Analysis and Refinement of Targeting Mechanisms for Food and Multipurpose Cash Assistance to Central African Republic Refugees in Cameroon

Final Report

16 June 2018

Nisreen Salti, Hala Ghattas, Jad Chaaban, Alexandra Irani, Salma Chouccair Kayabalian

Contents

Objective

The overall objective of this work is to build a joint targeting approach for assistance provided by WFP and UNHCR, through analysis of the existing vulnerability data. The targeting mechanism will enable both agencies to move from a blanket coverage approach to assistance, to a food security/basic needs targeting approach that prioritises the most vulnerable CAR refugees. The targeting approach developed is intended to guide the delivery of WFP's food assistance (whether in-kind or cash modality) as well as UNHCR's basic needs assistance (whether in the form of NFIs or unrestricted cash).

These findings present the results of the food security and economic vulnerability analysis, conducted by AUB, which forms the basis of the targeting approach to be adopted by UNHCR and WFP.

For further details on the methodology and background to this analysis, see UNHCR / WFP's 'Joint Targeting Approach for Food and Basic Needs Assistance' (UNHCR & WFP, 2018) and the technical report prepared by AUB and presented to UNHCR on 20th November 2017.

Background

Cameroon is host to a large number of Nigerian and Central African refugees and asylum seekers. Since 2003, the continued instability in neighbouring Central African Republic (CAR) has led to 237,059[1] people seeking refuge in the East, Adamawa and North regions of Cameroon (WFP, 2017a). Approximately 30% of the refugees are living in 7 sites/camps while the remaining 70% have taken refuge in over 305 host villages and unmanaged sites (WFP, 2017a). Around 90% of these CAR refugees have settled in 16 'communes' in the East, Adamawa and North regions (UNHCR, 2017).

The Government of Cameroon, UN agencies, and international and national NGOs are offering international protection and humanitarian assistance to these refugees as well as supporting the host communities. Currently, the host villages are facing many challenges, due to the high influx of refugees, notably in terms of land management, access to rudimentary social services (health, schools, social welfare services) and natural resources such as land, food, and water (Barbelet, 2017). The pressures on these resources, combined with high levels of pre-existing poverty and under-

[1] The number of registered CAR refugees in East, Adamawa and North regions, according to UNHCR registration database (as of 31st March 2018).

development have meant that the North, East and Adamawa regions have remained some of the poorest in Cameroon (UNHCR, 2017).

Even though some progress has been achieved in the areas of protection and humanitarian assistance, field assessments have highlighted many shortcomings (WFP, 2017a). The constant influx of CAR and Nigerian refugees, combined with high levels of insecurity in some areas and natural disasters (such as flooding) are making it hard for refugees to reach a state of stability (Barbelet, 2017; OCHA, 2017). One of the main concerns is food security, which continues to be a problem since refugees are still largely dependant on food assistance programmes provided by UN organizations and NGOs (WFP, 2017a). In fact, in 2015, 80.4% of refugee households were dependent on food assistance (UNHCR, 2015).

UNHCR and WFP have started working on the development of a multi-sectoral targeted approach based on the vulnerability status of refugees.

Current Food Assistance Situation

WFP and UNHCR have been providing cash and in-kind food assistance to the refugees in the three regions of concern: East, Adamawa and North, in order to help sustain food and nutrition security of CAR refugees (WFP, 2015; WFP, 2017b). Up until the end of 2017, according to field reports, approximately 20% of refugees who arrived before 2013 ('old caseload') are being assisted, while refugees who arrived after 2013 are provided with blanket assistance. The complete food basket/ration provided to refugees provides the standard requirement of 2100 Kcal/person/day (Mudekereza & Virayie, 2016). It is mainly composed of cereals, corn soy blend, oil, pulses, and salt (WFP, 2015), an equivalent of 16$ per person. However, according to information acquired from the ground, part of this food ration is sold in order to meet other needs, such as buying meat, sugar, and condiments (Mudekereza & Virayie, 2016).

Based on a recent WFP report, some refugees who arrived in 2016 are however not being supported by any type of assistance; food or cash-based, due to a shortfall in funding (WFP, 2017b). In light of the reduction in funding for CAR refugees, humanitarian organizations are struggling to maintain the same level of assistance. From October 2016, refugees only received half of their standard ration of

2100 kcal (Mudekereza & Virayie, 2016; WFP, 2017b), though the ration was increased to 75% in July 2017.

Due to these funding constraints and ration cuts, it has therefore become crucial to switch from a blanket assistance approach to a more targeted one by identifying a reduced group of potential beneficiaries based on their level of vulnerability and their inability to afford and consume the minimum resources necessary for their long-term physical well-being. Since early 2017, UNHCR and WFP have been working on the development of a multi-sectorial targeted approach based on the vulnerability status of refugees (WFP, 2017a). WFP will continue to provide both e-voucher and in-kind food assistance to cover full and half food rations for targeted refugees while UNHCR will launch a multipurpose cash assistance programme, starting 2018.

Data Sources

The findings presented here are based primarily on the UNHCR/IFORD 2017 data set[2] as it is the most recent nationally representative sample of the CAR refugee population. It includes detailed household (HH) and individual level data and, most importantly, it includes indicators that allow a food security index and some economic vulnerability estimates to be computed. A key feature of the dataset is that it also includes a representative sample of both 'old' and 'new' caseloads, which enables a comparison of both refugee populations.[3] The WFP/UNHCR 2017 census data only includes new caseloads and does not include the necessary variables to construct the food security and economic vulnerability indicators and as such has only been used for the validation of certain findings and results.

[2] The IFORD/UNHCR data set includes 9,402 observations and does not include any probability weights. Accordingly, probability weights were generated based on the geographic distribution and caseload type (old vs new caseload) using the latest version of the proGres database shared with AUB in January 2018 (excluding cases that arrived after January 2017, the date of the UNHCR/IFORD survey and report). This led to a slight adjustment mainly to the caseload distribution as the IFORD/UNHCR sample was extracted to be nationally representative and self-weighing.

[3] The proGres database is used as reference to classify households as 'new' or 'old'. The categorization is done by UNHCR Protection (registration) staff and is based on an assessment of both the date of arrival (pre or post December 2013) as well the reason for flight from CAR (whether linked to the conflict from 2003 onwards or the conflict from 2014 onwards).

The UNHCR global registration database, proGres, was used to assign the status of households that were interviewed in the UNHCR/IFORD survey as "old" or "new".[4] For the purpose of targeting, all polygamous men living in a household with their polygamous wives, as reported in the UNHCR/IFORD data, were artificially transformed into single member households to ensure parallelism in the definition of households/cases in the UNHCR/IFORD data set on which the analysis is being conducted and the proGres database that will be used to generate the new targeting/beneficiary lists for assistance.

The proGres database extract provided to us (latest version sent in January 2018) is the reference database used for adjusting the UNHCR/IFORD dataset and for developing the simulated targeting lists referred to in this report. It includes 231,808 individuals from 79,287 unique cases. When the targeting approach is agreed upon, the new beneficiary lists will be generated by UNHCR Protection (registration) staff, using the most recent version of proGres available.

WFP Vulnerability Classification

While the first version of the analysis was based on the WFP Consolidated Approach for Reporting Indicators of Food Security (CARI), it was updated based on discussions with WFP in March/April 2018 and is now based on the Refugee influx Emergency Vulnerability Assessment (REVA). REVA includes a food component (based on the food consumption score (FCS)) and an economic vulnerability component based on total per capita expenditure. For prioritization purposes, as is the case in this report, total per capita expenditure *excluding* the value of assistance is used. REVA computed using expenditure per capita including food assistance will be reported for comparison purposes and to shed light on the potential implications of reductions in food assistance. The REVA classification includes three levels of vulnerability: highly vulnerable, vulnerable and less vulnerable, following the guidelines in table 1 below.

[4] For households that were missing a proGres case number in the UNHCR/IFORD survey, all those with an arrival date of 2013 or before were considered as "old". It is important to note that while the UNHCR/IFORD sample was stratified by old vs new caseloads (as well as geographic distribution), around a third of the sample was categorized as "old" compared to a fifth (~19.6%) of the proGres database. Accordingly, this discrepancy should be investigated to find out if the proGres database under represents old caseloads, or whether the UNHCR/IFORD survey over represents them. For the purpose of this report and project, the proGres distribution will be followed.

Table 1 WFP REVA Vulnerability Classification

Economic Vulnerability	Food Consumption Score		
	Poor	Borderline	Acceptable
Below food MEB	1	1	1
Between food + non-food MEB	1	1	2
Above food + non-food MEB	1	2	3

Highly vulnerable Vulnerable Less vulnerable

Taking into account the effect of the distributed WFP food assistance, almost three quarters (72.8%) of the population is highly vulnerable, 12.3% vulnerable and 14.9% less vulnerable (table 2). Levels of vulnerability are likely underestimated due to the provision of food assistance, even though, since November 2016, ration cuts have meant that food distributions only cover half of the required food needs. More specifically, the form of food assistance delivered (whether in-kind food assistance or restricted food e-vouchers) contributes to improving households' access to the adequate food groups.

There is a statistically significant difference in vulnerability classification between the old and new caseloads, with the old caseload appearing as more vulnerable than the new; however, this difference should be interpreted with caution as it mainly arises due to the old caseload currently receiving less food assistance than the more recently arrived refugees.

Table 2 REVA Vulnerability Classification (including WFP food assistance)

	Highly vulnerable	Vulnerable	Less vulnerable	Total
Total	72.8	12.3	14.9	100
Old caseload	77.1	10.7	12.2	100
New caseload	71.7	12.7	15.6	100

Note: Old/new caseload status from proGres data set. Uncategorized in IFORD with arrival date before 2014 were considered old. Difference between old and new caseload is significant at the 1% level.

It should be noted that discontinuing food assistance would likely have negative effects not only on the highly vulnerable, but also on some of the vulnerable and less vulnerable as they currently rely on this food assistance.

In fact, excluding WFP assistance, the percentage of highly vulnerable increases from 72.8% to 87.4%, while the percentage of vulnerable decreases from 12.3% to 6% and less vulnerable from 14.9% to 6.6% (table 3). The difference between the old and new caseloads is no longer statistically significant after removing the effect WFP food assistance.

Table 3 REVA Vulnerability Classification (excluding WFP food assistance)

	Highly vulnerable	Vulnerable	Less vulnerable	Total
Total	87.4	6	6.6	100
Old caseload	87.2	5.7	7.1	100
New caseload	87.5	6.1	6.4	100

Note:
Old/new caseload status from proGres data set. Uncategorized in IFORD with arrival date before 2014 were considered old. Difference between old and new caseload is not significant at the 10% level.
The bigger increase in the highly vulnerable among the new caseload compared to the old case load (table 2 vs table 3) is due to the difference in percentage of assisted households among the old vs the new caseloads. While only 56.5% of individuals belonging to an old case report receiving food assistance, 91.4% of those belonging to a new case report receiving food assistance.

Economic Vulnerability

While poverty for Cameroonian nationals has been studied (Government of Cameroon & World Bank, 2014), to our knowledge this brief is the first to depict the economic vulnerability of CAR refugees, using expenditure per capita as a proxy for welfare. Accordingly, we were not able to refer to a previous study or survey in order to validate our results.

To measure economic vulnerability, total reported monthly household expenditure (including food and non-food items) was used as the welfare indicator. Both an upper line (the Minimum

Expenditure Basket (MEB)) and a lower line (a food-based only MEB) were used and constructed. Based on the defined threshold or basket, the economic vulnerability headcount rate reflects the percentage of vulnerable individuals as a proportion of the total population.

The amount of 4,400 CFA (per person)[5] was added to the total expenditure of all households who reported receiving food assistance to ensure that the welfare indicator includes items consumed[6] but not purchased by the household[7]. The consumption expenditure aggregate was then adjusted for household composition. This is necessary because surveys usually reflect the expenditures of the household as a unit and not that of the individual, thus distorting actual welfare levels. Accordingly, the final total household expenditure was divided by the household size (number of members) to obtain monthly per capita expenditure[8].
Accordingly, the analysis was run twice, once including WFP assistance and once excluding it, in an attempt to simulate the effect of assistance cuts.

Constructing the MEB for CAR refugees[9]

The food-based MEB (lower poverty line, or food poverty line), typically reflects the monetary value of a minimal healthy level of nutrition given the population's tastes and consumption patterns and expressed as minimal caloric requirements (2,100 kcal per person per day). For the purpose of this report, the food basket that was set by WFP for CAR refugees (in 2015) was used and the food MEB was therefore set at 8,800 CFA.

[5] This is 50% of the WFP food assistance CFA value (which represents half a food ration per person per month). Rations were cut to 50% in November 2016, two months before the collection of data analysed here.
[6] A small percentage of the refugee population reported relying on own production for food consumption. This was reported for cereals (4.5%), dairy products (1.7%) and legumes (3.3%) while the percentage was less than 1% for the remaining food groups. However, since the survey did not collect the necessary data to monetize this consumption, it was not included in the expenditure of these refugees.
[7] After adding food assistance to the total expenditure of households who mentioned receiving such assistance and replacing total expenditure by food expenditure when the total was reported to be less than the food expenditure level, there were 49 remaining observations with a total expenditure level of 0 CFA. These were treated as missing values, decreasing our total number of observations to 9,353.
[8] While adult equivalence scale adjustments are sometimes used instead of a simple division by the number of household members, the calculation of such scales is controversial and might not lead to accurate results. Accordingly, we opted to use the former technique.
[9] An exercise to estimate economic vulnerability for CAR refugees using Cameroon national poverty lines is included in Annex 1. The lines are not suitable to measure economic vulnerability among refugees and they are not based on the specific needs and rights of refugees and as such were not used for the purpose of this analysis and targeting exercise.

Following the approach described in the WFP MEB construction guidelines (internal document shared with us by WFP) to construct the upper poverty line or MEB, the minimum non-food needs of households are estimated based on the average share of expenditure that households just above the food poverty line dedicate to needs other than food, following the below equation[10]:

$$Upper\ Poverty\ Line = Lower\ Poverty\ Line / (1 - non\ food\ share)$$

While in our first version of the upper poverty line, we had used the second and third quintiles to estimate the food share (88%) following the approach used by CAS & World Bank (2015), the food share was deemed too high as it was based on the food expenditure of poor/economically vulnerable individuals as opposed to ones that are right above the food MEB. We therefore updated the estimate by taking the average food share from the individuals who are right above the food line (second half of the fourth quintile). This decreased the average food share to 75%[11] and led to an estimated upper poverty line/ MEB of 11,733 CFA, rather than 10,000 CFA (initial estimate). While the food line was built by WFP using a needs-based approach, the full MEB can be considered a hybrid one since it includes a needs-based food component and an expenditure based non-food component. While not exact, this is a reasonable approach given the data available.

Table 4 Economic Vulnerability by Case Type (including received assistance)

	New caseload	Old caseload	Total
% above the MEB	18.2	14.4	17.4
% below the MEB	81.8	85.6	82.6
% below the food MEB	*69.1*	*74.3*	*70.1*

Note: Difference between old and new caseload is significant at the 1% level.

Taking into account food assistance, 82.6% of the population was below the MEB and 70.1% was below the food MEB (table 4). While the difference is statistically significant between the old and

[10] For the purpose of this report we substituted in the equation the food poverty line with the lower poverty line.

[11] The food poverty line constitutes a high share of the upper poverty line yet, such high levels of food expenditure shares can be justified, for the following reasons. CAR refugees come from one of the poorest nations in the world (Hunger 2017), which has the second to lowest level of human development (WFP 2017). Even prior to the renewed wave of violence in 2013, the population living in the centre and the North of the Central African Republic spent 75% of their income on food (FAO 2010).

new caseloads, this should again be interpreted with caution as it incorporates the effect of food assistance that is not equally distributed among them (as above, see table 2).

The percentage of refugees below the MEB increases from 82.6% to 92% when food assistance is excluded[12]. Those below the food MEB increase from 70.1% to 86.2% (table 5). In simple terms, this means that, without food assistance, 92% of CAR refugees do not have the means to purchase goods worth 11,733 CFA per person, per month, and 86.2% do not even have the means to purchase goods worth 8,800 CFA per person, per month (considered by WFP to be the monthly cost of accessing 2,100 kcal of food per day). The difference between the old and new caseloads is no longer statistically significant after removing the effect of WFP food assistance, a potential indication that old and new caseloads are not statistically different in terms of economic vulnerability and that any difference is caused by the food assistance distribution factor.

Table 5 Economic Vulnerability by Case Type (excluding received assistance)

	New caseload	Old caseload	Total
% above the MEB	7.9	8.4	8
% below the MEB	92.1	91.6	92
% below the food MEB	*86.4*	*85.6*	*86.2*

Note: Difference between old and new caseload is not significant at the 10% level.

Proposed Targeting Approach

Given the high rates of deprivation, both in terms of the WFP vulnerability classification (87.4%) and economic vulnerability (86.2%), a blanket approach for assistance is recommended to ensure CAR refugees are able to meet the most basic of their needs. Based on the WFP classification 202,601 out of the 231,808 are highly vulnerable, therefore a blanket approach would avoid exclusion errors.

[12] A total of 668 individuals (out of 9,402) had a reported 0 CFA per capita expenditure excluding WFP food assistance. Accordingly, a linear regression was run to impute their expenditure levels and expanding the analysis from 8,734 observations to 9,353 observations (49 observations were omitted from the analysis).

However, given the budget constraints of humanitarian actors, this section presents the results of a prioritization exercise that would help guide the distribution of the limited assistance available to the overall targeted vulnerable population.

A categorical targeting approach was found to be more suitable than a proxy means test. Under categorical targeting, assistance is distributed to all individuals within a certain geographical area and/or a group defined by certain characteristics such as household size, number of children in a household, gender of the head of household amongst others. These characteristics are selected based on the context and the strength of their association with the deprivation or identified needs that the programme aims to respond to.

Categorical targeting works well when high concentrations of vulnerability or needs exist, as is the case for CAR refugees. It is considered efficient as it tends to have low error rates (leakage and under coverage, also known as 'inclusion' and 'exclusion' errors). It can also yield, in the context of CAR refugees in Cameroon, more efficient results than the use of a proxy means testing approach that would involve higher error rates, and lower goodness-of-fit and out-of-sample predictive properties, due to the context and type and quality of the data, which were not collected for the purpose of targeting.

The two main suitable measures for the purpose of prioritization are: (1) for economic vulnerability the food MEB used as threshold along with monthly expenditure per capita (excluding food assistance) and (2) the WFP vulnerability classification category for the highly vulnerable (excluding food assistance). As both measures resulted in similar levels of vulnerability, it is suggested to use the WFP vulnerability classification, for two reasons: firstly, it is based on both a food component (using the food consumption score) and an economic vulnerability component, and secondly, it seems to be producing more robust results, as is shown in Tables 6 and 7 below. Table 6 reports the headcounts by region using the MEB: 87.6% of the refugee population in the East lives below the food MEB, compared to 85% in Adamawa and 75.6% in the North. This gap between the North and the rest of the regions is less pronounced when looking at the WFP classification.

Table 6 Economic Vulnerability by Region (excluding received assistance)

	East	Adamawa	North	Total
% above the food MEB	12.4	15.0	24.4	13.8
% below the food MEB	87.6	85.0	75.6	86.2
Total	**100**	**100**	**100**	**100**

Note: Difference between regions is significant at the 1% level.

Table 7 instead reports the vulnerability results by region using the WFP classification. While 88.2% and 86.8% of the population in the East and Adamawa is respectively highly vulnerable, 81% of the population in the North is classified as such. The gap between the North and Adamawa is therefore narrower when looking at the WFP classification compared to economic vulnerability.

Table 7 WFP Vulnerability Classification by Region (excluding received assistance)

	East	Adamawa	North	Total
Highly vulnerable	88.2	86.8	81.0	87.4
Vulnerable	4.9	8.0	11.1	6.0
Less vulnerable	6.9	5.3	7.9	6.5
Total	**100**	**100**	**100**	**100**

Note: Difference between regions is significant at the 1% level.

A narrower gap is preferred over a wider one, as the population in the North has a significantly higher percentage of the population with a poor food consumption score (24.3%, compared to 3.7% and 3.2% in the East and Adamawa respectively). These conflicting results could be due to the under-reporting of food expenditure based on agriculture (with no proper documentation in the survey) or access to other types of assistance and services that are not well documented and reported. Therefore, relying on the WFP classification would provide us with a more conservative estimate of vulnerability in the North than the standalone food MEB measure.

Identifying Categorical Variables

To proceed with categorical targeting, the list of categorical variables that have high levels of association with vulnerability (using the WFP classification) are displayed in table 9 (from highest to lowest association) along with the total number of refugees reached if the variable were to be used for targeting. The last column corrects for any double counting resulting from refugees included in more than one variable. As the rates of vulnerability are very high for CAR refugees, only variables with associations higher than 90% were included in the exercise.

Variables with high associations with vulnerability that would adversely affect refugees' incentives if used for targeting were not included in the exercise. A justification as to why they were left out is provided below. It is advised that the selected variables for targeting are not communicated with the refugee population or the field offices as this would lead to negative repercussions as certain households might try to fit into the criteria (for example by attempting to change the way in which their household is registered in proGres) in order to become eligible for assistance.

List of categorical variables considered:

1. Geographic area: while there was a significant difference in vulnerability levels across the 3 main regions (North, Adamawa, East), geographic targeting can lead to large internal population displacements. It could also cause social tensions if, for instance, religious groups are segregated by region. For example, there is a 6 percentage point difference between vulnerability rate in the North (81%) compared to Adamawa (86.8%) (table 7), however excluding the North completely might lead to the adverse repercussions listed above. Accordingly, this variable was not considered for the exercise.

2. Camp: While there was a significant difference in vulnerability levels based on residence in camps (91.2% of those living in camps were highly vulnerable compared to 84.8% of those living outside camps), the variable is highly under-reported in the proGres database and it might lead to displacements into camps or it may discourage camp residents from moving out of camps and integrating into Cameroonian villages and towns, where they likely have better opportunities for becoming self-reliant.

3. Head of household characteristics: While head of household characteristics are usually used in the targeting literature and models, we were not able to include them in our exercise due to the presence of improperly documented polygamous households and the way polygamous men are considered as separate cases in proGres, with no accurate link to the cases (such as wives and their dependents) that a polygamous man is related to. Accordingly, we are unable to take into account the effect of polygamy and are unable to correctly assign the head of household in each case, since the proGres database automatically assigns the polygamous wife as head of household once her polygamous husband has been artificially classified as a separate case. Furthermore, members of polygamous households often live

separately, in different locations, so a uniform approach is problematic. While including polygamous men as part of the eligible population for assistance would be controversial and might implicitly be considered as an incentive, the nature of the criteria recommended for targeting (such as bigger household sizes and number of children in a household) leads to their automatic exclusion since polygamous men are registered as a separate case in the proGres database.

4. Health, protection and other vulnerability indicators: While such variables are usually widely used in the targeting literature, given the weak quality of the data[13] and how the variables were recorded in both databases, they were not included in this exercise. There is a need for a more accurate recording of such variables for future vulnerability assessments and targeting exercises.

5. Education: Since the CAR refugee population is poorly educated as a whole, using education as a categorical variable did not lead to significant results. Among the 18+ sub-population, over half (51.2%) have received informal education only (mainly religious or Koranic schools) and almost a third (32.3%) had not received any type of education.

6. Employment: using employment as a targeting variable would lead to perverse incentives such as discouraging refugees from engaging in the labour market or the underreporting of their employment. Selected indicators for targeting exercises are usually observable and verifiable.

7. Arrival year: there was no clear and consistent increase or decrease in vulnerability based on the year of arrival (table 8). Households were grouped in uneven arrival year bins to ensure the number of observations in each bin is sufficient for statistical power. Also, if arrival date is to be used as a criterion, refugees arriving in 2018 would be automatically and unfairly

[13] Households were asked if their members suffered from a vulnerability. As the term might not be well understood by respondents, the survey results show that only 4.3% of the population suffers from a vulnerability. This low rate could be due to the vagueness of the question, or the under diagnosis of medical conditions among CAR refugees such as for chronic illnesses. Only after a confirmation was given, would the data collector list the types of vulnerabilities included in the options ranging from physical and mental disabilities, elderly living alone, chronic illnesses and unaccompanied child head of household.

excluded from the exercise as the IFORD/UNHCR data was collected in 2016/2017. Accordingly, arrival year was not included in the categorical targeting exercise.

Table 8 WFP Vulnerability Classification by Arrival Year

Arrival Year	Highly Vulnerable	Vulnerable	Less Vulnerable	Total
<2006	89.5	3.9	6.5	100
2006-2012	88.4	5.6	6.0	100
2013	85.6	7.5	6.9	100
2014	88.7	5.3	6.1	100
2015	80.2	12.3	7.5	100
2016-2017	83.6	4.7	11.7	100

8. Number of children: the number of children from various age interval groupings was found to be highly associated with a household's vulnerability status. More specifically the following variables had the highest associations: two or more children between the ages of 2 and 6, three or more children between the ages of 7 and 11, and at least one child between 12 and 17 (table 9). While the category three or more children under 5 had the highest association level, it was excluded from the exercise to avoid skewing households' incentives toward higher fertility. Although excluding households with children under the age of 2 is not ideal in a context afflicted by significant child malnutrition rates, some of these households were implicitly included by proxy through the remaining selected variables.[14] Also, the WFP vulnerability classification is not meant to be used as an exact proxy for child malnutrition, and as such, a household with a child under 2 that is considered highly vulnerable but was not included in the beneficiary pool does not necessarily suffer from child malnutrition. Nevertheless, while this is a food security and poverty targeting exercises, if child malnutrition is not tackled in other programmes, then such an exercise might risk excluding households that suffer from child malnutrition.

9. Household Size: There exists a positive and increasing association between the size of a household and vulnerability based on the WFP vulnerability classification. Specifically, 91.6%

[14] A quarter (25%) of households that have a child under 2 were found to be highly vulnerable.

of the population categorized as highly vulnerable, live in households compromised of 6 or more members[15]. Accordingly, the variable was included in this exercise.

10. Number of females in a household: There exists a positive and increasing association between the number of females in a household and vulnerability based on the WFP vulnerability classification. Specifically, 91.5% of the population categorized as highly vulnerable, live in households including 3 or more females (of all ages). Accordingly, the variable was included in the exercise.

Results of the Targeting Exercise

Table 9 below shows the list of categorical variables selected for the targeting exercise from highest to lowest (in terms of strength of association with the WFP vulnerability classification). At least one of the variables listed in the table below must be true of a household for it to be included in the targeting exercise. The prioritisation exercise could employ all 5 variables to reach 157,127 total individuals or use 1, 2,3 or 4 variables depending on the budget constraints faced. As stated above, if resources permit for all vulnerable households to be targeted for assistance (i.e. 87.4% of CAR refugees), blanket targeting would be the most appropriate method.

For example, 92.4% of individuals who live in households that include 2 or more children between the ages of 2 and 6 are highly vulnerable. Using this variable alone would enable us to select 68,729 individuals from the proGres database with a 7.6% leakage rate. In other words, of the 68,729, 7.6% would be falsely included in the beneficiary pool as they are not highly vulnerable, but were mislabeled as such (also known as inclusion error). Using only this variable would allow us to reach 36% of the overall highly vulnerable population or 72,936 individuals.[16] There is therefore an exclusion error of 64%, i.e. 64% of the highly vulnerable population would still not be included if only this selection criteria is applied.

[15] 91.3% of the population categorized as highly vulnerable, live in households compromised of 7 or more members.

[16] The total refugee population in proGres is 231,808, of which 87.4% or 202,601 are highly vulnerable. The first targeting variable alone only captures 36% of them or 72,936 individuals.

Adding the indicator "three or more children between 7 and 11 years of age" would expand our pool of targeted beneficiaries to 79,300, keep our leakage rate constant at 7.6% and slightly increase our coverage rate to 39.8% of highly vulnerable households (60.2% exclusion error).

Including the variable "households with 6 members or more" would expand our cumulative beneficiary count to 103,312 which is still below the current WFP budget constraint of 130,000 half food rations. If budget constraints are relaxed, then adding "At least one child between 12 and 17 years of age" would increase the pool of beneficiaries to 145,618 and "Three or more females in the HH" to 157,127 with a coverage rate of 81.9% and a leakage (inclusion error) of 8.9%.

Table 9 Categorical Targeting Exercise

Rank	Targeting factor	% of which are Highly Vulnerable	Beneficiary Count	Cumulative Beneficiary Count	Cumulative Coverage Rate	Cumulative Leakage Rate
1	Two or more children between 2 and 6 years of age	92.4***	68 729	68 729	36.0%	7.6%
2	Three or more children between 7 and 11 years of age	91.9***	17 499	79 300	39.8%	7.6%
3	Household size of 6+	91.6***	73 761	103 312	54.8%	8.3%
4	At least one child between 12 and 17 years of age	91.6***	104347	145618	76.2%	8.7%
5	Three or more females in the HH	91.5***	102172	157127	81.9%	8.9%

Notes:

**** Results are significant at the 1% level.*
The proGres database includes a total of 231,808 individuals from 79,287 cases.
The column "Beneficiary Count" displays the total number of individuals targeted if the variable is used alone. While the column "Cumulative Beneficiary Count", display the total number of individuals targeted if the variable is used along with all the variables found in the previous rows.

Table 10 (below) presents the percentage of households with children under 2 that would implicitly be included in the targeting exercise through the 5 selected indicators. For example, if we were to only use the first indicator for targeting, 34.9% of highly vulnerable households with children under 2 would be automatically covered. While, if we target using all five indicators, 74.3% of highly vulnerable households with children under 2 would be implicitly included in the targeting exercise. It

is important to note however, that these findings should be interpreted with caution as the children under 2, in a household that is classified as highly vulnerable, do not necessarily suffer from child malnutrition. The strength of the association between both indicators was not tested due to the lack of data availability. The aim of the exercise is to shed light on the potential risks faced in moving forward with this type of targeting and is at the request of both WFP and UNHCR who were concerned about the coverage of assistance for those households with children under 2 years in terms of *prevention* of child malnutrition (not treatment).

Table 10 Categorical Targeting Exercise

Rank	Targeting factor	Percentage of households with children under 2 covered by targeting	Percentage of highly vulnerable households with children under 2 covered by targeting
1	Two or more children between 2 and 6 years of age	31.5	34.9
2	Three or more children between 7 and 11 years of age	32.7	36.1
3	Household size of 6+	47.5	50.9
4	At least one child between 12 and 17 years of age	55.6	59.2
5	Three or more females in the HH	70.2	74.3

Recommendations for data collection and analysis in 2018

While the data available was satisfactorily robust and representative enough to enable this vulnerability analysis, it was not initially intended for this purpose and therefore shortcomings encountered here could be avoided in future rounds of data collection. For example, there is a need to conduct a representative household survey that includes all required indicators to calculate food security and economic vulnerability following international guidelines set by WFP, the World Bank and others[17].

[17] This includes a comprehensive expenditure module that differentiates between out of pocket expenditures and humanitarian aid and a more comprehensive and adapted list of negative coping strategies.

Furthermore, as the condition of refugees is volatile and the latest datasets (including the UNHCR/IFORD dataset) date back to January 2017, more recent data is needed to better reflect the current situation of CAR refugees.

A new survey, designed specifically for targeting purposes and the measurement of food security, money-metric and multidimensional poverty would also help shed light on issues that are not currently well-documented in any of the available datasets namely:

  - Sampling of households and data collection based on the proGres definitions of cases (for example for polygamous households).
  - The extent of refugee household reliance on own food production (and its monetary value).
  - Expanded expenditure module which integrates household consumption that is not based on expenditure (own production, gifts, assistance etc…).
  - Inter-household dynamics and decision-making in polygamous households and their impact on the household food security and poverty status.
  - In-depth analysis regarding the causes behind the low correlation between food insecurity and poverty.
  - Additional food security indicators, including a more exhaustive list of employed coping strategies.
  - Nutrition indicators with a focus on women and children (through anthropometric measures). Currently such measures exist in other surveys but cannot be linked to the data sets used for this project due to technical discrepancies.
  - Tracking and well-documented lists of households who receive various forms of assistance such as WFP food assistance and other forms of assistance such as education grants, subsidised healthcare, NFIs provided by UNHCR and other UN organizations and iNGOs, etc.

- There is a need to update the proGres database to better capture the below socio-demographic characteristics:
  - Updated categorization of all polygamous cases. We propose that polygamous men be included as their own separate cases, and that each wife and her children be listed as a separate case. We propose polygamous men be linked to all the different cases of their wives and children. This is what was communicated to us by UNHCR to be the

categorization that should be followed. However, the proGres dataset doesn't currently reflect that.

- Accurate categorization of cases by site (inside camps, outside camps etc…).

Annex 1 - Economic Vulnerability Estimates Using National Poverty Lines

The latest national poverty lines for Cameroon date back to 2007 and were estimated at 22,500 CFA for the upper poverty line and 17,962 CFA for the lower poverty line. The latter includes both food and non-food items.

The national lower poverty line is not comparable to the constructed food MEB for CAR refugees as it includes non-food items. Furthermore, the food component of the Cameroon national poverty line is based on 2,900 kcal per person per day (Government of Cameroon & World Bank, 2014), which is higher than the 2,100 kcal per person per day used by WFP to calculate the food-MEB for CAR refugees. The composition of the baskets might also be different, as well as the food prices.

Using published annual inflation rates of overall prices from 2008 to 2015 from the Cameroon National Institute of Statistics, the lower poverty line is expressed in 2015 currency to 22,219 CFA and the upper poverty line to 27,832 CFA. Based on the 2015 poverty lines, 98.5% of CAR refugees fall below the upper poverty line and 97.7% fall under the lower poverty line. These lines were developed based on the needs of Cameroonian nationals and as such do not depict the situation of CAR refugees. The exercise was however conducted for general analysis purposes.

Bibliography

CAS, & World Bank. (2015). *Measuring poverty in Lebanon using 2011 HBS.*

FAO (2010). Consolidated Appeals 2010: Central African Republic.

Government of Cameroon, & World Bank. (2014). *Cartographie de la pauvreté au Cameroun.*

Hunger, A. A. (2017). "Central African Republic." Retrieved 22/1/2017, 2017, from https://www.actionagainsthunger.org/countries/africa/central-african-republic.

IFORD & UNHCR. (2017). *Etude de base : Cartographie des zones de moyens de subsistance et analyse de l'économie des ménages.*

MINSANTE & UNHCR. (2016). *Enquetes Sens Aupres Des Refugies Centrafricains Hors Sites Dans Les Regions De L'est, Adamawa Et Nord Du Cameroun.*

UNHCR, & WFP. (2016). *Évaluation conjointe HCR/PAM de l'assistance humanitaire et de la situation des réfugiés centrafricains vivant au Cameroun.*

UNHCR & WFP. (2017). *Consultations avec les réfugiés centrafricains sur leurs perceptions de la vulnérabilité.*

UNHCR & WFP. (2017). *Enquête de vulnérabilité sur les réfugiés centrafricains bénéficiaires de l'assistance humanitaire, les régions de l'Est, de l'Adamawa et du Nord Cameroun.*

UNHCR & WFP. (2018). *Joint Targeting Approach for Food and Basic Needs Assistance for Central African Refugees in Cameroon.*

WFP (2017). "Central African Republic." from http://www1.wfp.org/countries/central-african-republic.