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# Direct and indirect benefits of food and cash assistance in Uganda

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## Executive summary

The United Nations World Food Programme (WFP) has the vision to escalate Cash Based Transfers (CBT) initiatives in coordination with the Government of Uganda. This study aims to gain a better understanding of the direct and indirect benefits of food and cash transfers to refugees and asylum seekers within WFP's General Food Assistance (GFA) operations in the country.

Based on the modality of assistance provided, four settlements were selected, namely Bidibidi (100 percent food transfers) and Kiryandongo (61 percent cash transfers and 39 percent food transfers), Kyangwali (100 percent cash transfers), and Nakivale (100 percent cash transfers).

In these settlements, WFP interviewed 1,406 beneficiary households along with 635 households from host communities and 140 business owners. A general equilibrium (GE) modelling approach was applied to the collected data to simulate how spending in goods and services generates spill-over<sup>1</sup> impacts to non-assisted households, productive activities, and the labour market. Specifically, the GE model used is the Local Economy-Wide Impact Evaluation (LEWIE) model within WFP's Shock and Assistance Platform for Economic Simulations ([SHAPES](#)).

The results of the study are representative at the settlement level and will inform ongoing interventions, providing supporting evidence for promotion of self-reliance, livelihood, and asset creation activities. The key findings are as follows:

**The overall contribution of WFP assistance is significant in all four settlements.** When simulating the impact of cash versus food transfers, the LEWIE model shows that cash transfers create larger total impacts, which imply larger spill-over effects and thereby higher benefits for Ugandans living nearby the settlements.

**GFA (both food and cash transfers) has a significant return on investments.** For every US dollar transferred to the beneficiaries, it is possible to estimate an income multiplier of 1.89 in Bidibidi, 1.37 in Kiryandongo, 1.50 in Kyangwali, and 1.53 in Nakivale. Production multipliers are larger for retail and service activities (between 5 and 17 percent), while they are smaller for crop and livestock activities (between 0 and 6 percent).

**Market integration, the level of agricultural productivity and date of establishment of the settlements are key conditions to be considered to explain these results.** For settlements that are well established and integrated with regional markets, cash tends to create larger benefits. The date of establishment of the settlement seems to be relevant to

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<sup>1</sup> Spill-over impacts are defined as the multiplier – the economic effects above the transfer value, here defined as one USD for the sake of clarity. Note that the multiplier is independent from the currency, therefore it can be referred to UGX as well.

the levels of additional benefits generated. This is likely to be partially driven by increased productive activities for refugees who have been living in Uganda for a longer period.

**The market dynamics in host communities are influenced by refugees' income-generating activities.** The study shows that, refugees do not survive on assistance alone in the surveyed settlements; often they have income-generating activities that allow them to interact with the host-country economy. Local businesses potentially benefit from refugees' demand for their products and the availability of refugee labour.

**We find some relevant households' characteristics that are associated to the use of assistance and the generation of income and productive multipliers:**

- Households receiving cash transfers spend more money than those receiving food transfers and have a higher probability of engaging in farming activities.
- The more aggregate productive capacity refugee and host communities have, the larger the multipliers. Households with more productive capacity tend to have fewer coping needs.
- Multiplier effects on assistance grow as households become more productive in the local economy. Increasing their capacity to engage in income generating activities is therefore important, and training programs could support this effort, also by improving financial literacy in the settlements.
- Refugee households with female heads of household perform significantly worse than their male-headed counterparts. However, when female members have secondary or above level of education, they tend to have higher food security outcomes even if with lower income and expenditure levels.
- Households with a larger number of working age members less likely adopt negative livelihood coping strategies, while those with more vulnerable individuals (children, pregnant and lactating women, disabled individuals, and the elderly) have worse food security outcomes.



## 1. Objectives of the study

The United Nations World Food Programme (WFP), in coordination with the Government of Uganda, has the vision to escalate Cash Based Transfers (CBT) initiatives. This study aims to gain a better understanding of the benefits of different assistance modalities and the spill-over effects in four out of thirteen settlements concentrated in the South-western and North-western regions. Refugees and asylum seekers in these settlements receive General Food Assistance (GFA), be it in the form of CBT or in-kind food. Specifically, the objectives of the study are:

- Understand household income, expenditure, and food security in different communities receiving GFA.
- Describe the sectors (agriculture, livestock, trade) that benefit the most from GFA investments.
- Explore the full return on investments in terms of direct and indirect economic benefits in GFA communities.

### Methodology

The study findings were generated using the Shock and Assistance Platform for Economic Simulations ([SHAPES](#)) developed by the WFP's Research, Assessment, and Monitoring Division. SHAPES is an analytical platform that simulates the impact of negative shocks on households and the local economy and assesses the direct and indirect benefits of assistance provided to households to offset those shocks. More specifically, this study uses one of the three models available in SHAPES, namely the General Equilibrium (GE) model whereby households in a local community are allowed to trade with each other generating spill-over impacts to non-assisted households, productive activities, and the labour market.<sup>2</sup> Specifically, the GE model in SHAPES models agents as input-output relationships (expenditure functions, production functions etc.) and is a version of the Local Economy-wide Impact Evaluation (LEWIE) methodology<sup>3</sup> adapted to WFP needs.

WFP conducted a data collection at the household level, retailers, and key informants for a supplemental business survey in October-November 2021. Semi-structured questionnaires were applied to beneficiaries (refugees and asylum seekers) and host communities neighbouring the settlements.

The four selected settlements were sampled based on the type of assistance provided, using a non-probabilistic sampling: Kyangwali and Nakivale settlements in the South-western

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<sup>2</sup> The other two models are: a climate impact model to predict seasonal weather-related shocks to crop yields; and a household impact model that estimates price elasticities, allocates expenditures to broad categories including food, and models consumption decisions to food groups, thereby enabling food security outcomes to be estimated. See the Annex for further details.

<sup>3</sup> The LEWIE methodology was developed by Mateusz Filipiński and J. Edward Taylor from the University of California, Davis (Taylor & Filipiński, 2014).



region and Bidibidi and Kiryandongo settlements in the North-western region. Based on the total number of refugees assisted by WFP in 2021, Bidibidi is by far the largest settlement with more than 295 thousand people, followed by Nakivale and Kyangwali with 146 and 137 thousand people, respectively. Kiryandongo is a smaller settlement with around 82 thousand people receiving assistance (Table 1).

Three survey instruments were applied as follows:

- Household survey, to understand the food security situation and practices within sampled households and how this is influenced by the different demographic variables such as sex of household head, education and literacy levels and related aspects.
- Market and trader survey using the Market Functionality Index methodology (WFP, 2020) to evaluate the level of functionality of marketplaces, whereby the concept of functionality encompasses the following key dimensions: 1) Assortment of essential goods, 2) Availability, 3) Price, 4) Resilience of supply chains, 5) Market competition, 6) Infrastructure, 7) Services, 8) Food quality, and 9) Access and protection. The primary reason for use of the MFI survey was to additionally provide a larger business sample for the LEWIE study.
- Supplemental business survey that replicated the household survey questions in the business module. The goal of the standalone business survey was to ensure a sufficient sample size of businesses to facilitate estimation of production functions. Key questions covered include type of business, monthly revenue, monthly costs in labour, inputs, and intermediary goods (processed goods used in the production of other items, e.g., flour).

In total 1,406 households of refugees and asylum seekers, 635 households from host communities and 140 businesses were surveyed (Table 1). While WFP provides both food and cash transfers in each settlement, for modelling purposes we categorize WFP assistance based on the most relevant transfer modality by settlement. Therefore, all Bidibidi refugees are modelled as if they received only food transfers (instead of an actual 95 percent), while refugees in Kyangwali are modelled as if they received only cash transfers (instead of an actual 89 percent). In Nakivale and Kiryandongo the sample size made it possible to model both transfer modalities.

The data collection involved the training of four separate teams in two sessions<sup>4</sup> (one for North-western settlements, and one for South-western settlements), covering the three survey instruments described above. The questionnaires were standardized through the implementation of WFP [Survey Designer](#) tool, using the SHAPES module questions to facilitate the construction of the LEWIE model inputs. This module covers demographics, food consumption scores, shocks, and livelihood indicators.

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<sup>4</sup> The training methodology included sessions to understand the questionnaires, a mock to strengthen enumeration skills and techniques, and field tests to ensure data quality.

A cluster-random approach was chosen as the primary sampling strategy inside the settlements. First, all the villages inside each settlement were randomly sampled, upon which the teams were instructed to adopt an every- $n^{\text{th}}$ -household approach for interviews.

For host communities in the North-western region, an alternative approach was adopted to ensure the representativeness of the sample: surrounding villages were listed and randomly sampled. After this, the Local Council member 1 (LC1's) was contacted and approached to generate a list of households within the village. In addition, the LC1 supported the mobilization of households, obtaining permissions to conduct the survey and facilitating interactions between host households and the survey team, primarily to help locate households selected to reduce travel and search time.

The list approach was deemed infeasible for the Western settlements, as the household list could be not fully reliable primarily in Kyangwali, where tension between the host community and the Office of the Prime Minister regarding obtaining land for refugee settlements occurred in the recent past. As such, a simpler every- $n^{\text{th}}$ -household approach was chosen.

A review of the data and quality control of daily submissions was conducted on daily basis. In instances where recorded values were deemed improbable or impossible, a follow up session with the enumerator was done by the team leaders to correct the entries. Initial assessment of the collected data indicates good quality with little to no missing values (except in cases when respondents truly did not know the answer).

Table 1 – WFP assistance in 2021 by settlement and survey sample

Settlement	Food transfers		Cash transfers		Share of total beneficiaries by transfer modality		Modelled transfer modality	Survey		
	Beneficiaries	MT	Beneficiaries	USD	Food	Cash		Beneficiaries	Host community	Business
Bidibidi	281,021	32,089	14,355	382,846	95%	5%	Food	351	145	20
Kiryandongo	26,698	2,632	54,933	2,880,826	33%	67%	Mixed	346	168	80
Kyangwali	14,988	682	122,320	7,098,938	11%	89%	Cash	334	161	20
Nakivale	19,810	1,864	125,848	7,370,879	14%	86%	Mixed	375	161	20
Uganda	806,603	87,842	824,442	46,728,934	49%	51%				

Source: WFP

## Limitations of the study

**Representativeness:** The samples taken per settlement meet minimum sampling requirements to ensure data can provide results significant at the settlement level. However, the sampling design cannot provide statistically significant outputs at lower administrative boundaries and can be complemented with additional surveys for this purpose.

**Coverage:** Host populations are similar across the four settlements, but they are not reflective of Ugandan populations in their respective districts. Instead, only villages close enough to refugee settlements for frequent interaction are included in the survey. The selection of sites was within the purposively selected settlements, in this case the households and business entities were systematically sampled on site during the data collection process.

**Respondent Bias:** To understand who is replying to our surveys, WFP obtained information on each respondent's demographics and socio-economic status by asking 'profiling' questions. WFP accounted for bias during analysis. In cases where respondents lean towards certain characteristic, e.g., gender, urban, socioeconomic status, results were reweighed to reflect the composition of the population using a correction factor.

**Language Bias:** Language could also have potentially introduced bias. In the case of multiple local languages, enumerators that could speak the languages were contracted for the exercise. It is likely that there could have been information loss where translations were used.

**Enumerators Bias:** Enumerators who conducted the surveys may have included unintentional bias, and this was assessed through quality control tests including randomly selected surveys and review of the time of submission rates. This bias and how to avoid it was also emphasized during the trainings prior to data collection.

**Timeframe:** The data collection was conducted just after rations reduced to 70 percent food/cash entitlements due to funding constraints.

## 2. Overview of refugees and asylum seekers in Uganda

In 2021, the number of forcibly displaced people globally stood at over 84 million, according to the United Nations High Commissioner for Refugees (UNHCR), out of which 35 million (42 percent) are under the age of 18, and 85 percent are hosted in developing countries.

Uganda hosts the largest number in Africa, with over 1.5 million refugees. By December 2021, the country of origin of refugees residing in the country was mainly South Sudan (61 percent) and the Democratic Republic of the Congo (29 percent). Upon arrival in Uganda, refugees are registered at transit centres and distributed to one of the 13 settlements. Settlements in North-western regions mostly host refugees from South Sudan (e.g., Bidibidi and Kiryandongo), while South-western settlements typically host refugees from the Democratic Republic of the Congo, Burundi, and Rwanda (e.g., Kyangwali and Nakivale).

Uganda has been applauded for having one of the most progressive refugee-hosting policies in the world. The country allows refugees placed in settlements the right to free movement and employment.

Children get access to preschool and primary education comparable to that of the nationals. Within the settlements, the United Nation High Commissioner for Refugees (UNHCR) collaborates with the local government to provide both public service facilities (clinics, boreholes etc.) and plots of land for homesteading at the time of registration. In some settlements, refugees are allocated agricultural plots on which they can grow crops. Access to cultivable land helps provide a means of self-sustainability within the settlement and potentially fosters two-way produce trade between refugees and locals. WFP provides food or cash assistance to the refugees in Uganda as in other refugee-hosting countries.

The provision of agricultural land, relief assistance, and freedom of movement provide an opportunity for refugees to interact economically with host-country businesses and households around the settlements.

While the costs of hosting refugees are often quantifiable through operation costs, the benefits of assistance can often be difficult to ascertain. The direct impact of assistance on refugee welfare may be difficult to quantify given the myriad of programmes/projects present in settlements that aim to improve food security, education, and healthcare. Additionally, refugee communities do not exist in a vacuum. The large population of settlements naturally attracts businesses largely owned and operated by local communities to set up shops around settlements to meet the demand for goods and services.

Trade and market interactions between refugees and host households have the potential to generate additional benefits above and beyond the value of assistance provided by WFP through the stimulation of productive activities. However, an influx of resources, be it cash or in-kind, also has the potential to generate inflationary/deflationary impacts through markets. Thus, the full impact of hosting refugees needs to be analysed in the context in which they exist, considering the spill-over impact on host communities. This is the reason why a GE approach was adopted to better understand the full impact of WFP assistance in refugee settlements.

The rise in global refugees and the presence of protracted displacement call for a new paradigm of applying development-oriented interventions to refugee settlements aimed at fostering and nurturing self-sustainability. This report challenges the notion that refugees are necessarily a net drain on the host community and brings forth evidence that, under the right circumstances and with external support, refugees can add to the welfare of locals through productive activity and assistance spill-over.

### 3. WFP assistance to refugees in Uganda

The Uganda Country Strategic Plan (2018-2022), guides WFP's engagement and support to the Ugandan Government to achieve Sustainable Development Goals 2 and 17. WFP therefore maintains an emergency response capacity and supports the Government in hosting the growing number of refugees and thus addressing the causes of food insecurity and malnutrition and improving the social protection system through the six strategic outcomes below:

- **Strategic outcome 1:** Refugees and other crisis-affected people have access to adequate nutritious food in times of crisis;
- **Strategic outcome 2:** Food-insecure populations in areas affected by climate shocks have access to adequate and nutritious food all year;
- **Strategic outcome 3:** Children aged 6–59 months in food-insecure areas have acute malnutrition and stunting rates in line with national targets by 2030;
- **Strategic outcome 4:** Smallholder farmers, especially women, in targeted areas have enhanced and resilient livelihoods by 2030;



- **Strategic outcome 5:** Institutions have increased capacity to coordinate and manage food security and nutrition programmes and respond to shocks by 2030; and
- **Strategic outcome 6:** Humanitarian actors have access to cost-efficient supply chain services when needed.

WFP in Uganda continues to provide:

- Food and nutrition assistance to refugees;
- Food and nutrition assistance to crisis-affected households;
- Cash and food transfers to women and men participating in community asset-creation projects;
- Technical assistance for the Government through South-South cooperation and other initiatives;
- Nutritious hot meals to children attending school; and
- Specialized nutritious food and nutrition-sensitive CBT for populations at risk.

In pursuit of saving and changing lives, WFP helps refugees and asylum seekers in Uganda mainly through the provision of cash-based transfers (50.5 percent of beneficiaries) and in-kind assistance (49.4 percent of beneficiaries) at the individual level (WFP, 2021). Other assistance modalities include home-grown school feeding, and resilience-building activities among others.

The coverage of WFP Uganda operations includes all the 13 settlements in Uganda in the Karamoja region, West Nile, Southwest Uganda, Northern Uganda, and the urban refugees in Central Uganda.

Specifically, for GFA, WFP assist food insecure households in refugee settlements to enable them to meet their immediate food needs. Due to funding constraints, there was significant reductions in the GFA to a 70 percent ration and this was anticipated to further reduce ration levels in the future.

## 4. Household survey findings

This section presents key characteristics of the households surveyed, with a description of demographic variables (household size, dependency ratio, presence of pregnant and lactating women and persons living with disabilities, levels of expenditures and incomes. The information is presented by type of population (refugee settlement or host community) and by location.

### Demographics

Table 2 shows differences between households living in refugee settlements and host communities based on gender, dependency ratio, and selected vulnerable population. Differences are not significant on average, in fact refugees have similar household sizes (6.4 versus 7.4), dependents as a share of total household size (60 percent both), number of

pregnant and lactating women (44 versus 49 percent), and number of persons living with disabilities (below 20 percent both).

Average household sizes vary significantly by settlement<sup>5</sup> and tends to be larger in the North-western settlements (Bidibidi and Kiryandongo), with host community households near Bidibidi settlement being the largest close to 11 household members, while for the Western regions the average household size is between five and six members. Overall dependency ratios are relatively high (over 55 percent)<sup>6</sup>, with higher proportion of female-headed households (60 to 70 percent).

Having a larger household with fewer dependents infers a greater supply of available labour for productive activities at the household level. A higher dependency ratio is an indication of a lower capacity for productive and income-generating activities and could be driven by a large share of young or elderly household members as evidenced by the key findings of this study in terms of average incomes per household.

*Table 2 - Selected household demographics*

Population type	Household Size (average)	Dependency Ratio	Pregnant and lactating Women	Persons Living with Disabilities
Refugee	6.42	63%	44%	17%
Host	7.39	59%	49%	16%

*Source: WFP*

In all cases, over 60 percent of the household members are literate, either in their local language, English, or both. However, refugee households in the South-western settlements (Kyangwali and Nakivale) have a higher share of illiterate members as compared to their North-western counterparts.

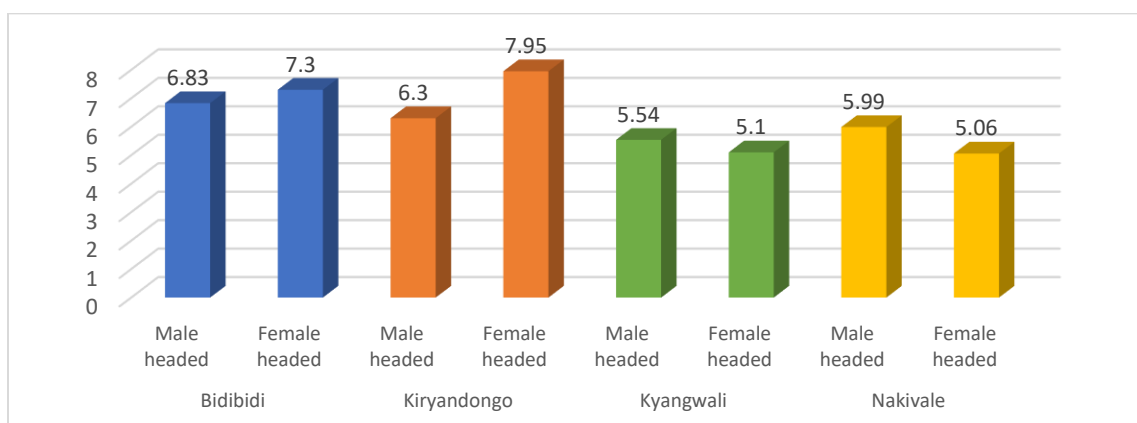
This could reflect previous education experiences prior to being settled in Uganda. Differences in the number of disabled/pregnant/lactating members of households are small (within 10 percentage points) between host and refugee households.

Female-headed households are more frequent within refugees, compared to households in host communities, ranging between 49 to 85 percent. Overall, 61 percent of refugee households are headed by female members, compared to 29 percent for local Ugandans. These households tend to have a larger share of dependents (Figure 1).

<sup>5</sup> A household member is defined as someone who eats from the same pot and sleeps under the same room for at least 6 months in the past 12 months.

<sup>6</sup> Dependents are defined as those between the age of 0-18 and those over 60.

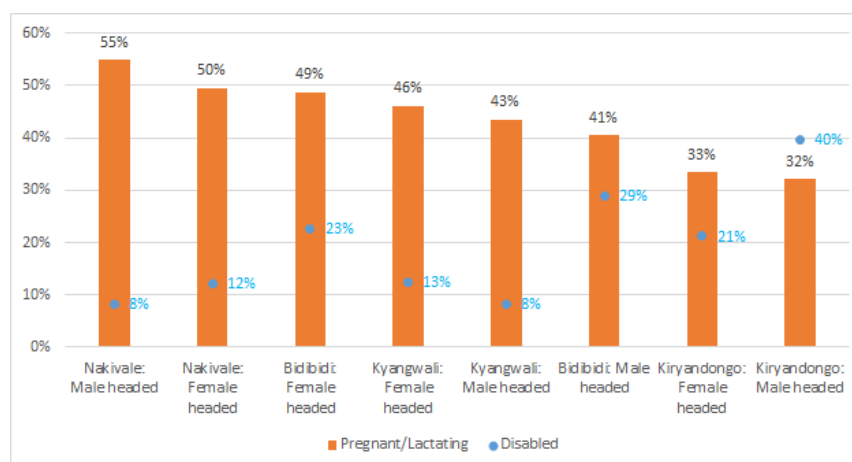
Figure 1 - Household size by sex of household-head presented by location (average)



Source: WFP

Households with persons living with disabilities range from 8 to 40 percent, while those with pregnant or lactating woman from 32 to 55 percent (Figure 2). When comparing the percentage of literate females by the gender of the household head, the rates in female-headed households is lower compared to male-headed households (respectively 56-85 percent and 73-96 percent).

Figure 2 - Proportions of disability and pregnant or lactating mothers



Source: WFP

Data confirms that female-headed households are more likely to be composed of young children and the elderly. Such characteristics have the potential to manifest different choices of production activities provided the limited labour capacity available in the household (Table 3).

Across the four settlements, access to healthcare and markets are nearly universal, with the notable exception of host communities living near Kiryandongo (Table 4). Employment (wage work) opportunities vary by settlement and host/refugee status widely.

Employment level in Kiryandongo is the highest compared to the other settlements for both refugees and host communities. On average, two household members are employed in agricultural production (crops or livestock) activities irrespective of their status (refugee or host community).

Employment in non-agricultural activities tend to be higher for host community members compared to refugees.<sup>7</sup> Non-agricultural employment is seven percent for refugees and 28 percent for host communities in Bidibidi, 10 percent for refugees and 33 percent for host communities in Kiryandongo, around three percent for refugees and 16 percent for host communities in Kyangwali, and 11 percent for the refugees while 12 percent for host communities in Nakivale.

Table 3 - Female-headed households

Settlement	Population Type	Female-headed household
Bidibidi	Refugee	66%
	Host	30%
Kiryandongo	Refugee	85%
	Host	27%
Kyangwali	Refugee	46%
	Host	24%
Nakivale	Refugee	49%
	Host	34%

Source: WFP

Table 4 - Access to services, employment, and income sources by population type

Settlement	Population type	% Households with Access to		Average share of household members employed in		Income sources (month/UGX)			
		Healthcare	Markets	Agriculture	Non Agriculture	1st	2nd	3rd	Total
Bidibidi	Refugee	100%	100%	0.63	0.07	68,460	35,836	12,447	123,327
	Host	100%	100%	1.98	0.28	150,035	76,569	31,007	113,280
Kiryandongo	Refugee	96%	98%	2.03	0.1	155,591	82,263	37,136	287,396
	Host	98%	99%	2.32	0.33	339,008	116,375	20,060	272,746
Kyangwali	Refugee	100%	99%	0.71	0.03	90,104	49,841	4,226	164,733
	Host	100%	100%	0.18	0.16	305,453	49,280	2,795	119,533
Nakivale	Refugee	100%	97%	1.03	0.11	85,786	44,446	10,371	150,992
	Host	99%	99%	0.98	0.12	151,745	60,311	11,329	129,585

Source: WFP

In all these locations, host household incomes are two to three times higher than refugee households. It is worth noting that income for both refugees and hosts are highest (within their respective categories) in Kiryandongo settlement.

Table 5 disaggregates the same variables by gender of the head of household. Non-agricultural employment (wage work) is consistently lower for female-headed households (likely due to lower levels of available labour and compatible jobs). In the case of agricultural labour, female-headed households are more likely to be employed for activities in this sector.

<sup>7</sup> Note that the timing of the survey potentially influences this distribution (e.g., harvest season).



In both Kiryandongo and Kyangwali settlements, female-headed households have comparable levels of agricultural employment. Comparing the top-three household incomes, female-headed households are slightly lower. We observe that the monthly household income of male-headed households tends to be higher, with the largest gap being in Kyangwali settlement.

In Bidibidi settlement, male-headed households have a monthly income of around UGX 123,327, while female-headed households are at UGX 113,280. In Kiryandongo settlement, the figures are respectively UGX 287,396 and UGX 272,746. In the other two settlements the income difference is larger: in Kyangwali male-headed households earn around UGX 164,733 and female-headed households earn UGX 119,533, whereas in Nakivale the average monthly income is respectively UGX 150,992 and UGX 129,585.

*Table 5 - Access to services, employment, and income sources by gender*

Settlement	Household head	% Households with Access to		Average share of household members employed in		Income sources (month/UGX)			
		Healthcare	Markets	Agriculture	Non Agriculture	1st	2nd	3rd	Total
Bidibidi	Male	100%	100%	0.7	0.09	73,632	36,372	13,322	123,327
	Female	100%	100%	0.59	0.06	65,739	35,554	11,987	113,280
Kiryandongo	Male	96%	98%	1.87	0.25	165,264	103,566	18,566	287,396
	Female	98%	99%	2.06	0.07	154,841	78,409	40,495	272,746
Kyangwali	Male	100%	99%	0.68	0.04	102,384	57,220	5,130	164,733
	Female	100%	100%	0.76	0.01	75,401	41,007	3,145	119,533
Nakivale	Male	100%	97%	1.12	0.16	91,402	46,627	12,964	150,992
	Female	99%	99%	0.93	0.06	79,831	42,133	7,621	129,585

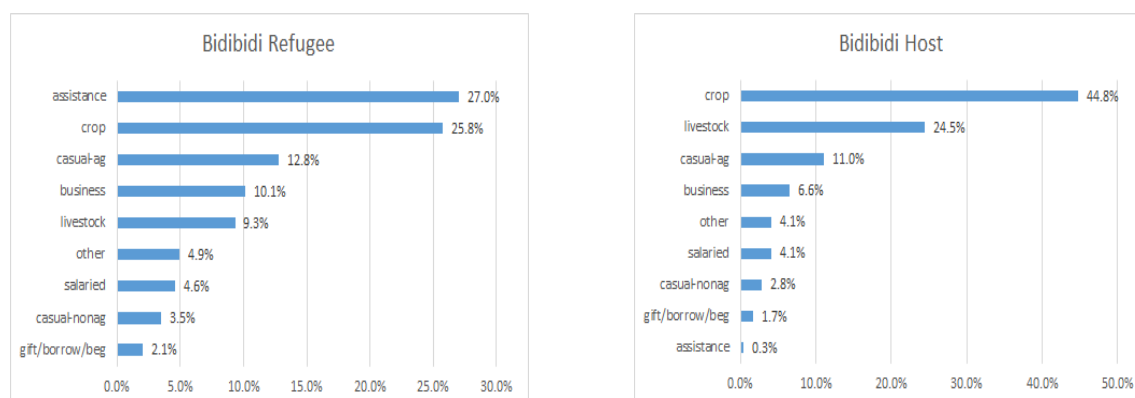
Source: WFP

## Income sources

A comparison of refugee household income sources vis-à-vis host households can be helpful in giving a general overview of how the two communities compare in terms of income-generating preferences and abilities.

In Bidibidi settlement, host communities largely rely on crops (45 percent) and livestock (24 percent) as income-generating activities. For refugee households, the largest source of income is from assistance (27 percent), followed by cropping (26 percent) and casual agricultural labour (13 percent). Households running a business are 10 and seven percent for refugee and host households, respectively (Figure 3).

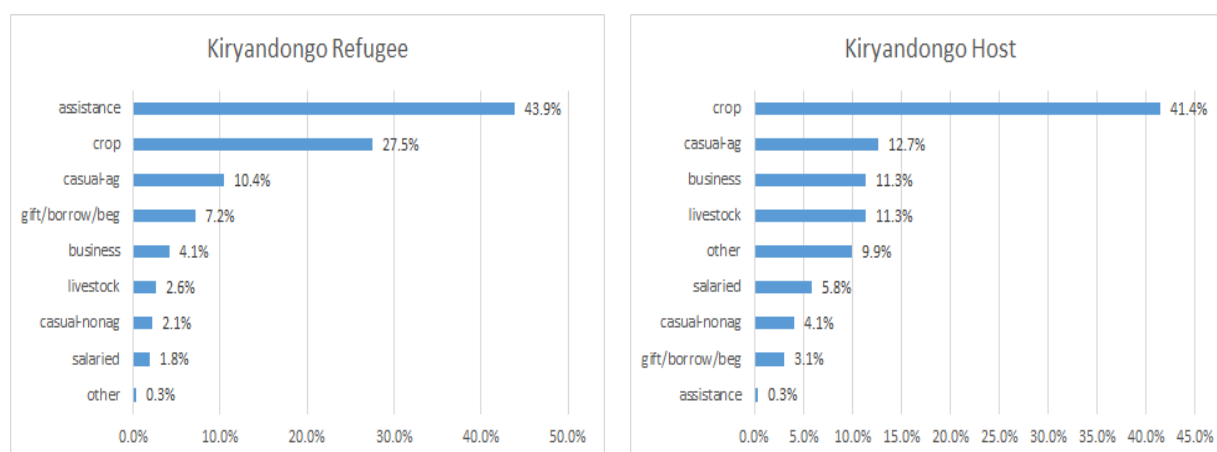
Figure 3 - Main income sources in Bidibidi settlement



Source: WFP

Refugee dependence on assistance is more significant in Kiryandongo, with 44 percent of reported primary income sources being assistance. Like Bidibidi, the most common source of income generation is cropping for hosts, which is also the second most common source of income for refugees, followed by casual income in agriculture activities (Figure 4).

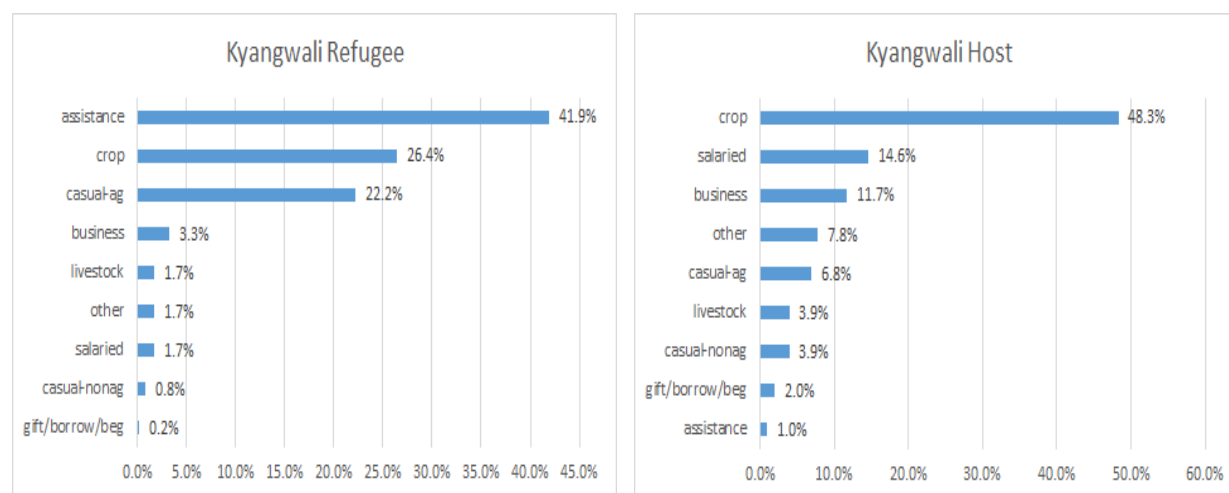
Figure 4 - Main income sources in Kiryandongo settlement



Source: WFP

The three most reported sources of income in Kyangwali settlement are assistance (42 percent, all in cash – bank on wheels), cropping (26 percent) and casual agricultural labour (22 percent) for refugees. Host communities primarily rely on cropping (48 percent) and salaried labour (15 percent) (Figure 5).

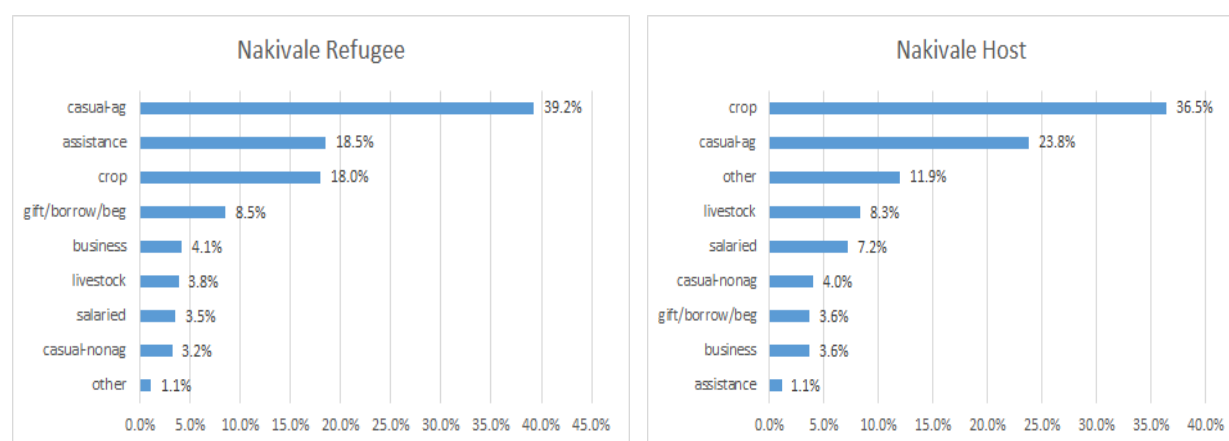
Figure 5 - Main income sources in Kyangwali settlement



Source: WFP

Nakivale presents an interesting case, as it is one of the oldest settlements and relatively well developed, sharing more similarities with a small township rather than a settlement in the traditional sense. For refugees residing in Nakivale, the top three most frequent sources of income are, respectively, casual agricultural labour (39 percent), assistance (19 percent) and cropping (18 percent) for refugees, whereas host community households rely on cropping (36 percent), casual agricultural labour (24 percent) and other sources of income (12 percent). Income generating activities are also relatively more diversified in Nakivale for both refugees and hosts (Figure 6).

Figure 6 - Main income sources in Nakivale settlement



Source: WFP

A closer look at the four main income-generating activities, with average monthly income by the source is shown in Table 6. Participation in income generating activities varies greatly across household residential status and location. Kiryandongo (57 percent of refugees and 72 percent of host communities) and Nakivale (70 percent of refugees and 66 percent of host

communities) have relatively higher levels of wage employment, reporting at least one member earning a wage.

Cropping activities are more widespread, with most households growing crops in some form (including garden plots for herbs/vegetables). However, dependant on growing crops, the average revenue from crops is substantially lower for refugee households (by a factor of 3-4).<sup>8</sup> This is not surprising as refugees tend to have less access to land for agricultural production.<sup>9</sup> Livestock production follows a similar pattern, with refugees in all settlements less likely owning livestock, and if they do own livestock it is a smaller herd (by value) compared to their host counterparts.

Business operations are the least frequently mentioned form of income generation activities, on average with 7-26 percent of households in each category having a business. Revenue-wise, refugee businesses are substantially smaller than host businesses in terms of monthly revenue (by a factor of 5-6). Note that purely comparing revenues may not be a good indicator of income due to larger costs associated with larger businesses.

Table 6 - Main income by location and type of income

Settlement	Population type	Wage Employment		Crops		Livestock		Business	
		Participation	Income (Average)	Participation	Revenue (Average)	Participation	Revenue (Average)	Participation	Revenue (Average)
Bidibidi	Refugee	36%	151,620	83%	62,482	58%	36,940	15%	673,157
	Host	52%	409,739	98%	180,083	89%	142,727	16%	4,648,056
Kiryandongo	Refugee	57%	427,916	79%	42,537	32%	49,117	7%	708,440
	Host	72%	436,050	81%	158,717	43%	92,024	26%	3,692,075
Kyangwali	Refugee	47%	118,146	83%	42,647	33%	28,136	7%	1,111,843
	Host	24%	292,895	67%	198,532	43%	65,695	21%	5,214,452
Nakivale	Refugee	70%	103,903	69%	55,631	31%	22,471	8%	201,443
	Host	66%	149,060	81%	295,498	53%	35,611	9%	1,072,600

Source: WFP

Table 7 tabulates the same information for refugee households, disaggregated by male and female heads of household.<sup>10</sup> Wage work rates (both in agriculture and non-agriculture sectors) tend to be lower for female-headed households, with the notable exception of Kyangwali. A similar pattern is observed for both crop, livestock, and small business activities.

<sup>8</sup> Revenue figures are conditional on participation in an activity (i.e., zeros are omitted from the revenue).

<sup>9</sup> While refugees can rent in land, so there is nothing physically stopping them from expanding crop production, land leases can often be costly and difficult to negotiate.

<sup>10</sup> Note business revenues are unavailable due to supplementary businesses survey not recording HH information.



Table 7 - Main income by location and gender

Settlement	Housheold head	Wage Employment		Crops		Livestock		Business	
		Participation	Income (Average)	Participation	Revenue (Average)	Participation	Revenue (Average)	Participation	Revenue (Average)
Bidibidi	Male	40%	153,156	79%	39,058	65%	25,618	15%	615,442
	Female	34%	150,686	85%	88,877	53%	17,679	15%	792,943
Kiryandongo	Male	75%	356,329	81%	41,908	38%	30,799	15%	724,413
	Female	53%	446,390	78%	38,566	31%	20,285	5%	488,097
Kyangwali	Male	44%	129,489	82%	35,656	36%	4,226	6%	758,782
	Female	51%	106,508	83%	21,589	28%	3,266	7%	1,677,369
Nakivale	Male	73%	108,628	74%	42,549	38%	8,627	11%	233,088
	Female	67%	98,480	63%	31,486	24%	4,106	4%	98,389

Source: WFP

Monthly expenditures are similar between refugee and host households on a per capita basis (though not statistically significant) in Bidibidi settlement, though in the other three settlements host households have significantly higher monthly per-capita expenditure levels. Most expenditures tend to happen at shops in nearby markets, thus the share of retail spending is high in all locations (Table 8).

Table 8 - Expenditure by location and population type

Settlement	Population type	Household Expenditure (monthly/UGX)	Per Capita Expenditure (monthly/UGX)	Expenditure share			
				Crop	Livestock	Retail	Service
Bidibidi	Refugee	78,222	13,472	13%	2%	62%	17%
	Host	115,809	12,592	8%	5%	66%	16%
Kiryandongo	Refugee	130,388	19,425	7%	3%	80%	9%
	Host	173,551	26,184	13%	5%	67%	13%
Kyangwali	Refugee	76,963	17,446	3%	0%	89%	8%
	Host	129,069	24,913	1%	0%	87%	12%
Nakivale	Refugee	59,037	13,426	6%	2%	80%	12%
	Host	91,925	19,282	5%	2%	75%	16%

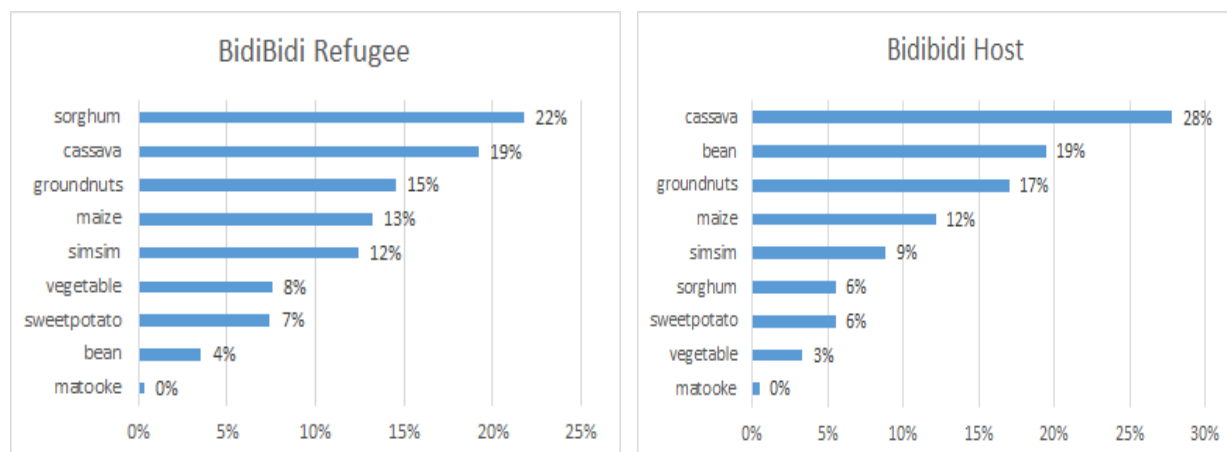
Source: WFP

## Agricultural activities

The types of crops grown vary significantly by settlement. Refugees and host communities largely grow the same type of crops within the same region, with the notable exception of *matooke* (plantain) production in Nakivale, which is largely exclusive to host households due to land demands and longer cycles of production.

A diverse set of crops is grown in Bidibidi. For refugee households, the most grown crop is sorghum, followed by cassava then groundnuts (peanuts). Host communities frequently grow cassava, beans, and groundnuts (Figure 7).

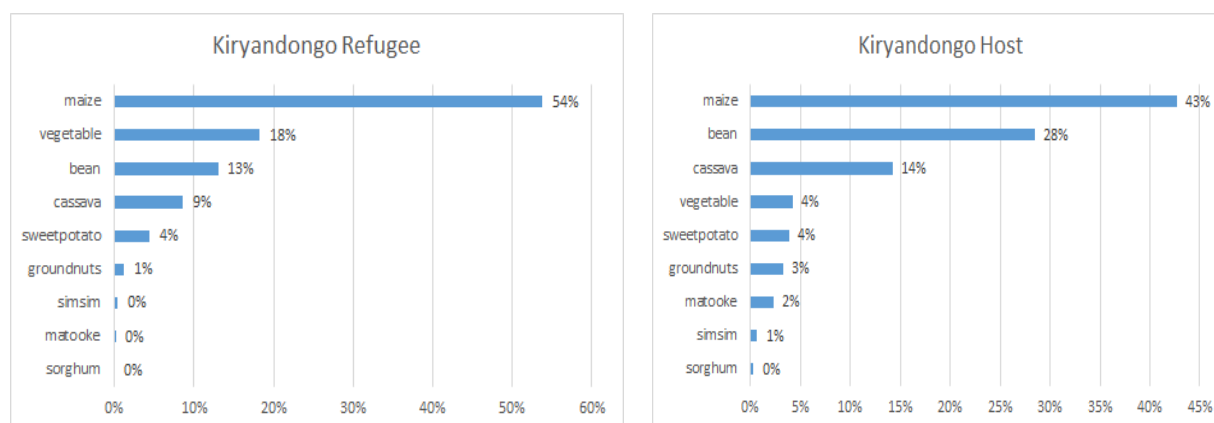
Figure 7 - Crop types grown in Bidibidi settlement



Source: WFP

The two key crops grown in Kiryandongo are maize and beans (often intercropped row-by-row), with refugees also frequently growing green vegetables, largely for own consumption. (Figure 8)

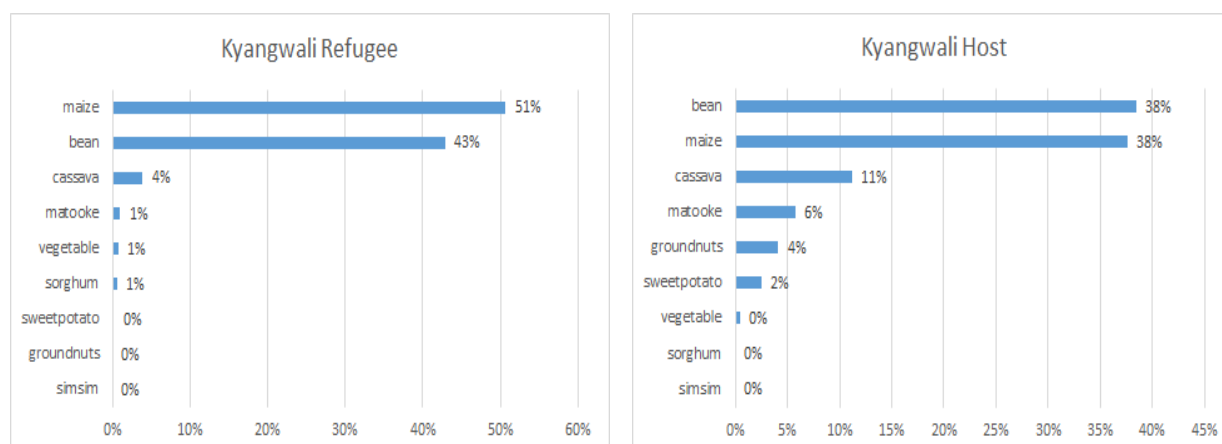
Figure 8 - Crop types grown in Kiryandongo settlement



Source: WFP

Compared to North-western localities, the settlements in the South-western region grow a smaller set of crop types, primarily maize and beans. The main crops of host communities in Kyangwali are beans, maize, and cassava (Figure 9).

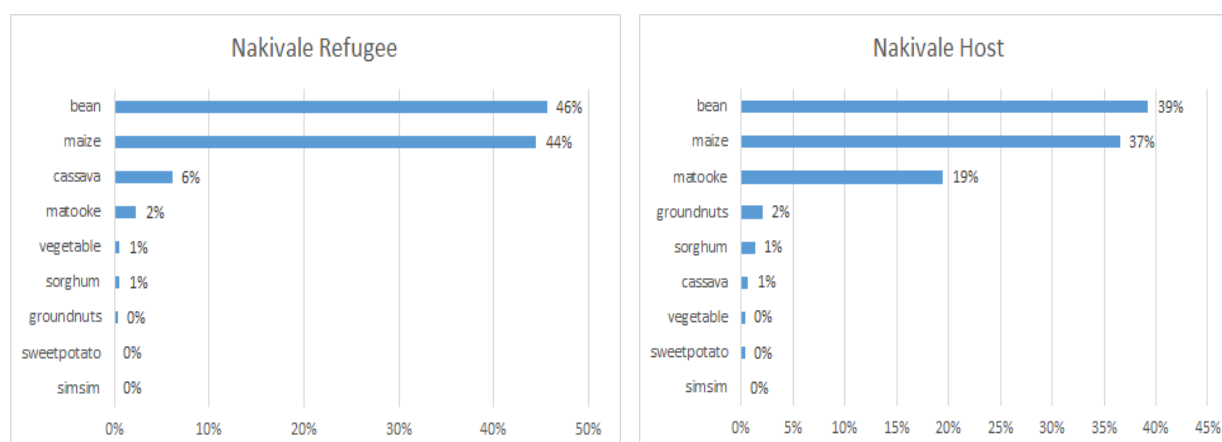
Figure 9 - Crop types grown in Kyangwali settlement



Source: WFP

Due to limited land and insecure land tenure, refugees in Nakivale settlement tend to not grow *matooke*. Their main crops are beans and maize. The main crops for host communities in Nakivale are beans, maize and *matooke* (Figure 10).

Figure 10 - Crop types grown in Nakivale settlement



Source: WFP

Table 9 shows key inputs that go into crop production. Land sizes are not distributed evenly across settlements. In Bidibidi and Nakivale households have, on average, between 2.9 and 6.9 acres of land, while in Kiryandongo and Kyangwali their plot size is on average less than 1 acre. Overall, refugees have substantially less land compared to their host counterparts. Host households are more likely to hire labour for crop production, and it can be due to having more funds and more crops to harvest. We observe a significant disparity in the use of pesticides and fertilizers for refugee households compared to host communities; input expenditures (seed costs, pesticide & fertilizer costs) are in fact significantly lower for refugee

households.<sup>11</sup> Overall application of purchased inputs (seeds, pesticide, and fertilizer) is low for the entire sample, even though some regions are considered to have high agricultural productivity.

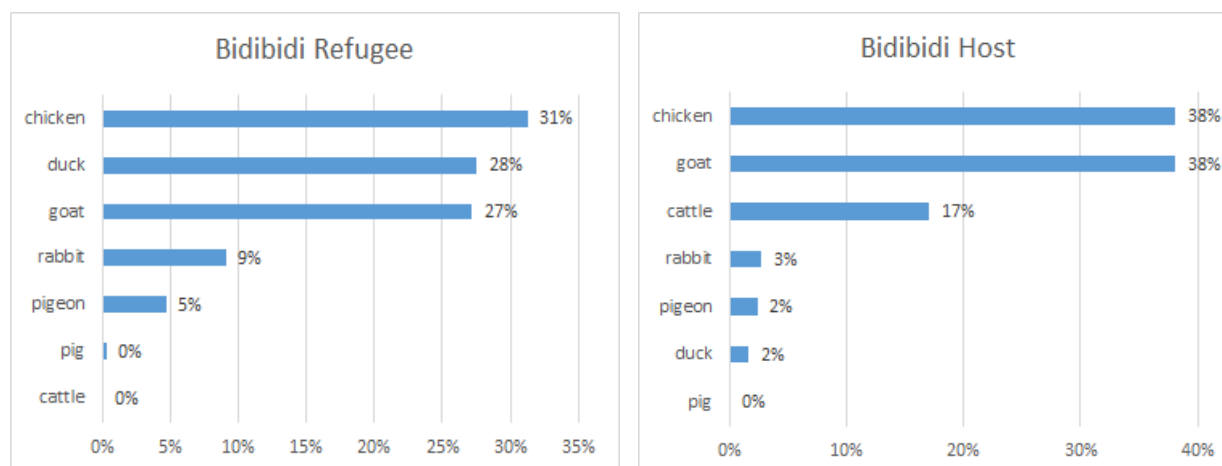
Table 9 - Land size, hired labour, and crop inputs

Settlement	Population type	Land Size (acres)	Hired labor	Use pesticides and fertilizers	Input cost (year/UGX)	
					Seeds	Pesticides and fertilizers
Bidibidi	Refugee	2.9	4%	7%	16,713	1,746
	Host	6.5	9%	24%	67,036	9,650
Kiryandongo	Refugee	0.7	4%	6%	7,006	1,883
	Host	2.9	24%	31%	57,980	33,950
Kyangwali	Refugee	0.3	4%	5%	13,553	1,440
	Host	1.3	12%	11%	28,567	2,500
Nakivale	Refugee	6.9	3%	13%	31,064	1,214
	Host	8.6	8%	15%	62,769	3,853

Source: WFP

In Bidibidi, the three main livestock types for refugee households are chicken (31 percent), ducks (28 percent) and goat (27 percent), with no refugees having cattle. The three most frequently owned livestock for host households are chicken and goats (38 percent each) and cattle (17 percent). The lack of large livestock such as bovine for refugee households likely reflects the lack of access to grazing land, or initial resources to purchase expensive assets such as large livestock herds (Figure 11).

Figure 11 - Livestock types in Bidibidi settlement



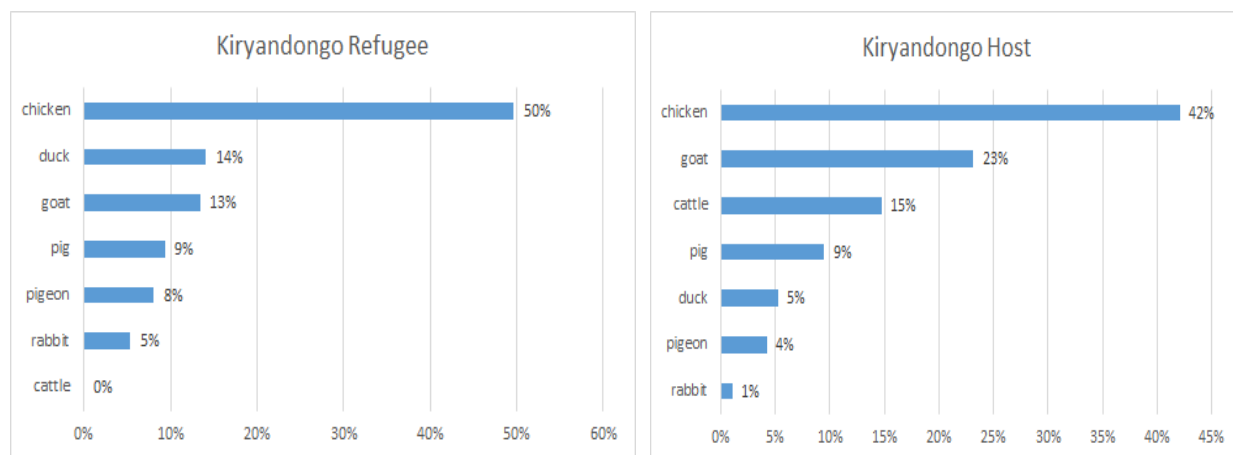
Source: WFP

<sup>11</sup> This holds even if we consider expenditures per acre, except for Kyangwali, where input expenditures are low for both groups.



Half of all reported livestock ownership for refugees in Kiryandongo is chicken, followed by duck (14 percent) and goat (13 percent). Host communities' livestock is primarily composed of chicken (42 percent), goat (23 percent) and cattle (15 percent) (Figure 12).

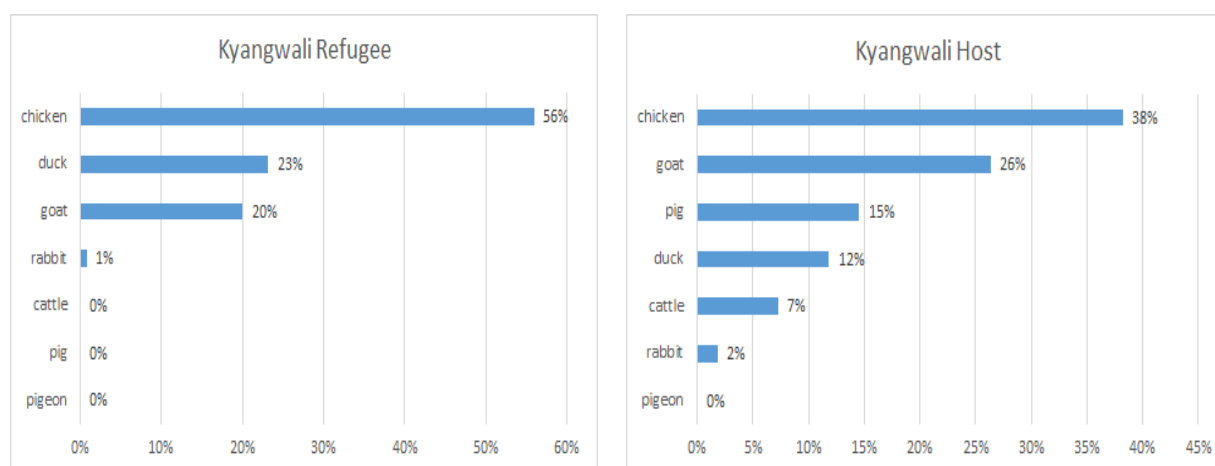
Figure 12 - Livestock types in Kiryandongo settlement



Source: WFP

Compared to refugees in North-western settlements, livestock holdings by refugee households in Kyangwali are primarily dominated by chicken (56 percent), followed by duck (23 percent) and goat (20 percent) with very little in terms of other livestock species; for host communities the three main livestock are chicken (38 percent), goat (26 percent) and swine (15 percent) (Figure 13).

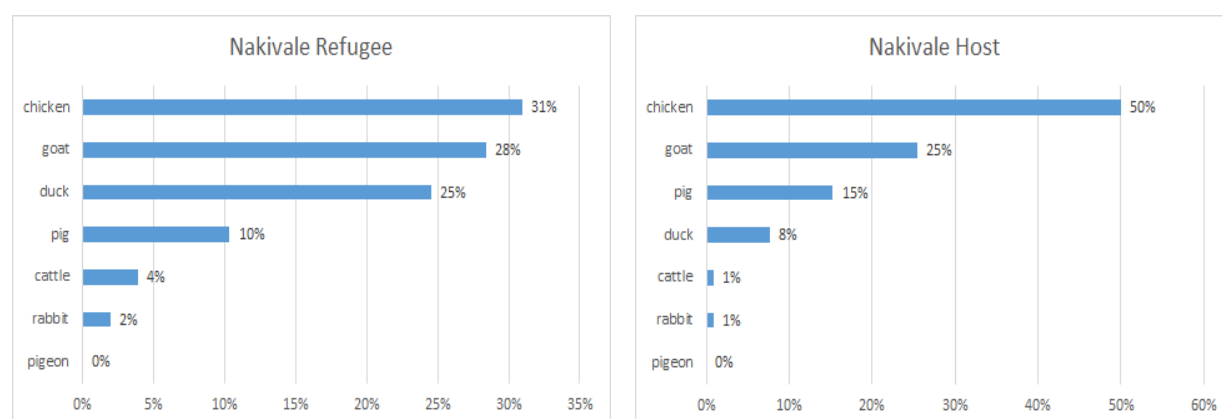
Figure 13 - Livestock types in Kyangwali settlement



Source: WFP

Nakivale refugees have a more diverse set of livestock. Primarily raising chicken (31 percent), goat (28 percent) and ducks (25 percent); compared to chicken (50 percent), goat (25 percent) and pigs (15 percent) for host households (Figure 14).

Figure 14 - Livestock types in Nakivale settlement



Source: WFP

Finally, Table 10 presents the levels of hired labour and the six-month average costs in animal feed and veterinary associated with rearing animals. In all the four settlements, hired labour for the management and rearing of livestock is rare and consistently lower for refugee households. Using mean prices to impute the herd value, we observe that Bidibidi settlement has the most livestock activity, on average, while Kiryandongo has the lowest. Host communities have significantly larger herds of livestock when compared to their refugee counterparts.

Table 10 - Hired labour and livestock cost and value

Settlement	Population type	Hired labor	Feeding and veterinary costs (UGX)	Average herd value (UGX)
Bidibidi	Refugee	0%	4,721	226,808
	Host	2%	9,462	672,405
Kiryandongo	Refugee	0%	4,086	98,206
	Host	2%	39,500	172,358
Kyangwali	Refugee	1%	2,704	114,772
	Host	2%	11,621	222,880
Nakivale	Refugee	1%	2,975	141,629
	Host	2%	11,044	286,975

Source: WFP. Costs refer to 6-month average

## Business activities

Entrepreneurial activities represent another productive form of income generation. Refugee businesses are typically much smaller than those run by the host community (Table 11). The largest difference is in Kyangwali, which is also the newest settlement, while the gap is much smaller in Nakivale, which in contrast is the oldest settlement. This is consistent with the notion that over time refugees are better able to integrate into local markets and adopt business activities. Most businesses are family-operated and do not hire outside labour.

Table 11 - Business capital value, type and workforce

Settlement	Population type	Capital Value	Owner labor (day/month)	Hired Labor	Business type	
					Retail	Service
Bidibidi	Refugee	497,756	16.3	2%	79%	21%
	Host	3,233,652	21	0%	83%	17%
Kiryandongo	Refugee	2,336,576	22.7	4%	75%	25%
	Host	4,294,091	21.1	5%	82%	18%
Kyangwali	Refugee	1,077,182	20	9%	82%	18%
	Host	7,320,824	21.3	0%	62%	38%
Nakivale	Refugee	1,302,241	18.2	3%	62%	38%
	Host	2,174,067	19.5	0%	73%	27%

Source: WFP

## Savings and debts

Savings rates vary substantially by settlement, but in all cases, refugees are less likely to save, and when they manage doing so, they save less compared to their host counterparts. When comparing host and refugees, they have similar patterns of access to credit, and borrowing (in the previous 6 months). The amounts borrowed and current debt is higher in refugee settlements than in host communities, and there is no difference in the patterns or levels of debt between regions (Table 12).

Table 12 - Savings and Debt levels

Settlement	Population type	Savings			Credit		
		Yes/No	UGX (past month)	Access	Borrowed (6 months)	Amount borrowed	Current debt
Bidibidi	Refugee	42%	13,449	46%	35%	28,362	14,293
	Host	60%	41,624	55%	38%	43,028	22,387
Kiryandongo	Refugee	51%	14,415	48%	32%	79,162	73,675
	Host	65%	138,292	56%	38%	180,946	192,792
Kyangwali	Refugee	43%	10,832	50%	34%	39,154	19,970
	Host	70%	49,224	54%	16%	42,391	15,373
Nakivale	Refugee	45%	7,343	75%	57%	86,971	61,265
	Host	71%	25,391	78%	45%	102,398	71,009

Source: WFP

## Food security

In addition to demographics and income-generating activity information, the study presents information on selected food security indicators (Table 13), namely the Food Consumption Score (FCS), the Reduced Coping Strategy Index (rCSI) and the Livelihood Coping Strategy Index (L-CSI).

The FCS is a measure of dietary diversity, food frequency and the relative nutritional importance of the food consumed.<sup>12</sup> The rCSI measures the stress level a household is facing when exposed to food shortage by assessing the frequency of adoption of food-related coping mechanisms, as well as their relative severity.<sup>13</sup> The L-CSI index assesses longer-term household coping and productive capacities and their future impact on access to food and other essential needs.

The average FCS is acceptable in a range between 54 and 57 percent for refugees and 68 and 78 percent host communities. Host households consistently have higher FCS scores compared to refugees at each settlement. A larger difference is observed in FCS between hosts and refugees for the two North-western settlements.

The rCSI index indicates that households in host communities are recurring to less negative coping strategies in the past 7 days, than refugees. The index in refugee settlements is two or three times higher than the one in host communities, depending on the location. Results can be influenced by seasonality. Kiryandongo is presenting the highest level of stress (using more types of coping strategies), followed by Bidibidi.

The L-CSI shows that all locations, without distinction between the type of population, are resorting to emergency and crisis livelihood strategies.

Table 13 - Food Consumption Score and Reduced Coping Strategy Index

Settlement	Population type	Food Consumption Score	Food Consumption Score Category			Food-Based Coping Strategies	Coping Strategies Index - Livelihoods			
			Poor	Border	Accept		Not using negative coping strategies	Stressed	Crisis	Emergency
Bidibidi	Refugee	36.0	10%	34%	56%	15.8	30%	20%	43%	7%
	Host	39.6	3%	29%	68%	9.3	30%	20%	43%	6%
Kiryandongo	Refugee	40.4	1%	42%	57%	17.4	31%	22%	40%	7%
	Host	44.6	3%	23%	74%	9.5	30%	28%	33%	8%
Kyangwali	Refugee	36.5	2%	44%	54%	7.6	36%	32%	22%	10%
	Host	44.9	1%	21%	78%	1.7	74%	17%	6%	3%
Nakivale	Refugee	37.1	6%	37%	57%	9.4	29%	27%	36%	8%
	Host	45.2	3%	21%	76%	3.7	47%	15%	35%	3%

Source: WFP

## 5. Estimating the direct impact of assistance

This section investigates how cash and in-kind-based transfers (along with selected household characteristics) relate to refugee outcomes in terms of income, expenditure, and food security (Table 14) and business activities (Table 15).

<sup>12</sup> The FCS outcome can be further disaggregated into 3 categories: *poor* food consumption (score of 0-21), *borderline* food consumption (score of 21.5-35) and *acceptable* food consumption (score of >35).

<sup>13</sup> The higher the stress, the higher the behavioural responses and the index.

A lasso regression framework was first adopted to determine the important set of control variables, using a Bayesian Information Criterion (BIC) to set cut-off thresholds.<sup>14</sup> Common explanatory variables include (but are not limited to): indicators by settlements, household size, dependent ratio, education levels (indicators for secondary education or above), age of the head of household, an indicator variable for land access, and the number of disabled and lactating/pregnant members of the household.

### Income, expenditure, and food security

**Results show that refugees receiving cash assistance spend more money** (both at the household and per-capita level). This could be influenced by the cash-on-hand compared to refugees receiving in-kind assistance.

**Refugee households with female heads of household perform significantly worse than their male-headed counterparts.** Per capita income and expenditure are significantly lower for female-headed households, and they also have worse food security (as indicated by the FCS and rCSI). Considering education by gender of household members, **we find that households that have a female member with secondary education or above tend to have significantly better food security outcomes.** In comparison, households where male members have a secondary education or above have higher expenditure and income levels. In this regard, gender roles in respective cultures might be key, e.g., better-educated male members have an easier time earning a higher income, while expenditure decisions over food may primarily lie with female members of the household.

**Larger households tend to have more income, higher expenditure, and better FCS scores.** Households with more dependents have lower per-capita expenditures (likely due to younger members of households having less expenditures) and worse performance on rCSI outcomes. At the same time, expenditures on tobacco and alcohol are lower for households with more dependents. Households with more pregnant and lactating women or disabled individuals tend to have worse food security outcomes (FCS and rCSI). Those with an older household head tend to have less income, expenditures, and a lower FCS.

**Access to land (including ownership) is strongly correlated with expenditures and food security, as having access to cultivatable land improves both.** However, they are also exposed to risk in the form of drought which may impact their crop production. Surprisingly, we find a positive correlation between household income, expenditure, and FCS with having experienced a shock in the last 12 months. This is likely because households with more production activities (e.g., crops, livestock, small business etc.) are simultaneously better off in welfare measures (here, expenditure, income, and FCS) while also being exposed to more possible shocks.

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<sup>14</sup> This procedure was performed for each of the dependent variables, through which a common set was selected as controls.

Table 14 - Impact of assistance and household characteristics on food security, income, and expenditures

Category	Log (Household Income)	Logistic regression (Expenditure)	Food Consumption Score	Food-Based Coping Strategies	Expenditures on Tobacco/Alcohol
Cash recipient	0.14 (0.090)	0.18** (0.090)	-1.97 (1.380)	1.16 (1.540)	-8156.4 (6827.0)
Household size	0.08*** (0.010)	0.09*** (0.010)	0.32*** (0.100)	0.17 (0.130)	483.8 (712.6)
Dependent Ratio	-0.15 (0.130)	-0.08 (0.110)	-0.72 (1.410)	2.84* (1.480)	-11592** (4557.4)
Pregnant and lactating women	-0.001 (0.050)	-0.03 (0.040)	0.16 (0.620)	-1.59** (0.650)	-1083.7 (1905.0)
Disabled	-0.05 (0.060)	0.02 (0.070)	-1.46* (0.760)	-0.71 (0.880)	3060.4 (2901.6)
Age of household head	-0.01*** (0.001)	-0.01*** (0.002)	-0.06*** (0.020)	-0.03 (0.030)	-84.1 (72.6)
Female headed household	-0.19*** (0.060)	-0.12** (0.050)	-0.17* (0.064)	1.89*** (0.700)	-4828.9 (3090.7)
Female Secondary School	-0.08 (0.080)	0.08 (0.060)	1.44*** (0.860)	-1.70* (0.960)	-382.1 (2497.8)
Male Secondary School	0.16** (0.070)	0.14** (0.060)	-0.16 (0.780)	0.24 (0.830)	-2646 (2428.6)
Indicators for Access to Land	0.03 (0.060)	0.24*** (0.070)	2.07*** (0.740)	-3.84*** (0.910)	-1345.5 (2894.8)
Indicators for Household Shock	0.26*** (0.060)	0.32*** (0.050)	1.84*** (0.710)	5.53*** (0.750)	7440.2*** (2210.9)
Settlement IDs	Yes	Yes	Yes	Yes	Yes
Robust Standard Errors	Yes	Yes	Yes	Yes	Yes

Source: WFP

## Business activities

**Refugees receiving cash have a significantly higher probability of engaging in farming activities**, likely due to CBT being useful in purchasing inputs for crops (renting land, fertilizer etc.). We also observe that female-headed households are less likely to engage in livestock-rearing activities.

Household size is an important predictor for the household's ability to engage in various income-generating activities. Having household members with secondary education, or above, increases the likelihood of employment activities for both genders, whereas only more educated male members of households significantly predict a higher likelihood of the household owning/operating a business.



Table 15 - Impact of assistance and household characteristics on business activities

Category	Business	Employment	Crop	Livestock
<b>Cash recipient</b>	0.17 (0.480)	-0.02 (0.230)	0.91** (0.430)	0.17 (0.250)
<b>Female headed household</b>	-0.32 (0.220)	-0.2 (0.140)	0.11 (0.220)	-0.46*** (0.130)
<b>Household size</b>	0.07*** (0.030)	0.02 (0.020)	0.09*** (0.030)	0.06*** (0.020)
<b>Dependent Ratio</b>	-0.13 (0.510)	-0.15 (0.290)	-0.5 (0.480)	0.06 (0.290)
<b>Pregnant and lactating women</b>	0.25 (0.170)	0.14 (0.120)	-0.07 (0.230)	0.02 (0.120)
<b>Disabled</b>	-0.3 (0.250)	-0.03 (0.140)	-0.43* (0.260)	0 (0.150)
<b>Age of household head</b>	0 (0.010)	-0.02*** (0.010)	0 (0.010)	0 0.000
<b>Female Secondary School</b>	0.13 (0.260)	0.40** (0.170)	0.57 (0.350)	0.19 (0.170)
<b>Male Secondary School</b>	0.48** (0.230)	0.33** (0.150)	0.52 (0.320)	0.18 (0.150)
<b>Land</b>	-0.35 (0.230)	0.34** (0.140)	4.74*** (0.240)	0.85*** (0.150)
<b>Household shock</b>	0.21 (0.230)	0.85*** (0.140)	0.88*** (0.250)	0.1 (0.140)
<b>Settlement IDs</b>	Yes	Yes	Yes	Yes
<b>Robust Standard Errors</b>	Yes	Yes	Yes	Yes
<b>Observations</b>	1,406	1,406	1,406	1,406

Source: WFP

Having access to land greatly increases the likelihood of growing crops, but access to land also significantly affects employment and livestock activities. The role of land access to refugees in Uganda is unique in this aspect, as refugees are given a (typically) small plot of land and can rent land from host communities.

## Household preferences and concerns

Figure 15 shows the most common comments<sup>15</sup> about in-kind/cash rations and their reduction, with roughly half the comments recorded expressing concern over the recent (and planned) reduction in rations.

Common words/phrases such as “ration”, “food ration”, “cash ration”, “money”, and “food” are frequently paired with words such as “reduction”, “(not covering) intended period”. Phrases such as “increase of food” is commonly paired with statements such as “(we request)

<sup>15</sup> These come from free-response questions, in which respondents were encouraged to summarize their key challenges. In total 546 comments were collected from refugees.

increase of food". Other common comments involve requests for lighting (public lighting), more financial literacy training, more land, and technical support on farming practices (training).

Figure 15 - Most raised concerns by beneficiaries



Source: WFP

## 6. Estimating the indirect impact of assistance

Refugee households directly assisted by WFP create local-economic spill-over effects by spending cash on goods and services supplied by other households in the local economy. These suppliers, in turn, spend their cash, creating new rounds of stimulus to local production and incomes.

As impacts swirl through local economies, they can create local income and production multipliers: each US dollar of assistance received may increase local income by more than a US dollar. The study finally simulates the impact of WFP assistance levels for both refugee households and host communities in the four settlements using the LEWIE model (see the Annex for further details).

As indicated earlier in Table 1, we model food transfers in Bidibidi settlement cash transfers in Kyangwali settlement, and both transfers in Kyryandongo and Nakivale settlements.

In each settlement, we model also the host communities that are similar across the four settlements and are not reflective of Ugandan populations in their respective districts. Instead, only villages close enough to refugee settlements for frequent interaction are included in our survey. This necessarily results in slightly conservative estimates on the total

impacts as further away villages may still receive slight benefits from assistance but are excluded from the model (assumed to not receive an impact).

We model the transfer value of UGX 31,000 per month for cash, representing a full ration based on the average market prices of commodities, and roughly an equivalent value for food transfers. We acknowledge that for budget constraints, the transfer value had been reduced at the time of the assessment, but we still model the full ration that was provided for years. The impact of this assistance is simulated in the model via an exogenous transfer in either cash or in-kind (at the household level), at the corresponding levels above.<sup>16</sup>

## Income and production multipliers

Table 16 below documents the estimated indirect impact of the current assistance regime. Simulation results indicate clearly that the impact of WFP assistance in the four refugee settlements is positive and significant. The multiplier, which is a measure of returns on investment, should be interpreted as the average impact of an additional one US dollar of assistance transferred.

*Table 16 - Actual Impact of WFP assistance: Income and Production multipliers*

	Bidibidi	Kiryandongo	Kyangwali	Nakivale		Bidibidi	Kiryandongo	Kyangwali	Nakivale
<b>Total Multiplier</b>	1.890	1.370	1.500	1.530	<b>Crop</b>				
<b>upper CI (95 percent)</b>	2.260	1.560	0.210	1.730	<b>Refugee: Cash</b>	-	0.026	0.010	0.017
<b>lower CI (95 percent)</b>	1.360	1.240	0.160	1.370	<b>Refugee: In-kind</b>	0.058	0.026	-	0.017
<b>Disaggregated impacts</b>					<b>Host Community</b>	0.054	0.026	0.009	0.016
<b>Refugee: Cash</b>	-	0.780	1.380	1.180	<b>Livestock</b>				
<b>Refugee: In-kind</b>	1.770	0.330	-	0.130	<b>Refugee: Cash</b>	-	0.014	0.005	0.032
<b>Host Community</b>	0.120	0.260	0.120	0.220	<b>Refugee: In-kind</b>	0.027	0.014	-	0.033
					<b>Host Community</b>	0.027	0.014	0.004	0.023
					<b>Retail</b>				
					<b>Refugee: Cash</b>	-	0.055	0.068	0.111
					<b>Refugee: In-kind</b>	0.149	0.055	-	0.114
					<b>Host Community</b>	0.168	0.056	0.068	0.117
					<b>Service</b>				
					<b>Refugee: Cash</b>	-	0.088	0.052	0.085
					<b>Refugee: In-kind</b>	0.158	0.095	-	0.093
					<b>Host Community</b>	0.154	0.100	0.050	0.096

Source: WFP

For Bidibidi settlement, each US dollar transferred in in-kind assistance results in a total of USD 1.89 generated in total benefits, of which USD 1.77 are captured by refugee populations, while the remaining USD 0.12 accrued to host communities, despite them not being direct beneficiaries.

<sup>16</sup> In-kind assistance is simulated as an exogenous transfer packet that is partially sold (20 percent) at a slightly depressed value (90 percent of market value) to emulate refugee sales of assistance packets.

Production activities expand substantially in the settlement at the household level. Annual transfers boost crop production by 5.8 percent and 5.4 percent for refugee households and local Ugandan households, respectively; by 2.7 percent for livestock (both refugees and host); by 14.9 percent and by 16.8 percent for retail businesses (measured in revenue) for refugee and hosts communities. Similarly, service business output increased by 15.8 percent and 15.4 percent respectively.

One of the key drivers of this expansion is the relatively large number of refugees present, meaning all else constant, transfers to Bidibidi settlement are the largest of the four settlements surveyed. Refugees and host households also have substantial levels of business activities (retail and service), which contribute to the larger impacts observed.

Kiryandongo settlement has the lowest aggregate multiplier, standing at USD 1.37 of total benefits generated per each US dollar transferred (weighted between cash and in-kind assistance populations). However, at the same time, benefits accruing to host communities via market interactions (spill-over) are relatively large. Of the USD 1.37 per one US dollar transferred, USD 0.78 goes to cash refugees, USD 0.33 goes to in-kind refugees and the remaining USD 0.26 go to host households.

It is worth pointing out that both refugee and host households in Kiryandongo seem to have lower levels of retail business activity, which is another contributor to relatively smaller multipliers (aside from populations). Entrepreneurial training programmes are likely to have a significant impact in Kiryandongo.

Kyangwali is a relatively new settlement. The estimated multiplier for Kyangwali is USD 1.50 per each US dollar transferred in cash assistance. Of the USD 1.50 per each US dollar transfer generated, USD 1.38 is received by refugee populations and the remaining USD 0.12 goes to host communities. Livestock activities are relatively less important to Kyangwali, hence the lower levels of expansion in livestock production (0.5 percent and 0.4 percent for refugee and host communities, respectively). Similar to Kiryandongo, business activities expand relatively less compared to Bidibidi settlement, making a case for more entrepreneurial support. Issues with land expansion also hamper productive expansions in cropping and livestock activities. The land is modelled as a fixed factor (meaning that the model does not allow for land increases from base levels) to reflect short-term constraints to the expansion of productive activities.

Nakivale settlement is one of the oldest settlements and relatively well integrated, which is reflected in the relatively large spill-over impacts. For each US dollar transferred in cash and in-kind assistance (weighted by current refugee populations receiving assistance), USD 1.53 of total benefits are generated; of which USD 1.18 is received by refugees supported by cash transfer, USD 0.13 by refugees supported by in-kind assistance, and USD 0.22 by host communities. Impacts of assistance are relatively small for crop and livestock production, but we observe substantial increases in entrepreneurial activities (retail and service). Owing to it being an older settlement, expansion of fixed factors (such as land) may be challenging.

Our results are similar, but slightly lower than the multiplier effects estimated in Adjumani and Rwamwanja settlements in an earlier LEWIE study (Taylor, et al., 2016). Several things likely contribute to this, first and foremost being that assistance levels were substantially higher in 2016 due to a large influx of recent arrivals (recent arrivals in 2016 received 100 percent assistance upon arrival). Additionally, the LEWIE methodology itself has improved in terms of modelling of multiple local markets.

In summary, we estimate that **the overall impact of WFP assistance is substantial in all four settlements. This result is consistent with the number of resources transferred to refugee populations in all settlements.** Productive impacts are unevenly distributed and depend on a settlement's aggregate productive ability, subject to constraints such as fixed factors, the share of goods imported from outside the local economy (outside our survey region) and the overall distribution of cash, in-kind and host populations.

### Comparing cash vs. in-kind assistance

One key question explored in the simulation is the comparison between cash assistance and in-kind assistance. This is challenging for several reasons, first, there lacks a convincing counterfactual (each settlement is unique); secondly, had the modality of assistance been different all along, the local economy would be structured differently.

While the LEWIE model can help (partially) overcome the first point by imposing structural assumptions and estimating input-output relationships, the second point remains valid. As such, results from this section should be taken carefully, and can only be interpreted as short-run impacts (before the local economy inevitably adjusts to the new assistance regime).

Table 17 displays the results of a set of simulations that increase refugee incomes by one percent in either cash or in-kind assistance.<sup>17</sup> The key difference between the two methods of transfer is that CBTs directly enter the local economy, increasing demand for goods and services, without any distortion to market prices. However, in-kind assistance can be resold onto the market (assumed 20 percent of value resold) and has the potential to depress local prices of agricultural output such as maize etc.

Refugee households also incur a penalty when selling their assistance (assuming they sell for 90 percent of the retail price).<sup>18</sup> In theory, in-kind assistance can be better in regions with low agricultural productivity/production and a lack of integration with regional markets. In such

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<sup>17</sup> We simulate a percentage to facilitate comparison. One percent of their current incomes was added to each representative refugee household for this simulation.

<sup>18</sup> For this simulation we needed to assume two parameters: the share of the in-kind assistance sold, and the price penalty of sales. From conversations with refugee households, we have chosen the share sold to be 20 percent while the price penalty is 10 percent (so assistance is sold for 90 percent of market value).

a scenario, cash assistance would push up prices substantially (leading to generalized inflation) and potentially do more harm than good.

Table 17 - Simulated impact of assistance: In-kind vs. Cash

Settlement	Household Group	1 percent increase in income: cash	1 percent increase in income: in-kind	Percent change in outcome (In-kind vs. Cash)
<b>Bidibidi</b>	In-kind Refugee	1.82	1.77	-2.7
	Host	1.38	1.33	-3.6
<b>Kiryandongo</b>	Cash Refugee	1.04	1.02	-1.9
	In-kind Refugee	1.58	1.54	-2.5
	Host	1.27	1.22	-3.9
<b>Kyangwali</b>	Cash Refugee	1.46	1.42	-2.7
	Host	0.65	0.61	-6.1
<b>Nakivale</b>	Cash Refugee	1.37	1.33	-2.9
	In-kind Refugee	1.36	1.33	-2.2
	Host	1.12	1.07	-4.4

Source: WFP

Under the assumed parameters, **cash assistance provides more total benefits when compared to in-kind assistance for all household groups simulated.** For settlements that are established and well-integrated with regional markets, cash tends to create larger benefits in general due to fewer market friction (not to mention it is likely cheaper to implement).

The estimated percent change in the outcome between cash and in-kind transfers is largest in absolute value for host households, this means that **spill-over impacts** (host does not get any transfer under any of

the simulations) **are substantially larger for CBTs.** This is an important factor to consider when determining assistance distribution, **cash seems to provide more benefits for local Ugandans.**

## 7. Conclusion

This study investigates direct and indirect impacts of WFP assistance in four settlements in Uganda, namely Bidibidi, Kiryandongo, Kyanwali and Nakivale, where more than 600 thousand refugees are hosted.

The study relies on primary data collected in October and November 2021. Indirect effects are estimated using the LEWIE model within WFP's SHAPES analytical platform.

We find that WFP assistance has a significant direct impact on refugee households. Food Security levels (as measured by the food consumption score and the reduced coping strategy index) are largely comparable between cash and in-kind recipients. Controlling for an array of household characteristics and settlement fixed effects, those receiving cash assistance spend more money than those receiving in-kind assistance and have a higher probability of engaging in farming activities. Female-headed households with secondary or above level of education have lower income and expenditure levels but a higher impact on food security, while the opposite is true for male-headed households, suggesting that expenditure decisions over food may primarily lie with women. Households with vulnerable people, e.g., pregnant and lactating women, disabled and elderly members tend to have worse food security outcomes.



The host communities get positive impacts too, thanks to spill-over effects of WFP assistance. In fact, the estimated income multiplier effect of GFA is 1.89 in Bidibidi, 1.37 in Kiryandongo, 1.50 in Kyangwali, and 1.53 in Nakivale settlements. The size of refugee population vis-à-vis the local population is a key determinant of the impacts as a larger share of refugee population in a region means more GFA assistance on average. Cash assistance tends to have a larger multiplier effect when compared to in-kind assistance.

Additionally, market integration and the production capacity of both refugee and host households are important in determining the total impact. Impacts of assistance are relatively small for crop and livestock production (between 0 and 6 percent increase), but we observe substantial increases in entrepreneurial retail and service activities (between 5 and 17 percent). Higher levels of production are especially crucial in translating assistance into productive impacts, indicating the need for more livelihood and asset creation programs to improve synergistic impacts.



## Annex

### Introduction to SHAPES

Impacts of economic and climate shocks on local populations can be devastating and require humanitarian intervention to save lives and restore livelihoods. But how can we ensure that our responses are well prepared, timely and adequate?

The Shock and Assistance Platform for Economic Simulations (SHAPES) is a WFP analytical platform that augments the evidence around food security, enabling with one simultaneous analysis to simulate both the impact of multiple negative shocks on households and the local economy, and assess the direct and indirect benefits of assistance provided to households to offset those shocks. It can help answering the following questions:

- How many additional people will become food insecure after a shock?
- What are the food security outcomes of assistance?
- What indirect economic effects will that assistance generate?

As such, SHAPES can be used as an early warning and anticipatory action tool, for the simulation of various impacts to inform decision making and program design for the most appropriate actions in crises, and to support advocacy to mobilize resources to save and change lives.

Using household survey data, SHAPES simulates how climatic and economic shocks affect households' income, expenditures, and consumption, how people would use assistance, and to what extent their food security and other measures of household welfare would be improved as a result. This allows SHAPES to project the number of people in need given a particular shock, to simulate the food security outcomes of assistance to households, and to model how and to what extent that assistance will benefit the local economy through spill-over effects to non-beneficiary households, productive activities, and the labour market.

Running a simulation with SHAPES is easy. Users interact with a web-platform through a user-friendly interface to define a fully customizable scenario quantifying parameters for shocks (such as inflation, exchange rate, income changes including remittances, extreme rainfall and temperature) and assistance (cash or in-kind transfers, number of beneficiaries assisted, transfer values, and targeting and prioritization choices). The simulation is then run on a computational engine and results are typically available within minutes.

What happens in the cloud-based computational engine is more complex. User input triggers three models, where one model's output becomes the input for the next model. These are a climate impact model to predict seasonal weather-related shocks to crop yields; a general equilibrium model whereby households in a local community are allowed to trade with each other generating spill-over impacts to non-assisted households; and a household impact model that estimates price elasticities, allocates expenditures to broad categories including food, and models consumption decisions to food groups, thereby enabling food security outcomes to be estimated. Originally, the general equilibrium model and the household

impact model were conceptualized as independent models, respectively being called Local Economy-wide Impact Evaluation (LEWIE) model and Shock Impact Simulation Model (SISMod), both largely used in applied research and WFP reports.

### The LEWIE Model at glance

In this study we focus only on the indirect economic effects that assistance can generate. Under the best of circumstances, it is difficult and costly to estimate the spill-over effects of public programmes using conventional experimental approaches (e.g., randomized control trials (RCTs) or econometric Instrumental Variables or “quasi-natural” experiments). Given the non-random nature of settlement placement, RCTs are not a feasible way to quantify the economic impacts of WFP assistance in-and-around refugee settlements. Because baseline data prior to the start of the settlements usually do not exist, neither are econometric methods that try to emulate experiments.

LEWIE instead uses simulation methods to estimate the direct and indirect (or “spill-over”) effects of WFP assistance on refugee settlements. LEWIE uses a structural approach that integrates models of actors (businesses and households) within a GE model of the local economy. Businesses include locally owned businesses and businesses not owned by locals but typically employing some local workers and purchasing some locally supplied inputs. There is a rich tradition in economics of using micro survey data to construct models of agricultural households that are both producers and consumers of food (Singh, et al., 1986).

LEWIE begins by using micro-survey data and econometric methods to construct models of firms, households, and household farms within local economies. Then these micro-models are “nested” within a GE model of the local economy, drawing from a rich tradition of GE modelling in economics (Dixon & Jorgensen, 2012). The models of firms describe how businesses combine various factors (e.g., hired labour, family labour, land, capital) and intermediate inputs (fertilizer, seed, and a variety of purchased inputs) to produce an output (corn, prepared meals, a service), which may be consumed locally or sold to others.

The household and household-farm models describe each household group’s productive activities, income sources, and consumption/expenditure patterns. In a typical model, households participate in activities such as crop and livestock production, resource extraction (e.g., fishing), retail, and other business activities, as well as in the labour market. Production functions for each activity are the recipes that turn inputs into outputs. Production functions for each activity and household group are estimated econometrically, using microdata collected in surveys that were carried out within the boundaries of the local economy.

Local income multipliers are not necessarily greater than one, because the new demand created by WFP assistance could be met by purchases from other parts of Uganda or abroad. In this case, the income “leaks out” from the local economy to other places, creating benefits there. In general, as local incomes rise, trade with the rest of the country increases.



Local demand also rises. A critical question is whether the local supply of goods and services can expand to meet the new demand. If not, growth in demand around settlements may put upward pressure on prices. This reduces the real or inflation-adjusted income gains from assistance. Interventions to make the local supplies of goods and services more responsive may then be necessary in conjunction with continued WFP assistance, for example, agricultural extension to make local farmers more productive, or micro-credit to finance local businesses.

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## Acronyms

BIC	Bayesian Information Criterion
CBT	Cash Based Transfers
FCS	Food Consumption Score
GE	General Equilibrium modelling
GFA	General Food Assistance
LC1	Local Council member 1
L-CSI	Livelihood Coping Strategy Index
LEWIE	Local Economy-Wide Impact Evaluation model
rCSI	reduced Coping Strategy Index
SHAPES	Shock and Assistance Platform for Economic Simulations
UNHCR	United Nation High Commissioner for Refugees
WFP	United Nations World Food Programme

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