor" or "poor" (based on a community targeting exercise based on the Household Economy Analysis (HEA) methodology) are selected to participate in FFA activities. In this section, we explain how a community wealth ranking was performed to mimic the HEA targeting exercise across treatment and comparison groups before the baseline survey was carried out, and prior to the WFP targeting process. We then compare results from the community pre-baseline wealth ranking with results from the WFP community targeting undertaken in treatment sites after the randomization.

Pre-baseline wealth ranking prior to baseline survey

177. The Niger baseline sample includes 91 FFA work sites. We sampled a primary village in each site, and one secondary village in sites with multiple secondary villages. This gives us a sample of 158 villages in the 91 sites.

178. Within the 158 villages, we undertook a door-to-door household listing, leading to the identification of 23,414 households (see Table 33 for a breakdown by region). We then drew a sample of 10,079 households (up to 80 households per village), which we asked community committees to rank in a process that mimics the HEA approach used by WFP for community targeting in Niger. The goal of the pre-baseline wealth ranking was to predict which households would be identified as FFA beneficiaries by WFP (typically households classified as "very poor" or "poor"), and to do so consistently across treatment and comparison areas.

Table 33: Number of households listed, ranked, and interviewed at baseline – across all 91 programme and comparison sites (and the 158 sampled villages associated with these sites)

Region	Households listed	Households ranked	Households interviewed at baseline
Diffa	1 453	1 315	936
Dosso	3 139	1 551	595
Tahoua	18 822	7 213	3 183
Total	**23 414**	**10 079**	**4 714**

179. WFP and the World Bank's Development Impact Evaluation (DIME) department worked together to develop a protocol for the listing and community wealth ranking, with the objective to come as close as possible to the WFP targeting process without raising expectations about programme participation. The steps followed the WFP targeting protocol by creating three subcommittees to rank households using the same targeting tool as WFP implementing partners. The enumerators who facilitated the work of the subcommittees were trained by WFP trainers, using WFP content and targeting tools. The difference was that the process was a bit lighter: the committees ranked only a (random) sample of households instead of all households in the community. In addition, the process was not followed by a village-wide assembly with participation from commune leaders, and did not involve door-to-door verification of households for committee consensus on the ranking. This was to avoid raising expectations about upcoming programme participation.

180. As a result of the pre-baseline wealth ranking exercise, 4,755 households (47.2 percent) were considered "very poor", 3,841 (38.1 percent) were considered "poor", 1,222 (12.1 percent) were

considered “moderately poor”, and 225 (2.3 percent) were considered “well-off”. Table 34 provides the breakdown.

Table 34: Number of households by pre-baseline wealth ranking, for all households ranked and for households in the baseline sample (programme and comparison sites)

Poverty status	Households ranked	% households ranked	Households sampled	% households sampled
Very poor	4 755	47.20%	2 249	45.90%
Poor	3 841	38.10%	1 890	38.60%
Moderate	1 222	12.10%	616	12.60%
Well-off	225	2.30%	125	2.60%
No consensus	36	0.30%	12	0.30%
Total	**10 079**	**100%**	**4 892**	**100%**

181. Among the ranked households, we drew a subsample of 54 households per site to be interviewed at baseline. The 4,892 baseline sample households included 3,057 from primary villages (62.5 percent) and 1,835 from secondary villages (37.5 percent). Out of the 4,892 sampled households, 4,714 were successfully interviewed at baseline. The household sample was not stratified by poverty level, but we can document its breakdown by the poverty status elicited from the pre-baseline wealth ranking. Out of the 4,892 baseline sample households, 2,249 (45.9 percent) were considered “very poor”, 1,890 (38.6 percent) were considered “poor”, 616 (12.6 percent) were considered “moderately poor”, and 125 (2.6 percent) were considered “well-off”. Due to a lack of consensus in community committees, 12 households (0.3 percent) could not be ranked. Table 35 provides the pre-baseline breakdown of sample households by community wealth ranking. It is very similar to the full population ranked, highlighting the representativeness of the sample.

Correlation between pre-baseline wealth ranking and programme targeting

182. Following the baseline survey and randomization, WFP implemented a full targeting protocol in the 46 treatment sites. This section analyses the consistency between the pre-baseline wealth ranking and the results of the WFP targeting exercise in treatment sites. For the 46 treatment sites, targeting data were provided by the WFP country office and sub-offices for the 158 sample villages. Specifically, DIME shared the list of 11,913 households identified during the community listing in treatment villages. Then, WFP conducted the targeting and shared the targeting datasets with DIME. Of the 11,913 households listed, 11,880 (99.7 percent) were uniquely identified, and 33 households could not be identified by their corresponding ID in the WFP targeting dataset. Among the 11,913 households of the full listing dataset, 11,358 (95.3 percent) were ranked during the WFP community targeting process. The remaining 555 households (4.7 percent) have missing ranking values.

Table 35: Correspondence between household classification in pre-baseline wealth ranking and WFP targeting data (treatment sites)

Community wealth ranking						
		WFP targeting				
		VP	P	M	W	Missing
Pre-baseline wealth ranking	VP	1 497	461	364	34	185
	P	551	693	521	51	159
	M	98	83	352	45	45
	W	4	6	36	52	11

Note: VP = "Very poor", P = "Poor", M = "Moderate", W = "Well-off".

Table 36: Correspondence between household classification in pre-baseline and WFP targeting data (programme sites, baseline sample only)

Community ranking						
		WFP targeting				
		VP	P	M	W	Missing
Baseline	VP	610	202	135	12	115
	P	262	317	227	19	92
	M	47	45	166	20	36
	W	2	3	19	24	7

Note: VP = "Very poor", P = "Poor", M = "Moderate", W = "Well-off".

183. The consistency between the results from the pre-baseline wealth ranking and the programme targeting data is lower than expected. Among the 5,248 households ranked in treatment sites, only 2,594 (1,497 + 693 + 352 + 52, or 2,594/5,248 = 49 percent) of all households are classified in the same category in both the pre-baseline wealth ranking and WFP targeting data (see observations in the diagonal in Table 35). Even when considering the broader categories of either poor or less poor, 3,687 (1,497 + 461 + 551 + 693 + 352 + 45 + 36 + 52, or 3,687/5,248 = 70 percent) of all households are classified the same way as either “poor” (“very poor” or “poor”) or “less poor” (“moderate” or “well-off”). Similarly, among the 2,360 baseline households ranked in the treatment group, 1,117 (610 + 317 + 166 + 24, or 1,117/2,360 = 47 percent) are classified in the same category in both rankings (see observations in the diagonal in Table 36). Considering the broader categories of either “poor” or “less poor”, 1,620 (610 + 202 + 262 + 317 + 166 + 20 + 19 + 24, or 1,620/2,360 = 69 percent) of all households are classified the same way as either “poor” (“very poor” or “poor”) or “less poor” (“moderate” or “well-off”).

184. These results have two main implications. First, they show that the HEA community targeting process, which relies on a participatory approach, is not easily replicable. Even with the exact same training, tools, and largely the same protocol resulting in a high consensus in the ranking between committees within communities, the results are rather unstable. Second, from the impact evaluation standpoint, the pre-baseline wealth ranking was collected to facilitate subgroup analysis between “poor” and “less

poor" households in the control and treatment groups. Since the actual programme targeting was only conducted in the treatment group, this exercise does not generate similar categorization in the control group villages. Therefore, we cannot adjust the impact evaluation sample to reflect the actual programme targeting data. The endline analysis thus relies on intent-to-treat estimates, which means comparing respondents living in sites targeted for the intervention with respondents from sites not targeted for the intervention. Importantly, some interventions (e.g., school feeding, nutrition activities, etc.) are implemented at the site level and are expected to impact households across different groups, which the intent-to-treat analysis factors in. The impact evaluation report also presents that the main results are robust when estimating treatment-on-the-treated for those actually participating in FFA.

Acronyms

BMZ Germany's Federal Ministry for Economic Cooperation and Development

CBT cash-based transfer

DIME World Bank's Development Impact Evaluation department

FCS Food Consumption Score

FCS-N Food Consumption Score - Nutrition

FFA food assistance for assets

FGD focus group discussion

FIES Food Insecurity Experience Scale

GDP gross domestic product

HDDS Household Dietary Diversity Score

HDI Human Development Index

HEA Household Economy Analysis

IFPRI International Food Policy Research Institute

ITT Intention-to-Treat

LSS lean season support

RBD Regional Bureau of Dakar

RCT randomized controlled trial

SAMS Smallholder Agriculture Market Support

UNDP United Nations Development Programme

USAID United States Agency for International Development

VSLA Village Savings and Loan Association

WFP World Food Programme

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Office of Evaluation

World Food Programme

Via Cesare Giulio Viola 68/70,
00148 Rome, Italy - T +39 06 65131

wfp.org/independent-evaluation