Research Terms of Reference

Libya Poverty Analysis

LBY2111

Libya

December 2021
Version 1

REACH Informing more effective humanitarian action

1. Executive Summary

Country of intervention	Libya					
Type of Emergency	□	Natural disaster	X	Conflict	□	Other *(specify)*
Type of Crisis	□	Sudden onset	□	Slow onset	X	Protracted
Mandating Body/ Agency	European Civil Protection and Humanitarian Aid Operations (ECHO)					
IMPACT Project Code	*14ARW*					
Overall Research Timeframe *(from research design to final outputs / M&E)*	15/11/2021 to 21/01/2022					
Research Timeframe *Add planned deadlines (for first cycle if more than 1)*	1. Start data consolidation and analysis: 29/11/2021					
	2. Analysis sent for validation: 24/12/2021					
	3. Outputs sent for validation: 21/01/2022					
	4. Outputs published: 28/01/2022					
	5. Final presentation sent for validation: 28/01/2022					
Number of assessments	X	Single assessment (one cycle)				
	□	Multi assessment (more than one cycle) *[Describe here the frequency of the cycle]*				

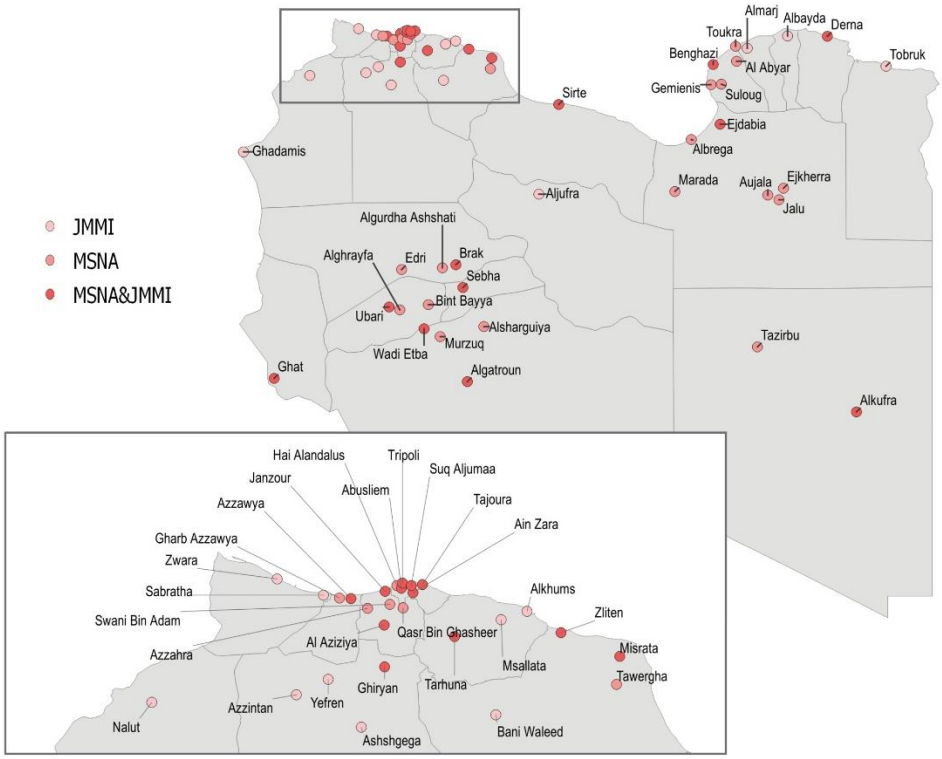
Humanitarian milestones *Specify **what** will the assessment inform and **when*** *e.g. The shelter cluster will use this data to draft its Revised Flash Appeal;*	**Milestone**		**Deadline**
	□	Donor plan/strategy	_ _/_ _/_ _ _ _
	□	Inter-cluster plan/strategy	_ _/_ _/_ _ _ _
	□	Cluster plan/strategy	_ _/_ _/_ _ _ _
	□	NGO platform plan/strategy	_ _/_ _/_ _ _ _
	X	Inform Cash and Markets Working Group (CMWG) understanding and programming around cash assistance	Ongoing
	Audience type		**Dissemination**

Audience Type & Dissemination *Specify **who** will the assessment inform and **how** you will disseminate to inform the audience*	□ Strategic X Programmatic □ Operational □ [Other, Specify]	□ General Product Mailing (e.g. mail to NGO consortium; HCT participants; Donors) X Cluster Mailing (Education, Shelter and WASH) and presentation of findings at next cluster meeting X Presentation of findings (e.g. at HCT meeting; Cluster meeting) X Website Dissemination (Relief Web & REACH Resource Centre) □ [Other, Specify]
Detailed dissemination plan required	□ Yes	X No
General Objective	Inform the understanding of income, expenditure and poverty across baladiyas in Libya, focussing on the percentage of assessed households in poverty[1] in all baladiyas covered by the 2021 Libyan population Multi-Sector Needs Assessment (MSNA)[2]. This information is intended to help CMWG actors in their strategic planning and targetting of locations.	
Specific Objective(s)	1) Correct 2021 MSNA income and expenditure data for households size and map the distribution of both variables; 2) Estimate the percentage of households in poverty using several different indicators and poverty lines (see research questions below for more information on the indicators); 3) Based on the analysis, identify the baladiyas with the highest percentage of households in poverty (if any); 4) Identify key characteristics of households in poverty, such as household size, gender of head of household, employment types, or other potential indicators that may be related to the identified instances of poverty.	
Research Questions	1. What does the income data distribution look like across Libya and in the baladiyas covered by the 2021 Libyan population MSNA? 2. What does expenditure data distribution look like across Libya and in the baladiyas covered by the 2021 Libyan population MSNA? 3. What percentage of households is in poverty, according to the following indicators and poverty lines: a. Indicators: i. Income ii. Expenditure b. Poverty lines: i. The Minimum Expenditure Basket (MEB) according to the Joint Market Monitoring Initiative (JMMI)[3] ii. Bottom 30% quantile	

[1] Households will be classified as being in 'poverty' as per the methodology outlined in section 3.4 The primary measure of poverty will be income and expenditure below the Minimum Expenditure Basket (MEB).

[2] The MSNA is a yearly assessment that aims to inform the overall understanding of humanitarian needs in Libya. The primary component of the assessment is quantitative data collection through household surveys. For the 2021 MSNA, 8871 households were surveyed between 14 June and 2 August. Sampling was purposive, and findings are thus indicative only. Please see the MSNA ToR here.

[3] The JMMI is a monthly assessment that aims to inform the understanding of market developments and prices. The assessment relies on KII data. The MEB reflects the estimated minimum cost of basic goods for a five-person household in a month. Please see the JMMI ToR here:

	iii. Bottom 40% quantile[4] 4. Where (if anywhere) are there pockets of poverty in Libya? 5. For those households that are identified as living in poverty, in what way (if at all) do households have any characteristics in common? If yes, what are those characteristics?
Geographic Coverage	The basis for the analysis is the 2021 Libyan population MSNA data. Therefore, the analysis will cover the baladiyas (ADM3) covered by the MSNA. Additionally, the analysis will use data from REACH Libya's Joint Market Monitoring Initiative (JMMI) which covers 37 baladiyas. Regional aggregation will be used for the baladiyas covered by the MSNA but not by the JMMI. The geographic coverage of the data used from both assessments looks as follows: Map 1: Geographic coverage of the two data sources 
Secondary data sources	The key data sources that will be used for the analysis are: 1. REACH Initiative, 2021 Multi-sector Needs Assessment (Libyan population), data published in August 2021. All data is available on the REACH resource center. 2. REACH Initiative, Libya Joint Market Monitoring Initiative (JMMI), data published monthly. The data for June 2021, July 2021, and August 2021 will be used for the analysis, as that is the period that coincides with data collection for the MSNA. All data is available on the REACH resource center.
Population(s)	□ IDPs in camp □ IDPs in informal sites

[4] The quantile approach is adopted and suggested by the Libya CMWG for their analysis of MSNA data, and will be adopted as well to ensure consistency between analysis approaches of income and expenditure data in this context.

Select all that apply	X	IDPs in host communities	□	IDPs [Other, Specify]
	□	Refugees in camp	□	Refugees in informal sites
	X	Refugees in host communities	□	Refugees [Other, Specify]
	X	Host communities	□	[Other, Specify]

Stratification *Select type(s) and enter number of strata*	X	Geographical #: 45 baladiyas Population size per strata is known? X Yes □ No	□	Group #: N/A Population size per strata is known? □ Yes □ No	□	*[Other Specify]* #: N/A Population size per strata is known? □ Yes □ No

Data analysis method	□	Primary	**X**	Secondary
Data management platform(s)	X	IMPACT	□	UNHCR
	□	[Other, Specify]		

Expected ouput type(s)	□	Situation overview #: _ _	□	Report #: _ _	□	Profile #: _ _
	□	Presentation (Preliminary findings) #: _ _	X	Presentation (Final) #: 1	X	Factsheet #: 1
	□	Interactive dashboard #:_	□	Webmap #: _ _	□	Map #: _ _
	□	[Other, Specify] #: _ _				

Access	X	Public (available on REACH resource center and other humanitarian platforms)
	□	Restricted (bilateral dissemination only upon agreed dissemination list, no publication on REACH or other platforms)
Visibility *Specify which* ***logos*** *should be on outputs*	***REACH***	
	Donor: *ECHO*	

2. Rationale

2.1 Background

According to the 2021 Libyan population MSNA, many of the needs that currently exist in Libya are driven by economic factors. Overall, 53% of assessed households reported that they were unable to afford all of their basic needs in the 30 days prior to data collection due to insufficient economic resources. Additionally, 28% reported that cost is a key prohibitive barrier to access to healthcare. Finally, 42% of assessed households reported that access to cash was a priority need for them.[5] These findings underpin the importance of economic status for Libyans' well-being and ability to access services. It has been estimated that the protracted conflict in Libya has had severe macro-economic consequences. The United Nations Economic and Social Commission for Western Asia (UNESCWA) estimates that the protracted conflict in Libya has costed 783.4 billion Libyan dinars (LYD) (approx 170 billion USD) since 2011 in terms of lost GDP.[6]

Nonetheless, little information exists about income, expenditure, and poverty within Libya. Due to the fragmented governance system in Libya, income data is scarce are rarely covers all regions. Furthermore, when income data is available, it rarely takes into account the significant price differences across regions.[7] This complicates attempts to identify the percentage of households in Libya that live in poverty, and the regions where poverty is most common. The issue is further complicated by the lack of a generally accepted poverty line for Libya. The World Bank's standard international poverty line of $1,90 (or the alternative lines of $3,20 or $5,50 for lower and upper middle-income countries) per day is hard to implement

[5] REACH Initiative, 2021 Multi-sector Needs Assessment (Libyan population), August 2021
[6] UNESCWA, The economic cost of the Libyan conflict,
[7] REACH Initiative, Libya Joint Market Monitoring Initiative (JMMI), data published monthly.

in the Libyan context due to the presence of two separate exchange rates (one official, one black market).[8],[9] The analysis proposed in this document will attempt to address some of these information gaps and support the identification of assessed households living in economic poverty in 45 baladiyas in Libya.

2.2 Intended impact

The proposed research has been conceptualized in cooperation with the Libya Cash and Markets Working Group (CMWG). Currently, the CMWG uses the JMMI, and more specifically the MEB, to inform their cash programming and the Cash Transfer Value (CTV) for Libya.[10] Expenditure or income data are not typically taken into consideration nor inform decision-making by the CMWG or other actors, as they are scarcely available. The outcomes of this analysis are meant to inform CMWG partners' decision-making regarding targetting of areas and/or beneficiary profiles, as well as potential other considerations related to cash programming. Additionally, the analysis will inform the general understanding of income distribution and poverty in Libya, benefiting CMWG partners as well as other interested stakeholders.

3. Methodology

3.1 Methodology overview

The research will consist entirely of the analysis of secondary data. The 2021 Libyan population MSNA and the June, July, and August 2021 rounds of the JMMI will be used to gain new insights regarding income, expenditure and poverty in Libya. The Libyan population MSNA is a yearly assessment that aims to inform the general understanding of humanitarian needs in Libya. The primary component of the assessment is large-scale quantitative data collection regarding basic needs in six sectors and several thematic areas, including cash and markets. In 2021, 8871 quantitative household surveys were completed in a total of 45 baladiyas in Libya. Outputs for this assessment, including the questionnaire and the dataset, can be found on the REACH Resource Center here. The JMMI is a monthly assessment that monitors price levels in Libya as well as other market indicators at given times, such as indicators related to liquidity and access to financial service providers, when deemed relevant by REACH, the CMWG, and/or other sectoral partners. The data is collected through key informant interviews (KIIs) in 37 baladiyas every month. The data from the KIIs is aggregated in order to estimate the price changes for all assessed items, and calculate the MEB. Outputs for this assessment, including the datasets and factsheets, can be found on the REACH Resource Center here.

In order to create a robust overview of poverty in Libya, several different poverty indicators and poverty lines will be employed to triangulate and validate the results. The data will primarily be sourced from the 2021 MSNA, with the MEB derived from the JMMI. All analysis comparing poverty lines to the listed indicators will take place at baladiya-level, with the option to aggregate findings to the national level. The following indicators and poverty lines will be analysed against each other:

1. Indicators:
    a. Income
    b. Expenditure
2. Poverty lines:
    a. The Minimum Expenditure Basket (MEB) according to the Joint Market Monitoring Initiative (JMMI)
    b. Bottom 30% quantile of income and expenditure
    c. Bottom 40% quantile of income and expenditure

[8] For more information about international poverty lines, see World Bank.
[9] For more information about the exchange rates, see e.g. the Libya Observer.
[10] The MEB is a measure of how much an average 5-person household is expected to spend on basic needs on a monthly basis. It is calculated by REACH every month based on collected price data across consumption groups (e.g. food items and hygiene items). The CTV is calculated by the CMWG based in part on the MEB to estimate the amount of needed cash assistance for targeted households in order for them to meet their needs.

All of the indicators (and poverty lines) will have to be 'prepared' as a starting point for analysis. For expenditure and income data, this means removing outliers and adjusting the data for household size. The data is collected at household level, which means that direct comparisons will be biased based on differing household sizes and compositions. The research will use an equivalence scale to be able to compare income and expenditure data across all assessed households. An equivalence scale is a method of adjusting income and expenditure data to a standardized one-person household. Based on the number of household members and their ages, it calculates the equivalent available or spent resources for the standard one-person household size. This method is preferred to calculating income or expenditure per capita by dividing the amount with the number of household members, as it takes into consideration household economies of scale. Household economy of scale refers to the fact that a household of five will likely not consume fives time the amount than a one-person household does. On one hand, not all household members will consume the same amount: for example, children may consume less. On the other hand, per capita expenditures do not increase proportionally to the number of additional household members, as the ability of a household to share goods typically allows to lower per capita expenditure on them. For example, a household may cook a slightly larger meal, enough to feed one additonal person, by only increasing the amount for some ingredients. A household's rent may also not change with an additional household member.[11] Due to these considerations, an equivalence scale will be used to adjust the income and expenditure data for this research.
There is not one widely accepted equivalence scale that is used across contexts. There are three scales that are most commonly deployed, all developed by the Organisation for Economic Co-operation and Development (OECD). These scales are:

- The 'old OECD scale' or the 'Oxford scale'
- The OECD-modified scale
- The square root scale[12]

Some countries have their own specific equivalence scale, but unfortunately this is not yet the case for Libya. As a result, all three scales will be tested on the income and expenditure data to understand the impact the different scales have on the distribution of the data. Depending on the coherence of the distribution, and through consultation with the CMWG and potential other stakeholders, one equivalence scale will eventually be selected to move forward. For more information regarding the equivalence scales, please see section 3.4.

After the income and expenditure data have been cleaned and 'equivalized', the MEB data needs to prepared. When comparing the MSNA data to MEB data, two factors needs to be taken into consideration. First, the time of data collection and the period of time to which the data applies need to be matched as closely as possible across data sources. The MEB represents the minimum amount that a five-person household is expected to consume in 30 days in order to meet all their basic household needs. The MSNA data was collected between 14 June and 2 August 2021. In order to get a snapshot of purchasing power and poverty that is as accurate as possible, the MEB values for June, July, and August will be averaged for the purpose of this research. The income and expenditure data also covers a 30 day period, so no corrections are required related to time periods.

Second, the household size and composition would ideally be the same for the income/expenditure data and the MEB data. As discussed above, expenditure and income will be calculated for a one-person equivalent household based on household size and composition. The MEB applies to a five-person household, without taking into account the composition of the household. Without this information, it is nearly impossible to use an equivalence scale. The only equivalence scale that may be used is the square root scale, as it does not take into account composition. The CMWG divides the MEB by five to derive per capita MEB for their analyses. The method of deriving the one-person household MEB used for this research will depend on which equivalence scale is used for income and expenditure data. If the square root scale is chosen for the

[11] International Labour Organization (ILO), "Household income and expenditure statistics", 2003.
[12] Canberra Group, "Handbook on Household Income Statistics: Second Edition," 2011.

income and expenditure data, then this will also be applied to the MEB. If a different equivalence scale is used for income and expenditure, the simplified per capita method will be used to avoid using two different equivalence scales.

The 30% and 40% quantile poverty lines are used by the CMWG for their analyses of relative poverty in Libya. The quantile approach essentially looks only at the households that fall within the bottom quantile for a certain indicator. For expenditure, for example, this approach assumes that the households whose expenditure falls with the bottom 30% of the total distribution are in (relative) poverty. This research will use this method as well, largely to understand how the results compare to using the MEB as a poverty line. The primary benefit of using the bottom quantiles is that it avoids the above-mentioned problems when comparing MEB and MSNA data. The major disadvantage of using MEB data is the issue of household composition and size compared to MSNA data. As the quantile approach only relies on MSNA data, this will not be an issue. For both income and expenditure, the 30% or 40% bottom quantile will be considered in poverty. This analysis would be done at baladiya-level only, as will the comparisons with the MEB. Applying quantile analysis at the national level would ignore the significant price differences across Libya. By doing the analysis as baladiya-level only, the assumption is that the households deal with the same external market factors, and thus the relative poverty measure will not be affected by price differences. The quantile approach will serve as a triangulation tool for the MEB poverty line. Additionally, the quantile poverty lines will be applied on income and expenditure data separately, to understand if those assessed households with relatively low income are also those with relatively low expenditures. This will speak to the overall validity of both variables.

After the equivalence scale has been selected, and all variables cleaned, the indicators will be compared to the poverty lines. This analysis will be conducted at baladiya-level only, and will rely on two methods. The first method is comparisons of medians. In other words, the median income and expenditure will be compared with the median MEB. The median income and expenditure will also be compared to the 30% and 40% quantile income and expenditure levels. The expected outcome of the first method is an overview of the baladiyas where general income and expenditure levels are relatively low compared to the MEB and relative poverty indicators. The second method is to calculate the percentage of assessed households below the baladiya-level MEB. The 30% and 40% quantile approach cannot be employed here, as the percentage living below the quantile mark will necessary be 30% and 40%. The quantile approach will be used at this stage as a triangulation method only, to see how the results for the MEB poverty line compare to the quantiles. The expected outcome of the second method is an overview per baladiya of the percentage of households in poverty. To obtain national level results for both methods, the baladiya results will be aggregated. Aggregation will be done through summing the number of households in poverty per baladiya, and using the weights in the MSNA dataset to ascertian the percentage of households living in poverty across all locations. The methods are not directly applied at the national level, as the price differences across locations can be quite significant, potentially skewing results.

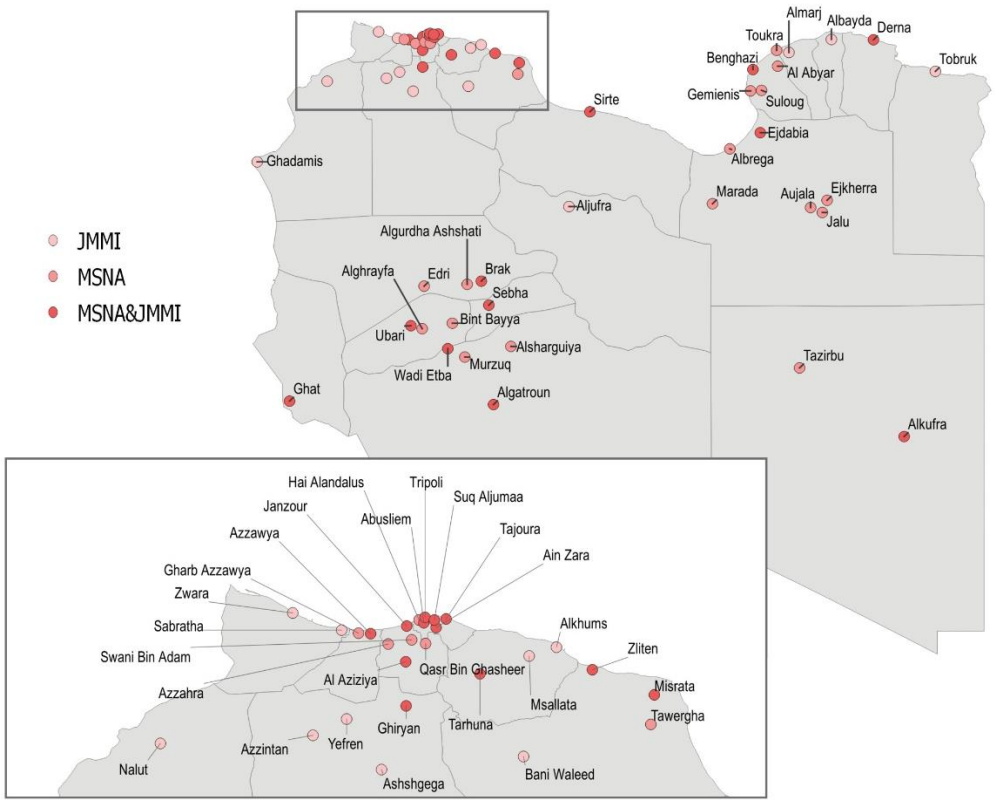
In theory, the different models should produce very similar results. A household that falls below the poverty line according to the quantile appraoch is likely to be considered in poverty according to the MEB poverty line as well. The final classification of households living in poverty will be done according to several criteria, see step 12 under section 3.4 for more information. For the subset of assessed households classified as 'poor', further analysis will be done to better understand the characteristics of this group. MSNA indicators such as displacement status, job type, sex of the head of household, household size, and documentation status will be analysed for this group to see if any strong relations appear. To test the strength of the relationships, linear regression models will be used. The results of this last step of analysis will hint at potential predictors of poverty, though the analysis will not be able to establish any causality.[13] In the case that there are no consistent results among the different models for estimating poverty, this will signal the need for further investigation into the level of reliability of income and expenditure data as collected through the 2021 MSNA. This in turn will inform how this data is collected in potential future MSNA cycles.

[13] In order to be able to establish causality, further quantitative and qualitative data collection and analysis would have to be completed to determine the exact nature of the relationship between the variables in question. Simple linear regressions can indicate correlation but never causation.

3.2 Population of interest

No additional data will be collected for this research. As a result, the scope of this assessment is bound to the population groups and areas covered by the MSNA and JMMI. The 2021 MSNA covered 45 baladiyas and the JMMI covers 37 baladiyas. A total of 23 baladiyas are covered by both assessments, see the map below an overview of which baladiyas are covered by which assessment.

Map 1: Geographic coverage of the two data sources



In order to be able to use all MSNA data, the baladiyas that are not covered by the JMMI have been matched to a baladiya that is covered by the JMMI. The MEB for that baladiya will be used for the analysis. The matching of baladiyas has been done based on proximity and whether they are in the same mantika. In some cases, two baladiyas are similarly close to the baladiya that is not covered, and both are in the same mantika. In this case, the MEB will be averaged (after the MEB has been averaged for the three months) for these two baladiyas to create the MEB for the baladiya that is not covered by the JMMI. See the table below for an overview of the baladiyas covered by the MSNA and not by the JMMI, and the baladiya they have been matched with.

Table 1: Baladiyas not covered by the JMMI, matched with the baladiya(s) from which JMMI data will be taken

Baladiya not covered by the JMMI	Baladiya(s) from which JMMI data will be taken
Tazirbu	Alkufra
Alabyar	Benghazi
Gemienis	Benghazi
Suloug	Benghazi
Toukra	Benghazi
Albrayga	Ejdabia

Aujala	Ejdabia
Ejkherra	Ejdabia
Jalu	Ejdabia
Marada	Ejdabia
Alsharguiya	Wadi Etba & Algatroun (averaged)
Murzuq	Wadi Etba & Algatroun (averaged)
Alghrayfa	Ubari
Bint Bayya	Ubari
Algurdha Ashshati	Brak
Edri	Brak
Azzahra	Janzour & Al Aziziya (averaged)
Qasr Bin Ghasheer	Janzour & Al Aziziya (averaged)
Swani Bin Adam	Janzour & Al Aziziya (averaged)
Gharb Azzawya	Azzawya
Tawergha	Misrata
Hai Alandalus	Tripoli & Abusliem (averaged)

As for the population groups covered, the MSNA data can be disaggregated for assessed internally displaced person (IDP), returnee, and non-displaced households. However, to avoid working with small sample sizes at baladiya-level, which may produce less reliable results, the analysis for this research will be not disaggregated for these population groups. Weights will be applied to the median analysis to prevent over-representation of IDP and returnee households. The information regarding displacement status may be used for the final analysis step, when looking at the characteristics of households found to live in poverty.

As the MSNA and JMMI data are both collected at baladiya-level, this will be the primary level of analysis. The MSNA data is at household level. The final analysis outputs will present findings at household-level per baladiya and aggregated to national level. As discussed above, the household income and expenditure data will be equivalized for one-person standardized household.

3.3 Secondary data review

The following data sources will be used for the analysis:

1. REACH Initiative, 2021 Multi-sector Needs Assessment (Libyan population), data published in August 2021. All data is available on the REACH resource center.
2. REACH Initiative, Libya Joint Market Monitoring Initiative (JMMI), data published monthly. The data for June 2021, July 2021, and August 2021 will be used for the analysis, as that is the period that coincides with data collection for the MSNA. All data is available on the REACH resource center.

Additionally, secondary sources will be consulted to make sure that the analysis meets the technical standards for doing income and poverty analysis. At minimum, the following sources will be used:

1. International Labour Organization (ILO), "Household income and expenditure statistics", 2003.
2. Canberra Group, "Handbook on Household Income Statistics: Second Edition," 2011.
3. Czajka & Denmead. "Income Data for Policy Analysis: A Comparative Assessment of Eight Surveys," December 2008.
4. Muhammad et al. "How income and food prices influence global dietary intakes by age and sex: evidence from 164 countries," May 2017.

5. EASYPol/FAO, "Equivalence Scales: General Aspects," 2005.
6. Jollife, Prydz. "Societal Poverty A Relative and Relevant Measure," 2017.

3.4 Data Processing & Analysis

The secondary data analysis for the research will follow several steps. Unless specified differently, the steps will primarily be executed in R. The steps are outlined here in detail:

Step 1: Map the distribution of un-adjusted income and expenditure data

Before diving into the analysis of adjusted income and expenditure, it is important to understand the distribution of the raw data. This will aid the general understanding of the data, as well as the outliers. The income data that will be used is the sum of the income reported per source by households assessed during the MSNA.[14] The expenditure data in the MSNA was gathered per consumption category. The categories that are also included in the MEB will be included in the total expenditure per household calculation. The MEB consists of a food and water component, an NFI component consisting primarily of hygiene items, and a fuel component. Accordingly, total expenditure per household will consist of the food, water, hygiene items, and fuel categories.

Step 2: Remove outliers from income and expenditure data

The removal of outliers from income and expenditure data will occur over the entire dataset. In other words, the outliers at baladiya-level will not be removed separately. This research will adopt the same approach as the CMWG used for their analysis of MSNA data, which is to remove the top and bottom 1% quantiles of the total expenditure and income data. The MSNA cleaning process has naturally involved the removal of outliers as well, but only on the separate income source and expenditure categories, rather than the summed income and expenditure data. In addition to the removal of outliers, 'N/A' values will also be removed at this stage.

Step 3: Test the equivalence scales and select one

As there is no widely accepted equivalence scale for the Libyan context, the three most commonly used internationally will be tested on the data. This approach is recommended as the type of equivalence scale may have significant impact on the distribution and median of your data.[15] Each equivalence scale works as follows: first, the equivalent size of the household is calculated, then the income/expenditure is divided by the equivalent size of the household. The differences between the equivalent scales lies in how the equivalent sizes are calculated. See table 2 below for an overview of the different calculations of equivalent size:

Table 2: Equivalent size formulas for different scales

Equivalence scale	Equivalence size formula	Equivalent size of household with 2 adults and 3 children
'Old OECD scale'/Oxford scale	$First\ adult + 0.7 \times subsequent\ adults + 0.5 \times children$	3.2
OECD-modified scale	$First\ adult + 0.5 \times subsequent\ adults + 0.3 \times children$	2.4

[14] The MSNA income question in the tool was structured as follows: households first reported the types of income they relied on, answer options included employment, government subsidies, and humanitarian assistance. After, for each reported income type, households were asked how much they earned/received in the 30 days prior to data collection per source.
[15] Reeves and Pulliam, "Tipping the balance: Why equivalence scales matter more than you think," Brooking Institute, April 2019.

Square root scale	$\sqrt{Household\ size}$	2.2
None (per capita)	Household size	5

After applying the different equivalence scales, the distribution and medians of income and expenditure will be compared to the unadjusted data to understand the respective impact of the different equivalence scales. The medians will also be compared to the unadjusted MEB (per capita) to understand the implications of the different scales on the comparison. The findings of this initial step will be shared with the CMWG, REACH field staff, and potentially other stakeholders to decide which equivalence scale is most appropriate for this context.

Step 4: Calculate median income and expenditure per baladiya

After applying the equivalence scale, it will be possible to compare income and expenditure across assessed households in the MSNA. The first step will be to map the distribution of both variables and comparing the levels and distributions to each other. Following these coherence checks, the weighted medians can be calculated at national level and per each baladiya. The weights will be used to correct for the over-sampling of IDP and returnee households in the MSNA. The weights are part of the MSNA dataset and will therefore not have to be calculated separately. In the case of large gaps, with expenditure being higher than income, this can be seen as a proxy for use of savings, loans, or other financial coping strategies to meet needs.

If the income data and expenditure data show very different distributions that cannot be explained, this will prompt further investigation into both variables to understand whether only one of the variables will be used for further analysis, or whether the data is not strong enough to move forward with the analysis. If the results are coherent, the results of step 4 are expected to inform which baladiyas, if any, see the most significant gap between income and expenditures.

Step 5: Apply the bottom 30% and 40% quantile measure of poverty

For both the income and expenditure variables, the bottom 30% and 40% quantiles will be calculated at baladiya-level. This involves establishing the level of income and expenditure that represents the boundary between the bottom quantile and the rest of the assessed households. Moreover, the households in the bottom quantiles for both variables can be identified. Theoretically, the households in the bottom quantiles should be very similar for both indicators.

This is a key check on the overall coherence of the expenditure and income data. If there are significant differences between the assessed households in the bottom quantiles for the expenditure and income variables, it is likely that the quality of at least one of the variables is inadequate. In this case, with the help of internal and external stakeholders, it will be important to determine which indicator most closely reflects reality. Other indicators in the MSNA tool can aid this process, for example by looking at the job type of households in the bottom quantile according to the two different variables. The second step would be to ensure that this data is accurate enough to continue with the analysis plans, or alternatively use this information to inform future data collection related to income and expenditure.

This step primarily serves as a means to check the coherence and quality of the data. At the end of this step, provided the data is coherent enough according to the checks in this step and step 4, the poverty analysis can start in earnest.

Step 6: Compare results for income and expenditure data

Provided the results of the above steps are sufficiently coherent, the first step of the poverty analysis can commence. At this stage of the analysis, for each baladiya, the median income and the maximum level of income for the bottom quantiles are known. The same information is known for expenditure. The aim of this step is to aggregate all the information and deduce which baladiyas appear most prone to poverty based on: a) the gap between income and expenditure levels and b) the gaps between median income and the bottom quantile income levels, and the median expenditure and the bottom quantile expenditure levels. The gap between income and expenditure will already have been investigated under step 4 but will be key to informing further analysis in this step and beyond. The comparisons between median and quantile levels will be an indicator for overall distribution of income and expenditure respectivley. The further the two values are removed, the flatter the distribution. The outcome of this step will be a comprehensive understanding of the difference between income and expenditure, and the distribution of both variables for each baladiya.

Step 7: Average the MEB for three months

As mentioned in section 3.1, the MEB is based on data collected on a monthly basis. The MSNA data was collected between 14 June and 2 August. As a result, to try and reflect the price levels for assessed households in this time as accurately as possible, the MEBs per location and at the national level will be averaged for June, July, and August 2021.

Step 8: Average the MEB data for locations not covered where needed

As mentioned in section 3.2, not all baladiyas that were covered by the MSNA are covered by the JMMI. In order to still perform the analysis in those baladiyas, they have been matched with nearby baladiyas that are covered by the JMMI. The assumption is that prices will not differ too significantly between adjacent baladiyas. In a few cases (see Table 2) there are multiple close baladiyas in the same mantika. In this case, the MEB for those two baladiyas will be averaged for the baladiya that was not covered. Although this is a limitation of the research, the differences between prices within mantikas is typically very limited.[16]

Step 9: Adjust the MEB for a one-person household

The final adjustment that needs be made for the MEB is the adjustment for household size. All MSNA income and expenditure data will have been equivalized for a one-person household at this point. The MEB needs to match this household size as well. As briefly mentioned in section 3.1, the method for deriving the one-person household MEB will depend on the equivalence scale chosen for the income and expenditure data. If the square root scale is used, the same method will apply to the MEB. If a different scale is used, then the MEB will simply be divided by the assumed household size (five). This approach has been selected because the methodology for the MEB does not specify the household composition, and it is ill-advised to use two different equivalence scales when comparing data.[17]

Step 10: Compare the median income and expenditure with the MEB

At this stage all data has been prepared for analysis. The first step of analysis will be to compare the baladiya-level median income and expenditure calculated during step 4 with the baladiya-level MEB. This step will indicate the extent and direction of gaps between income/expenditure and the MEB. It will also built on the analysis in step 6 to understand which baladiyas show the greatest discrepancies between economic resources and price levels.

Step 11: Calculate the percentage of households below the MEB

[16] REACH Initiative, Libya Joint Market Monitoring Initiative (JMMI), data published monthly.
[17] International Labour Organization (ILO), "Household income and expenditure statistics", 2003.

With the MEB in place, at baladiya-level, the percentage of assessed households whose income and/or expenditure are below the MEB can be calculated. In theory, income is the stronger indicator of poverty if it were below the MEB. Expenditure data will nonetheless be used as well due to the concerns regarding the quality of self-reported income data.[18] If the data passed the coherence tests in step 5, they should provide similar results here as well. The expenditure and income variables may regardless highlight some different households.

Step 12: Compare all model results and assess validity

At this point, the following points have been established through the analysis in steps 1 to 11:

a) The baladiyas where median expenditure and income are below the MEB have been established.
b) The assessed households in the bottom 30% quantile for income
c) The assessed households in the bottom 40% quantile for income
d) The assessed households in the bottom 30% quantile for expenditure
e) The assessed households in the bottom 40% quantile for expenditure
f) The assessed households with income below the baladiya-level MEB
g) The assessed households with expenditure below the baladiya-level MEB

The next step of the general poverty analysis is to find the assessed households that are consistently flagged as below poverty lines for both income and expenditure. Depending on the preceding analysis steps, the number of criteria (points b to g above) to be met by a household to classify the household as 'poor' may be all indicators of poverty or a decided upon number. The number will have to be decided upon by the analysis team based on the degree of overlap between the models. Ideally, if a reasonable number of assessed households (as validated by field staff and the CMWG) are classified as poor under all criteria, this group alone will be the focus of further analysis. However, if few households fall under all criteria, it may be necessary to lower the threshold for being considered 'poor' in order to perform the final analysis steps. This analysis to calculate the percentage of assessed households classified as poor should focus especially on those baladiya identified under point a).

Step 13: For poverty subset, identify any common characteristics

Finally, after the households classified as 'poor' are identified, the common characteristics of these households can be investigated. This will be done using indicators in the MSNA that are expected to be related to poverty, such as displacement status, documentation status, job type, sex of the head of household, reliance on subsidies or loans, etc. The selection of indicators used for this analysis will be conducted in collaboration with the CMWG and will be informed by existing literature on poverty and predictors of poverty. The relation between indicators can be viewed simply in excel using an exported dataset, or be tested using simple linear regression models in R.

The final outputs of this analysis will be 1) an overview of baladiyas that appear to most poverty-stricken, 2) the percentage of assessed households living in poverty per assessed location, and 3) the general characteristics of relatively poor households. Finally, the goal is the produce an R script and accompanying guidance that will make it easier to replicate this analysis for future MSNA cycles.

4. Key ethical considerations and related risks

The proposed research design meets / does not meet the following criteria:

[18] The primary concern is that income data is especially sensitive, and may be misrepresented by respondents. These concerns have been raised by, for example, the CMWG.

The proposed research design…	*Yes/ No*	*Details if no (including mitigation)*
… Has been coordinated with relevant stakeholders to **avoid unnecessary duplication** of data collection efforts?	Yes	
… **Respects respondents, their rights and dignity** (*specifically by: seeking informed consent, designing length of survey/ discussion while being considerate of participants' time, ensuring accurate reporting of information provided*)?	Yes	
… Does not **expose data collectors to any risks as a direct result** of participation in data collection?	N/A	No additional data will be collected
… Does not **expose respondents / their communities to any risks as a direct result** of participation in data collection?	N/A	No additional data will be collected
… Does not involve **collecting information on specific topics which may be stressful and/ or re-traumatising** for research participants (both respondents and data collectors)?	N/A	No additional data will be collected
… Does not involve **data collection with minors** i.e. anyone less than 18 years old?	N/A	No additional data will be collected
… Does not involve **data collection with other vulnerable groups** e.g. persons with disabilities, victims/ survivors of protection incidents, etc.?	N/A	No additional data will be collected
… Follows IMPACT SOPs for management of **personally identifiable information**?	N/A	No additional data will be collected, and only cleaned data will be used for the analysis

5. Roles and responsibilities

Table 3: Description of roles and responsibilities

Task Description	*Responsible*	*Accountable*	*Consulted*	*Informed*
Research design	Assessment Officer	Assessment Officer	Senior Assessment Officer, Data Officer, JMMI Assessment Officer, IMPACT HQ Research Design and Data Unit, CMWG	-
Supervising data collection	N/A	N/A	N/A	N/A
Data processing (checking, cleaning)	Assessment Officer	Assessment Officer	Senior Assessment Officer, Data Officer, IMPACT HQ Research Design and Data Unit	
Data analysis	Assessment Officer	Assessment Officer	Data Officer, IMPACT HQ Research Design and Data Unit	CMWG
Output production	Assessment Officer	Assessment Officer	Senior Assessment Officer, Country Focal Point, IMPACT HQ Research Reporting Unit	CMWG
Dissemination	Assessment Officer	Assessment Officer	Senior Assessment Officer, Country Focal Point, IMPACT HQ Research Reporting Unit	CMWG
Monitoring & Evaluation	Assessment Officer	Assessment Officer	Senior Assessment Officer, IMPACT HQ Research Department	
Lessons learned	Assessment Officer	Assessment Officer	Senior Assessment Officer, Data Officer, JMMI Assessment Officer, IMPACT HQ Research Department	

Responsible: *the person(s) who executes the task*

Accountable: *the person who validates the completion of the task and is accountable of the final output or milestone*

Consulted: *the person(s) who must be consulted when the task is implemented*

Informed: *the person(s) who need to be informed when the task is completed*

7. Monitoring & Evaluation Plan

IMPACT Objective	External M&E Indicator	Internal M&E Indicator	Focal point	Tool	Will indicator be tracked?
Humanitarian stakeholders are accessing IMPACT products	Number of humanitarian organisations accessing IMPACT services/products Number of individuals accessing IMPACT services/products	# of downloads of x product from Resource Center	Country request to HQ	User_log	X Yes
		# of downloads of x product from Relief Web	Country request to HQ		X Yes
		# of downloads of x product from Country level platforms	Country team		□ Yes
		# of page clicks on x product from REACH global newsletter	Country request to HQ		□ Yes
		# of page clicks on x product from country newsletter, sendingBlue, bit.ly	Country team		□ Yes
		# of visits to x webmap/x dashboard	Country request to HQ		□ Yes
IMPACT activities contribute to better program implementation and coordination of the humanitarian response	Number of humanitarian organisations utilizing IMPACT services/products	# references in HPC documents (HNO, SRP, Flash appeals, Cluster/sector strategies)	Country team	Reference_log	*None planned*
		# references in single agency documents			*None planned*
Humanitarian stakeholders are using IMPACT products	Humanitarian actors use IMPACT evidence/products as a basis for decision making, aid planning and delivery Number of humanitarian documents (HNO, HRP, cluster/agency strategic	Perceived relevance of IMPACT country-programs	Country team	Usage_Feedback *and* Usage_Survey template	*No usage survey will be conducted specifically for this assessment; however it may be included as part of wider usage surveys for ECHO-funded products.*
		Perceived usefulness and influence of IMPACT outputs			
		Recommendations to strengthen IMPACT programs			

	plans, etc.) directly informed by IMPACT products	Perceived capacity of IMPACT staff			
		Perceived quality of outputs/programs			
		Recommendations to strengthen IMPACT programs			
Humanitarian stakeholders are engaged in IMPACT programs throughout the research cycle	Number and/or percentage of humanitarian organizations directly contributing to IMPACT programs *(providing resources, participating to presentations, etc.)*	# of organisations providing resources (i.e.staff, vehicles, meeting space, budget, etc.) for activity implementation	Country team	Engagement _log	□ Yes
		# of organisations/clusters inputting in research design and joint analysis			X Yes
		# of organisations/clusters attending briefings on findings;			X Yes