Methodological Note: 2022 Shelter Severity Score & People in Need (scenario A)

Background

For the **2022 Yemen Humanitarian Needs Overview (HNO)**, REACH will support the Shelter Cluster with updating its Severity Score and People in Need (PIN) calculations. This methodological note explains how the **Shelter HNO Severity Score and PIN Calculations**, highlighting Shelter and NFI needs per district in Yemen, will be calculated.

Scope

In order to understand the Shelter needs of the population in Yemen, the 2022 HNO assesses Shelter-related severity scores and PIN estimates across all districts in Yemen. In order to do so, REACH will produce an analysis of **eight indicators** at the district level. This Methodology Note (MN) outlines which indicators will be used for informing the HNO, how these indicators are built, how the severity of needs is scaled, and how the number of PIN is calculated. This MN will be split into two scenarios;

- *scenario A* in case **Multi-Cluster-Location-Assessment (MCLA) data is available**,
- *scenario B*, in case the MCLA data is not available.

Analytical Framework

The analytical framework for Shelter-related indicators for the 2022 HNO is based on the Joint Inter-Sectoral Analysis Framework (JIAF)[1]. The framework comprises five pillars: the context of the crisis; the event or shock itself; the impact of the shock; the humanitarian conditions in which the event or shock takes place; and the current and forecasted needs of affected groups. The effects of the event or shock can be expressed by describing the humanitarian consequences. Humanitarian consequences are conceptualized by looking at three dimensions of impact on the lives and livelihoods of affected people, including living standards; coping mechanisms; and physical and mental wellbeing.

The 2022 Yemen Shelter HNO will look at all humanitarian consequences with a heavier focus on living standards as well as physical and mental wellbeing. All three consequences will be informed by a number of shelter and NFI-related indicators and sub-indicators. Table 1 will provide an overview of the selected indicators as well as the indicator weighting and data sources.

Sources

In order to ensure the quality of data to inform the Shelter HNO analysis, only assessments conducted by non-governmental organizations (NGOs) or United Nations (UN) agencies within a recent timeframe (2019-2021) will be reviewed. In total, REACH will consider the following five assessments:

- MCLA data 2021
- UNHCR INAT/PMT data (January – December 2021)
- REACH Flood Susceptibility Calculations 2019
- Shelter Cluster Winterization Analysis 2021 (based on REACH weatherization data 2019 and elevation data 2021)
- OCHA Population Estimates 2021

[1] *Joint Intersectoral Analysis Framework: 2021 Humanitarian Programme Cycle. August 2020. https://reliefweb.int/sites/reliefweb.int/files/resources/JIAF%20Guidance.pdf*

Limitations

- The Shelter Severity Scores and PIN figures should be considered as **indicative estimates**. Findings should allow providing guidance on in which areas in Yemen to prioritize assistance. For a detailed understanding of Shelter and NFI needs, separate assessments need to be conducted.
- Calculations are not linked to a single statistically representative survey, but based on the above assessments that include information gaps. It may prove difficult to compile information from different surveys and assessments with a wide variety of different methodologies. While the Shelter Cluster will review the calculations to assess their accuracy in representing the reality on the ground, these calculations should be interpreted with caution based on the overall lack of information in the Yemeni context.
- Even though the MCLA data is supposed to be a nation-wide assessment, it has limitations in terms of representation of different population groups due to under-sampling (specifically for IDPs, returnees, migrants). Thus, we will need to use the complete dataset and cannot separate it per population group.
- We expect though that the UNHCR dataset may have even more information gaps for different districts and might not be representative of needs at the district level.

Table 1. Indicators for 2022 Shelter HNO Severity Score and PIN calculations

Consequence	Indicators	Weight	Source
Coping mechanism	**1. Proportion of IDPs by district over total population (or host population and returnees)**	**15%**	OCHA population dataset 2021
Physical and mental well-being	**2. Percentage of populated areas highly susceptible to floods**[2]	**10%**	REACH Flood susceptibility model 2019 or GFT model 2021 (if available in time)
Physical and mental well-being	**3. Presence of extreme winter conditions**	**10%**	Shelter Cluster Winterization Recommendations 2021
	3a. Percentage of populated areas with winter nights equal or below 10°C	50%	REACH Weatherization data 2019
	3b. Populated district areas with average high elevation	50%	REACH Elevation data 2021
Living standards	**4. Percentage of households with inadequate shelter**[3]	**15%**	UNHCR INAT/PMT 2021 / MCLA 2021
Living standards	**5. Percentage of households with damaged or destroyed housing that report to be unable to repair themselves**	**15%**	MCLA 2021
Living standards	**6. Percentage of households facing threat of eviction**[4]	**10%**	UNHCR INAT/PMT 2021 / MCLA 2021
Living standards	**7. Percentage of households with access to adequate and functional facilities**	**10%**	MCLA 2021
Living standards	**8. Percentage of HHs without access to critical non-food items**	**15%**	UNHCR INAT/PMT 2021 / MCLA 2021

[2] The flood susceptibility scale was informed by analysing Yemen's hydrological, physical and topographical parameters. Calculations were based on a 1-7 susceptibility scale. Highly susceptible refers to a susceptibility rate of 5-7.
[3] Inadequate or non-existent shelter refers to collective centre, makeshift, emergency, transitional shelter and unfinished building as well as persons being homeless.
[4] At least including all IDP groups and if available also host community.

Phase 1: Determination of Severity Scores at District level

The findings of this review will be weighted and aggregated per district according to the following steps:

- **For each district, each indicator will be calculated based on available secondary data.**
  - In case information for certain indicators is missing, indicator figures will be left blank
- **Following, each indicator will be assigned a severity score based on a 5-point severity scale (see Table 2).**[2]
- **Total severity scores per district will be calculated by aggregating all indicators per district**
  - All indicators will be aggregated based on their unique weight.
  - In case information for certain indicators was missing, the remaining indicators will be inflated proportionally.

Table 2: Severity Categorization (5-point severity scale)

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	Stress	Severe	Extreme	Catastrophic	
1	**Proportion of IDPs over Total Population**	IDPs constitute (>0%, <4%) of population	IDPs constitute (>=4%, <8%) of population	IDPs constitute (>=8, <12%) of population	IDPs constitute (>=12, <15%) of population	IDPs constitute (>=15%) of population	*OCHA population estimates 2021*
2	**Percentage of populated areas highly susceptible to floods**	(>=0%, <10%) of populated areas within the district highly susceptible to floods	(>=10%, <25%) of populated areas within the district highly susceptible to floods	(>=25%, 50%) of populated areas within the district highly susceptible to floods	(>=50%, <75%) of populated areas within the district highly susceptible to floods	(>=75%) of populated areas within the district highly susceptible to floods	*REACH Flood susceptibility calculations / GFT model 2021 (if available in time)*
3a	**Presence of extreme winter temperatures in populated areas**	(>0%, <10%) of populated areas within the district susceptible to extreme winter temperatures	(>=10%, <25%) of populated areas within the district susceptible to extreme winter temperatures	(>=25%, <50%) of populated areas within the district susceptible to extreme winter temperatures	(>=50%, <75%) of populated areas within the district susceptible to extreme winter temperatures	(>=75%) of populated areas within the district susceptible to extreme winter temperatures	*REACH Weatherization calculation 2019*
3b	**Populated areas with average high elevation**	Populated areas with average elevation (<1,000m)	Populated areas with average elevation (>=1,000m, <1,5000m)	Populated areas with average elevation (>=1,500m, <2,000m)	Populated areas with average elevation (>=2,000m, <2,500m)	Populated areas with average elevation >=2,500m	*Elevation Model of populated areas 2021*
4	**Percentage of households whose primary shelter type is inadequate or non-existent**	(>0%, <10%) of households whose primary shelter type is inadequate or non-existent	(>=10%, <25%) of households whose primary shelter type is inadequate or non-existent	(>250%, <50%) of households whose primary shelter type is inadequate or non-existent	(>=50, <75%) of households whose primary shelter type is inadequate or non-existent	(>=75%) of households whose primary shelter type is inadequate or non- existent	*UNHCR INAT/PMT 2021 / MCLA 2021*

5	**Percentage of households with civilian houses in poor condition or destroyed (who report being in need of support for repairs)**	(>0%, <4%) of buildingsin the district in poor condition or destroyed	(>=4%, <6%) of buildings in the districtin poor condition or destroyed	(>=6%, <12%) of buildings in the districtin poor condition or destroyed	(>=12, <20%) of buildings in the districtin poor condition or destroyed	(>=20%) of buildings in the district in poor condition or destroyed	*MCLA 2021*
6	**Percentage of households facing evictionthreats**	Very few (>=0%, <10%) households are facing eviction threats	(>=10%, <25%) of households are facing eviction threats	(>=25%, <50%) of households are facing eviction threats	(>=50%, <75%) of HH are facing eviction threats	(>=75%) of households are facing eviction threats	*UNHCR INAT/PMT 2021 / MCLA 2021*
7	**Percentage of households with access to adequate and functional facilities**	Very few (>=0%, <10%) households with access to adequate and functional facilities	(>=10%, <25%) of households with access to adequate and functional facilities	(>=25%, <50%) of households with access to adequate and functional facilities	(>=50%, <75%) of HH households with access to adequate and functional facilities	(>=75%) of households with access to adequate and functional facilities	*MCLA 2021*
8	**Percentage of HHs who do not have access to critical non-food items**	(>0%, <10%) of households do not have access to critical non-food items	(>=10%, <25%) of households do not have access to critical non-food items	(>=25%, <50%) of households do not have access to critical non-food items	(>=50, <75%) of households do not have access to critical non-food items	(>=75%) of households do not have access to critical non-food items	*UNHCR INAT/PMT 2021/ MCLA 2021*

Detailed overview of calculation of Severity Scores per specific indicators

This section provides a more detailed overview of the calculation of each indicator.

1. *Proportion of IDPs over the total population*

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	**Stress**	**Severe**	**Extreme**	**Catastrophic**	
1	**Proportion of IDPs over TotalPopulation**	IDPs constitute (>0%, <4%)of population	IDPs constitute (>=4%, <8%) of population	IDPs constitute (>=8, <12%) of population	IDPs constitute (>=12, <15%) of population	IDPs constitute (>=15%) of population	*OCHA population estimates 2021*

Calculation of Indicator 1:

To have the proportion of IDPs over the total population we will calculate it as: Total IDPs / Total Population

2. *Percentage of populated areas highly susceptible to floods*

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	**Stress**	**Severe**	**Extreme**	**Catastrophic**	
2	**Percentage of populated areas highly susceptible to floods**	(>=0%, <10%) of populated areas within the district highly	(>=10%, <25%) of populated areas within the district highly	(>=25%, 50%) of populated areas within the district highly	(>=50%, <75%) of populated areas within the district highly	(>=75%) of populated areas within the districthighly susceptible to floods	*REACH Flood susceptibility calculations*

		susceptible to floods	susceptible to floods	susceptible to floods	susceptible to floods		

Calculation of indicator 2:

In order to calculate this indicator, REACH will overlay its flood susceptibility map with a spatial population dataset and extract areas with high susceptibility to flooding. The flood susceptibility scale was informed by analyzing Yemen's hydrological, physical and topographical parameters. Calculations will be based on a 1-7 susceptibility scale with highly susceptible referring to a susceptibility rate of 5-7.

3 a. Presence of extreme winter temperatures in populated areas

Nr	Indicator	1 No/minimal	2 Stress	3 Severe	4 Extreme	5 Catastrophic	SOURCES
3a	**Presence of extreme winter temperatures in populated areas**	(>0%, <10%) of populated areas within the district susceptible to extreme winter temperatures	(>=10%, <25%) of populated areas within the district susceptible to extreme winter temperatures	(>=25%, <50%) of populated areas within the district susceptible to extreme winter temperatures	(>=50%, <75%) of populated areas within the district susceptible to extreme winter temperatures	(>=75%) of populated areas within the district susceptible to extreme winter temperatures	*REACH Weatherization calculation 2019 / Shelter Cluster Winterization Recommendations 2021*

Calculation of indicator 3a:

*To have the presence of extreme winter temperature in populated areas, REACH will use the results computed with the help of ArcGIS that calculate the areas exposed to extreme winter temperatures and overlay it with a population layer. After having the result of populated Areas with Cold weather severity score (km²), we can classify the percentage of populated areas with cold weather severity score in the percentage of nights below 10°C. Then we can calculate a weighted average as follows: (% of populated areas with at least 10% of winter nights below/equal 10°C * 0.5) + (% of populated areas with at least 25% of winter nights below/equal 10°C * 0.75) + (% of populated areas with at least 50% of winter nights below/equal 10°C) / 100*

3 b. Populated areas with average high elevation

Nr	Indicator	1 No/minimal	2 Stress	3 Severe	4 Extreme	5 Catastrophic	SOURCES
3b	**Populated areas with average high elevation**	Populated areas with average elevation (<1,000m)	Populated areas with average elevation (>=1,000m, <1,5000m)	Populated areas with average elevation (>=1,500m, <2,000m)	Populated areas with average elevation (>=2,000m, <2,500m)	Populated areas with average elevation >=2,500m	*Elevation Model of populated areas 2021 / Shelter Cluster Winterization Recommendations 2021*

Calculation of indicator 3b:

For indicator three, the average elevation for each district was calculated using ArcGIS and overlaid with a spatial population dataset (WorldPop). The following populated areas were classified in distinct severity classes as outlined in the above table.

4. *Percentage of IDPs households whose primary shelter is inadequate or non-existent*

Nr	Indicator	1 No/minimal	2 Stress	3 Severe	4 Extreme	5 Catastrophic	SOURCES
4	**Percentage of IDPs households whose primary shelter is inadequate or non-existent**	(>0%, <10%) of households whose primary shelter type is inadequate or non-existent	(>=10%, <25%) of households whose primary shelter type is inadequate or non-existent	(>25%, <50%) of households whose primary shelter type is inadequate or non-existent	(>=50, <75%) of households whose primary shelter type is inadequate or non-existent	(>=75%) of households whose primary shelter type is inadequate or non-existent	*UNHCR INAT/PMT 2021 / MCLA 2021*

UNHCR PMT (South) & INAT (North)

This indicator will be used in case of more representative coverage.

6.1 What type of shelter is currently being occupied? (Select one only)	○ **No shelter / homeless *** ○ **Emergency shelter / tent *** ○ **Makeshift shelter (tarpaulin / cardboard) *** ○ Own/**Rented house** / apartment ○ Home of host family (non-related) ○ Home of relatives/friends ○ **Unfinished / vacant building *** ○ **Collective center (school, mosque) *** ○ Other (specify): ***sub-indicators that will be used for the calculation of the indicator**
6.2. What is the overall condition of the shelter?	○ Good condition (i.e. no repairs needed) ○ **Average condition (i.e. some repairs needed)** ○ **Poor condition (i.e. major repairs needed)*** ○ **Destroyed (i.e. needs to be re-built)*** ***sub-indicators that will be used for the calculation of the indicator**

MCLA

E_1.2 OBSERVATION: What type of shelter does this household live in? *(if no shelter or makeshift shelter transitional shelter, skip to E_8) (select one)*	○ **No shelter (Not residing inside a site and/or housing structure)*** ○ **Makeshift shelter – typically built from waste and temporary materials (tarpaulins, cardboard, blankets, metal sheeting, tarps, etc.)*;** ○ **Emergency shelter – a portable shelter with a cover and a structure***; ○ House or apartment ○ Public building (school, station, religious buildings, etc.) ○ Hotel ○ **Transitional shelter*** ***sub-indicators that will be used for the calculation of the indicator**

E_1.3 OBSERVATION: What is the status of the shelter? (select one)	○ Finished building – a building which is completed (with walls and roof) and composite of all building components (windows, doors, plumbing, etc.) ○ **Unfinished building – a building which has more than its frame, but is still missing elements (i.e. doors, windows, lighting, plumbing, walls, etc.)** ○ **Skeleton – a building which has a solid frame (concrete, steel, etc.) but no other elements** ***sub-indicators that will be used for the calculation of the indicator**
E_1.4 **OBSERVATION**: What is the state of the shelter? *(select one)*	○ **Fully destroyed (Housing unit is totally in rubble or where at least 50% of the structure of the shelter has incurred severe damage and cannot be repaired)** ○ **Partial damage (Housing unit where the skeleton incurred damages but part of the shelter is still livable and can be repaired)** ○ Minor damage (Housing unit incurred small damages while the house is still adequate for living i.e. bullet hole in the wall or broken window) ○ No damage to the shelter ***sub-indicators that will be used for the calculation of the indicator**

Calculation of indicator 4:

To calculate the percentage of households whose primary shelter type is inadequate or non-existent we will aggregate the sub-indicators in bold from the tools and calculate its percentage: Number of households whose primary shelter type is inadequate or non-existent / Total number of reported households

5. *Percentage of households with damaged or destroyed housing that report to be unable to repair themselves*

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	Stress	Severe	Extreme	Catastrophic	
5	**Percentage of households with damaged or destroyed housing that report to be unable to repair themselves**	(>0%, <4%) of buildings in the district in poor condition or destroyed	(>=4%, <6%) of buildings in the district in poor condition or destroyed	(>=6%, <12%) of buildings in the district in poor condition or destroyed	(>=12, <20%) of buildings in the district in poor condition or destroyed	(>=20%) of buildings in the district in poor condition or destroyed	MCLA

MCLA

E_1.4 OBSERVATION: What is the state of the shelter? *(select one)*	○ **Fully destroyed (Housing unit is totally in rubble or where at least 50% of the structure of the shelter has incurred severe damage and cannot be repaired) *** ○ **Partial damage (Housing unit where the skeleton incurred damages but part of the shelter is still livable and can be repaired)*** ○ **Minor damage (Housing unit incurred small damages while the house is still adequate for living i.e. bullet hole in the wall or broken window)** ○ No damage to the shelter ***sub-indicators that will be used for the calculation of the indicator**
E_6 If your shelter/household is damaged, are you able to repair the damage? *(select one)*	○ Yes, our household has access to available and affordable materials and maintenance items in the market to repair the damage ○ **No, our household has access to available materials in the market but cannot afford them in order to repair the damage *** ○ **No, our household has no access to materials to repair the damage because they are not available in the market *** ○ **No, our household has access to available and affordable materials in the market but no capacity to repair the damage *** ○ **No, our household has neither access to available nor affordable materials to repair the damage *** ○ I do not know ***sub-indicators that will be used for the calculation of the indicator**

Calculation of indicator 5:

To calculate the percentage of households with damaged or destroyed housing that report to be unable to repair themselves, we will aggregate the sub-indicators in bold from the tools and calculate its percentage: Number of households with buildings in poor condition or destroyed plus reporting to be not able to repair the damage themselves/ total number of surveyed households

6. Percentage of households facing eviction threats

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	**Stress**	**Severe**	**Extreme**	**Catastrophic**	
6	**Percentage of households facing eviction threats**	Very few (>=0%, <10%) households are facing eviction threats	(>=10%, <25%) of households are facing eviction threats	(>=25%, <50%) of households are facing eviction threats	(>=50%, <75%) of HH are facing eviction threats	(>=75%) of households are facing eviction threats	*UNHCR INAT/PMT 2021/MCLA*

UNHCR PMT South & INAT form (North)

6.5 Have you been threatened with eviction from your current shelter in the last 6 months?	○ **Yes*** ○ No ***sub-indicators that will be used for the calculation of the indicator**

MCLA

E_7 Only IDP's: Does your household face any of the following housing, land and property concerns? (select top three)	○ Damage to land/property ○ Looting of land/property ○ Property is unlawfully occupied by others ○ Disputed ownership ○ Rental problems (landlord/tenant issues) ○ Lack of documentation ○ Cannot access/lost access to housing because cannot afford it ○ **Evictions/threat of evictions*** ○ I do not know ○ I don't want to answer ○ None ***sub-indicators that will be used for the calculation of the indicator**

Calculation of indicator 6:

To calculate the percentage of households facing eviction threats, we will aggregate the sub-indicators in bold from the tools and calculate its percentage: Number of households facing eviction threats / Total number of surveyed households

7. Percentage of households with access to adequate and functional facilities

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	Stress	Severe	Extreme	Catastrophic	
7	**Percentage of households with no access to adequate and functional facilities**	Very few (>=0%, <10%) households with no access to adequate and functional facilities	(>=10%, <25%) of households with no access to adequate and functional facilities	(>=25%, <50%) of households with no access to adequate and functional facilities	(>=50%, <75%) of HH households with no access to adequate and functional facilities	(>=75%) of households with no access to adequate and functional facilities	*MCLA 2021*

MCLA

E_4 Does your household have access to the following facilities? *(select all applicable)*	○ **Access to functional kitchen (all basic equipment required for cooking is available such as kitchen set, cooking stove and fuel)** ○ **Access to functional toilet (availability of functional toilet, with doors, locks, water, disposal facilities and hygiene items)** ○ **Access to adequate water (access to clean and fresh water for drinking or bathing provided in a suitable manner and in sufficient volume)** ○ **Appropriate lighting** ○ **Adequate floor space** ○ **Adequate number of rooms** ○ **Adequate protection against climatic factors** ○ **None** ***sub-indicators that will be used for the calculation of the indicator (4 out of 7)**

Calculation of indicator 7:

To calculate the percentage of households with access to adequate and functional facilities, we will consider that 4 out of 7 facilities have to be selected to have minimal access. We will aggregate the sub-indicators in bold from the tools and calculate their percentage: Number of households with no access to adequate and functional facilities / Total number of surveyed households

8. Percentage of HHs who do not have access to critical non-food items

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	**Stress**	**Severe**	**Extreme**	**Catastrophic**	
8	**Percentage of HHs who do not have access to critical non-food items**	(>0%, <10%) of households do not have access to critical non-food items	(>=10%, <25%) of households do not have access to critical non-food items	(>=25%, <50%) of households do not have access to critical non-food items	(>=50, <75%) of households do not have access to critical non-food items	(>=75%) of households do not have access to critical non-food items	*MCLA*

UNHCR PMT INAT (South) & Initial Needs Assessment form (North)

Do you have a sufficient number of the following Non-Food Items?	○ **Blankets** (Yes/No)* ○ **Mattress**: (Yes/No)* ○ **Kitchen Sets**: (Yes/No)* ○ Water Buckets: (Yes/No)* ○ Plastic sheet: (Yes/No)* ○ **Sleeping Mat**: (Yes/No)* ***If 4 out of 6 indicators are chosen, the households is considered as having access to critical non-food items**

MCLA

E_8 Are basic non-food items available and affordable for your household to access in the local market? *(select one)*	○ Yes, they are both available and affordable ○ **Yes, they are available but not affordable*** ○ **Yes, they are affordable but not always available*** ○ **No, they are not affordable not available in the local market*** ○ I don't know ○ I don't want to answer ***sub-indicators that will be used for the calculation of the indicator**

Calculation of indicator 8:

To calculate the percentage of HH who do not have access to critical non-food items, we will aggregate the sub-indicators in bold from the tools and calculate its percentage (depending of the data available):
Number of HHs who do not have access to critical NFI / Total number of reported households

Phase 2: Determination of PIN score

The number of PIN is calculated per district, based on the aggregated Shelter Severity Score and the IDP district population as well as host community/returnee population. It is assumed that even if a district has a severity score of five, not all (100%) people in this district are actually in need. Thus, the value of each Severity Score is associated with a certain percentage of the population, classified as *in need*. See below table for more details:

The **Total PIN figure** is based on the sum of Acute PIN figure and Moderate PIN figure. The number of people in *acute* need is the sum of PIN, who live in districts classified with a Severity Score of 4 and 5. The number of people in *moderate* need is the sum of PIN, who live in districts classified with a Severity Score of 3.

Table 3. PIN calculation based on overall severity score and district population

Overall Severity Score	Level of need	Percentage of IDP PIN	Percentage of Host community / returnees
5	Acute	75%	75%
4	Acute	50%	50%
3	Moderate	25%	25%
2	-	0%	0%
1	-	0%	0%

Methodological Note: 2022 Shelter Severity Score & People in Need (scenario B)

Background

For the **2022 Yemen Humanitarian Needs Overview (HNO)**, REACH will support the Shelter Cluster with updating its Severity Score and People in Need (PIN) calculations. This methodological note explains how the **Shelter HNO Severity Score and PIN Calculations**, highlighting Shelter and NFI needs per district in Yemen, will be calculated.

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In order to understand the Shelter needs of the population in Yemen, the 2022 HNO assesses Shelter-related severity scores and PIN estimates across all districts in Yemen. In order to do so, REACH will produce an analysis of seven indicators at the district level. This Methodology Note (MN) outlines which indicators will be used for informing the HNO, how these indicators are built, how the severity of needs is scaled, and how the number of PIN is calculated. This MN will be split into two scenarios;

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- *scenario B*, in case the **MCLA data is not available**.

Analytical Framework

The analytical framework for Shelter-related indicators for the 2022 HNO is based on the Joint Inter-Sectoral Analysis Framework (JIAF)[5]. The framework comprises five pillars: the context of the crisis; the event or shock itself; the impact of the shock; the humanitarian conditions in which the event or shock takes place; and the current and forecasted needs of affected groups. The effects of the event or shock can be expressed by describing the humanitarian consequences. Humanitarian consequences are conceptualized by looking at three dimensions of impact on the lives and livelihoods of affected people, including living standards; coping mechanisms; and physical and mental wellbeing.

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Sources

In order to ensure the quality of data to inform the Shelter HNO analysis, only assessments conducted by non-governmental organizations (NGOs) or United Nations (UN) agencies within a recent timeframe (2019-2021) will be reviewed. In total, REACH will consider the following four assessments:

Available data sources (data to be used in case of scenario B)

- UNHCR INAT/PMT Analysis (January – December 2021)
- REACH Flood Susceptibility Calculations 2019
- Shelter Cluster Winterization Analysis 2021 (based on REACH weatherization data 2019 and elevation data 2021)
- OCHA Population Estimates 2021

Limitations

- The Shelter Severity Scores and PIN figures should be considered as **indicative estimates**. Findings

[5] *Joint Intersectoral Analysis Framework: 2021 Humanitarian Programme Cycle. August 2020. https://reliefweb.int/sites/reliefweb.int/files/resources/JIAF%20Guidance.pdf*

should allow providing guidance on in which areas in Yemen to prioritize assistance. For a detailed understanding of Shelter and NFI needs, separate assessments need to be conducted.

- Calculations are not linked to a single statistically representative survey, but based on the above assessments that include information gaps. It may prove difficult to compile information from different surveys and assessments with a wide variety of different methodologies. While the Shelter Cluster will review the calculations to assess their accuracy in representing the reality on the ground, these calculations should be interpreted with caution based on the overall lack of information in the Yemeni context.
- UNHCR INAT/PMT 2021 data might not be representative at district level, since data is only collected on a need's basis and not all areas might be covered. In addition, INAT/PMT data might not be available for all districts. Therefore, the data gaps will be a main limitation to the overall calculations.

Table 1. Indicators for 2022 Shelter HNO Severity Score and PIN calculations

Consequence	Indicators	Weight	Source
Coping mechanism	**1. Proportion of IDPs by district over total population (or host population and returnees)**	**15%**	OCHA population dataset 2021
Physical and mental well-being	**2. Percentage of populated areas highly susceptible to floods**[6]	**10%**	REACH Flood susceptibility model 2019 or GFT model 2021 (if available in time)
Physical and mental well-being	**3. Presence of extreme winter conditions**	**10%**	Shelter Cluster Winterization Recommendations 2021
	3a. Percentage of populated areas with winter nights equal or below 10°C	50%	REACH Weatherization data 2019
	3b. Populated district areas with average high elevation	50%	REACH Elevation data 2021
Living standards	**4. Percentage of households with inadequate shelter**[7]	**15%**	UNHCR INAT/PMT 2021
Living standards	**5. Percentage of IDPs with housing, land or property damaged or destroyed in their area of origin**	**15%**	UNHCR INAT/PMT 2021
Living standards	**6. Percentage of households facing the threat of eviction**[8]	**10%**	UNHCR INAT/PMT 2021
Living standards	**7. Percentage of HHs without access to critical non-food items**	**15%**	UNHCR INAT/PMT 2021

[6] The flood susceptibility scale was informed by analysing Yemen's hydrological, physical and topographical parameters. Calculations were based on a 1-7 susceptibility scale. Highly susceptible refers to a susceptibility rate of 5-7.
[7] Inadequate or non-existent shelter refers to collective centre, makeshift, emergency, transitional shelter and unfinished building as well as persons being homeless.
[8] At least including all IDP groups and if available also host community

Phase 1: Determination of Severity Scores at District level

The findings of this review will be weighted and aggregated per district according to the following steps:

- **For each district, each indicator will be calculated based on available secondary data.**
  - In case information for certain indicators is missing, indicator figures will be left blank
- **Following, each indicator will be assigned a severity score based on a 5-point severity scale (see Table 2).[2]**
- **Total severity scores per district will be calculated by aggregating all indicators per district**
  - All indicators will be aggregated based on their unique weight.
  - In case information for certain indicators was missing, the remaining indicators will be inflated proportionally.

Table 2: Severity Categorization (5-point severity scale)

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	Stress	Severe	Extreme	Catastrophic	
1	**Proportion of IDPs over Total Population**	IDPs constitute (>0%, <4%) of population	IDPs constitute (>=4%, <8%) of population	IDPs constitute (>=8, <12%) of population	IDPs constitute (>=12, <15%) of population	IDPs constitute (>=15%) of population	*OCHA population estimates 2021*
2	**Percentage of populated areas highly susceptible to floods**	(>=0%, <10%) of populated areas within the district highly susceptible to floods	(>=10%, <25%) of populated areas within the district highly susceptible to floods	(>=25%, 50%) of populated areas within the district highly susceptible to floods	(>=50%, <75%) of populated areas within the district highly susceptible to floods	(>=75%) of populated areas within the district highly susceptible to floods	*REACH Flood susceptibility calculations / GFT model 2021 (if available in time)*
3a	**Presence of extreme winter temperatures in populated areas**	(>0%, <10%) of populated areas within the district susceptible to extreme winter temperatures	(>=10%, <25%) of populated areas within the district susceptible to extreme winter temperatures	(>=25%, <50%) of populated areas within the district susceptible to extreme winter temperatures	(>=50%, <75%) of populated areas within the district susceptible to extreme winter temperatures	(>=75%) of populated areas within the district susceptible to extreme winter temperatures	*REACH Weatherization calculation 2019*
3b	**Populated areas with average high elevation**	Populated areas with average elevation (<1,000m)	Populated areas with average elevation (>=1,000m, <1,5000m)	Populated areas with average elevation (>=1,500m, <2,000m)	Populated areas with average elevation (>=2,000m, <2,500m)	Populated areas with average elevation >=2,500m	*Elevation Model of populated areas 2021*
4	**Percentage of households whose primary shelter type is inadequate or non-**	(>0%, <10%) of households whose primary shelter type is inadequate or non-	(>=10%, <25%) of households whose primary shelter type is inadequate or non-existent	(>250%, <50%) of households whose primary shelter type is inadequate or non-	(>=50, <75%) of households whose primary shelter type is inadequate or non-	(>=75%) of households whose primary shelter type is inadequate or non-existent	*UNHCR INAT/PMT 2021*

	existent	existent		existent	existent		
5	**Percentage of IDPs with housing, land or property damaged or destroyed**	Very few (>=0%, <10%) IDPs with housing, land or property damaged or destroyed	(>=10%, <25%) of IDPs with housing, land or property damaged or destroyed	(>=25%, <50%) of IDPs with housing, land or property damaged or destroyed	(>=25%, <50%) of IDPs with housing, land or property damaged or destroyed	(>=75%) of IDPs with housing, land or property damaged or destroyed	*UNHCR INAT/PMT 2021*
6	**Percentage of households facing eviction threats**	Very few (>=0%, <10%) households are facing eviction threats	(>=10%, <25%) of households are facing eviction threats	(>=25%, <50%) of households are facing eviction threats	(>=50%, <75%) of HH are facing eviction threats	(>=75%) of households are facing eviction threats	*UNHCR INAT/PMT 2021*
7	**Percentage of HHs who do not have access to critical non-food items**	(>0%, <10%) of households do not have access to critical non-food items	(>=10%, <25%) of households do not have access to critical non-food items	(>=25%, <50%) of households do not have access to critical non-food items	(>=50, <75%) of households do not have access to critical non-food items	(>=75%) of households do not have access to critical non-food items	*UNHCR INAT/PMT 2021*

Detailed overview of calculation of Severity Scores per specific indicators

This section provides a more detailed overview of the calculation of each indicator.

1. Proportion of IDPs over the total population

Nr	Indicator	1 No/minimal	2 Stress	3 Severe	4 Extreme	5 Catastrophic	SOURCES
1	**Proportion of IDPs over TotalPopulation**	IDPs constitute (>0%, <4%) of population	IDPs constitute (>=4%, <8%) of population	IDPs constitute (>=8, <12%) of population	IDPs constitute (>=12, <15%) of population	IDPs constitute (>=15%) of population	*OCHA population estimates 2021*

Calculation of Indicator 1:

To have the proportion of IDPs over the total population we will calculate it as: Total IDPs / Total Population

2. *Percentage of populated areas highly susceptible to floods*

Nr	Indicator	1 No/minimal	2 Stress	3 Severe	4 Extreme	5 Catastrophic	SOURCES
2	**Percentage of populated areas highly susceptible to floods**	(>=0%, <10%) of populated areas within the district highly susceptible to floods	(>=10%, <25%) of populated areas within the district highly susceptible to floods	(>=25%, 50%) of populated areas within the district highly susceptible to floods	(>=50%, <75%) of populated areas within the district highly susceptible to floods	(>=75%) of populated areas within the district highly susceptible to floods	*REACH Flood susceptibility calculations*

Calculation of indicator 2:

In order to calculate this indicator, REACH will overlay its flood susceptibility map with a spatial population dataset and extract areas with high susceptibility to flooding. The flood susceptibility scale was informed by analyzing Yemen's hydrological, physical and topographical parameters. Calculations will be based on

a 1-7 susceptibility scale with highly susceptible referring to a susceptibility rate of 5-7.

3 a. Presence of extreme winter temperatures in populated areas

Nr	Indicator	1 No/minimal	2 Stress	3 Severe	4 Extreme	5 Catastrophic	SOURCES
3a	**Presence of extreme winter temperatures in populated areas**	(>0%, <10%) of populated areas within the district susceptible to extreme winter temperatures	(>=10%, <25%) of populated areas within the district susceptible to extreme winter temperatures	(>=25%, <50%) of populated areas within the district susceptible to extreme winter temperatures	(>=50%, <75%) of populated areas within the district susceptible to extreme winter temperatures	(>=75%) of populated areas within the district susceptible to extreme winter temperatures	*REACH Weatherization calculation 2019 / Shelter Cluster Winterization Recommendations 2021*

Calculation of indicator 3a:

*To have the presence of extreme winter temperature in populated areas, REACH will use the results computed with the help of ArcGIS that calculate the areas exposed to extreme winter temperatures and overlay it with a population layer. After having the result of populated Areas with Cold weather severity score (Sqkm), we can classify the percentage of populated areas with cold weather severity score in the percentage of nights below 10°C. Then we can calculate a weighted average as follows: (% of populated areas with at least 10% of winter nights below/equal 10°C * 0.5) + (% of populated areas with at least 25% of winter nights below/equal 10°C * 0.75) + (% of populated areas with at least 50% of winter nights below/equal 10°C) / 100*

3 b. Populated areas with average high elevation

Nr	Indicator	1 No/minimal	2 Stress	3 Severe	4 Extreme	5 Catastrophic	SOURCES
3b	**Populated areas with average high elevation**	Populated areas with average elevation (<1,000m)	Populated areas with average elevation (>=1,000m, <1,5000m)	Populated areas with average elevation (>=1,500m, <2,000m)	Populated areas with average elevation (>=2,000m, <2,500m)	Populated areas with average elevation >=2,500m	*Elevation Model of populated areas 2021 / Shelter Cluster Winterization Recommendations 2021*

Calculation of indicator 3b:

For indicator three, the average elevation for each district was calculated using ArcGIS and overlaid with a spatial population dataset (WorldPop). The following populated areas were classified in distinct severity classes as outlined in the above table.

4. Percentage of households whose primary shelter type is inadequate or non-existent

Nr	Indicator	1 No/minimal	2 Stress	3 Severe	4 Extreme	5 Catastrophic	SOURCES
4	**Percentage of households whose primary shelter type is inadequate or non-existent**	(>0%, <10%) of households whose primary shelter type is inadequate or non-existent	(>=10%, <25%) of households whose primary shelter type is inadequate or non-existent	(>25%, <50%) of households whose primary shelter type is inadequate or non-existent	(>=50, <75%) of households whose primary shelter type is inadequate or non-existent	(>=75%) of households whose primary shelter type is inadequate or non-existent	*UNHCR INAT/PMT 2021*

UNHCR PMT (South) & INAT (North)

6.1 What type of shelter is currently being occupied? *(Select one only)*	○ **No shelter / homeless *** ○ **Emergency shelter / tent *** ○ **Makeshift shelter (tarpaulin / cardboard) *** ○ Own/Rented house / apartment ○ Home of host family (non-related) ○ Home of relatives/friends ○ **Unfinished/vacant building *** ○ **Collective center (school, mosque) *** ○ Other (specify): *sub-indicators that will be used for the calculation of the indicator
6.2. What is the overall condition of the shelter?	○ Good condition (i.e. no repairs needed) ○ Average condition (i.e. some repairs needed) ○ **Poor condition (i.e. major repairs needed)** ○ **Destroyed (i.e. needs to be re-built)** ***sub-indicators that will be used for the calculation of the indicator**

Calculation of indicator 4:

*To calculate the percentage of households whose primary shelter type is inadequate or non-existent we will aggregate the sub-indicators in **bold** from the tools and calculate its percentage: Number of households whose primary shelter type is inadequate or non-existent / Total number of reported households*

5. Percentage of IDPs with housing, land or property damaged or destroyed

5	**Percentage of IDPs with housing, land or property damaged or destroyed**	Very few (>=0%, <10%) IDPs with housing, land or property damaged or destroyed	(>=10%, <25%) of IDPs with housing, land or property damaged or destroyed	(>=25%, <50%) of IDPs with housing, land or property damaged or destroyed	(>=25%, <50%) of IDPs with housing, land or property damaged or destroyed	(>=75%) of IDPs with housing, land or property damaged or destroyed	*UNHCR INAT/PMT 2021*

UNHCR PMT South & INAT form (North)

6.11 How is your housing, land or property in your area of origin: *(complete only for IDPs who intend to return to place of origin)*	○Normal ○**Damaged** ○**Destroyed** ○Occupied ○Do Not Know ○N/A

Calculation of indicator 5:

*To calculate the percentage of IDPs with housing, land or property damaged or destroyed, we will aggregate the sub-indicators in **bold** from the tools and calculate its percentage: Number of IDPs with damaged or destroyed property / Total number of surveyed IDPs*

6. Percentage of households facing eviction threats (in the last 6 months from data collection)

Nr	Indicator	1	2	3	4	5	SOURCES

		No/minimal	Stress	Severe	Extreme	Catastrophic	
6	**Percentage of households facing eviction threats**	Very few (>=0%, <10%) households are facing eviction threats	(>=10%, <25%) of households are facing eviction threats	(>=25%, <50%) of households are facing eviction threats	(>=50%, <75%) of HH are facing eviction threats	(>=75%) of households are facing eviction threats	*UNHCR INAT/PMT 2021*

UNHCR PMT South & INAT form (North)

6.5 Have you been threatened with eviction from your current shelter in the last 6 months?	○ **Yes*** ○ No *sub-indicators that will be used for the calculation of the indicator

Calculation of indicator 6:

*To calculate the percentage of households facing eviction threats, we will aggregate the sub-indicators in **bold** from the tools and calculate its percentage: Number of households facing eviction threats / Total number of surveyed households*

7. Percentage of HHs who do not have access to critical non-food items

Nr	Indicator	1	2	3	4	5	SOURCES
		No/minimal	Stress	Severe	Extreme	Catastrophic	
6	**Percentage of HHs who do not have access to critical non-food items**	(>0%, <10%) of households do not have access to critical non-food items	(>=10%, <25%) of households do not have access to critical non-food items	(>=25%, <50%) of households do not have access to critical non-food items	(>=50, <75%) of households do not have access to critical non-food items	(>=75%) of households do not have access to critical non-food items	*UNHCR INAT/PMT 2021*

UNHCR PMT INAT (South) & Initial Needs Assessment form (North)

Do you have a sufficient number of the following Non-Food Items?	○ **Blankets (Yes/No)*** ○ **Mattress: (Yes/No)*** ○ **Kitchen Sets: (Yes/No)*** ○ Water Buckets: (Yes/No) ○ Plastic sheet: (Yes/No) ○ **Sleeping Mat: (Yes/No)*** *If 4 out of 6 indicators are chosen, the households is considered as having access to critical non-food items

Calculation of indicator 7:

*To calculate the percentage of HH who do not have access to critical non-food items, we will aggregate the sub-indicators in **bold** from the tools and calculate its percentage (depending of the data available): Number of HHs who do not have access to critical NFI / Total number of reported households*

Phase 2: Determination of PIN score

The number of PIN is calculated per district, based on the aggregated Shelter Severity Score and the IDP district population. It is assumed that even if a district has a severity score of five, not all (100%) people in this district are actually in need. Thus, the value of each Severity Score is associated with a certain percentage of the population, classified as *in need*. See below table for more details:

The **Total PIN figure** is based on the sum of Acute PIN figure and Moderate PIN figure. The number of people in *acute* need is the sum of PIN, who live in districts classified with a Severity Score of 4 and 5. The number of people in *moderate* need is the sum of PIN, who live in districts classified with a Severity Score of 3.

Table 3. PIN calculation based on overall severity score and district population

Overall Severity Score	Level of need	Percentage of IDP PIN	Percentage of Host community / returnees
5	Acute	75%	75%
4	Acute	50%	50%
3	Moderate	25%	25%
2	-	0%	0%
1	-	0%	0%