INDONESIA

Central Sulawesi Earthquake, Tsunami, and Liquefaction: Population Needs

Multi-Sector Needs Assessment: Executive Summary Report

February 2019
Central Sulawesi Earthquake, Tsunami, and Liquefaction: Population Needs – February 2019

Damaged Mosque in Ulujadi Sub-district, Palu Kota, Central Sulawesi. Photo Credit – Ari Weiss, October 2018.

About REACH
REACH is a joint initiative of two international non-governmental organizations - ACTED and IMPACT Initiatives - and the UN Operational Satellite Applications Programme (UNOSAT). REACH’s mission is to strengthen evidence-based decision making by aid actors through efficient data collection, management and analysis before, during and after an emergency. By doing so, REACH contributes to ensuring that communities affected by emergencies receive the support they need. All REACH activities are conducted in support to and within the framework of inter-agency aid coordination mechanisms. For more information please visit our website: www.reach-initiative.org. You can contact us directly at: geneva@reach-initiative.org and follow us on Twitter @REACH_info.
Following a magnitude 7.7 earthquake on 28 September 2018, large parts of Palu city, the capital of Central Sulawesi Province, along with the surrounding regencies of Sigi, Donggala, and Parigi Moutong on the Island of Sulawesi, were destroyed by liquefaction and a tsunami. According to the most recent assessments, as of 20 December 2018, 2,227 people were killed, 164,626 people were displaced into informal settlements and in tents outside of their homes, and 20,257 were in need of temporary shelters out of a previous population of over 1.2 million individuals before the disaster.

Four months after the earthquake, very little information is available on the needs and displacement situation of the population in Central Sulawesi Province. In order to address the needs of the population, REACH, as a standby partner to the United Nations International Children’s Emergency Fund (UNICEF) supported the Humanitarian Forum Indonesia (HFI) and Universitas Muhammadiyah Palu (UNISMUH) to conduct a household-level multi-sector needs assessment on behalf of the Ministry of Social Affairs (Kemensos) and the Government of Central Sulawesi Province, with financial support from ECHO.

The assessment was conducted through a statistically representative household survey, administered in 38 of 62 sub-districts located in the regencies of Donggala, Palu and Sigi in Central Sulawesi Province that were affected by the earthquake. In collaboration with humanitarian partners of the Displacement and Protection (PP) Cluster, a joint set of indicators and questionnaire was agreed upon and administered by trained enumerators to a random sample of households in each sub-district. Target households, from six separate population groups, were identified using randomly distributed GPS points based on OpenStreetMap shelter footprints. Data collection, using Kobo forms, lasted between 22 January and 6 February 2019 using a gender-balanced team of 71 enumerators and 9 team leaders. In total, 4,264 households were interviewed. Findings are statistically representative with a minimum confidence level of 95% and a 10% margin of error at the sub-district level and at crisis level for each separate population group. The assessment did not cover extremely remote or inaccessible areas, and did not cover households who were living in government transitional shelters (huntara collectifs) as the population moved in to these shelters after the assessment team had completed data collection in those areas.

The following were key findings from the assessment:

- 26% of households are displaced outside of their own homes or apartments; however, only 9% of households are staying in the informal settlements targeted by previous assessment and interventions. Many displaced household (10%) are hosted either directly or in empty houses the non-displaced community has provided for them. Another 5% are living in tents outside of their homes.

- Needs tended to vary based on displacement status, rather than geography. Most households in Palu, Sigi, and Donggala were found to have similar needs, in terms of food security, water, sanitation and hygiene (WASH). In Parigi Moutong, which was much less affected by the disaster, needs were often different and more related to health and education.

- Education access has largely returned to the same levels as before the disaster; however many children in Parigi Moutong were reported to have not been attending school before the disaster, suggesting underlying issues beyond school repair.

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1 Liquefaction occurs when the strength and stiffness of water-saturated soil is reduced by earthquake shaking or other tremors, causing it to lose its integrity and the soil loses its ability to support buildings and other structures. University of Washington, Department of Civil Engineering, “What is soil liquefaction?” 27 January 2000.
3 According to the Agency for Disaster Management (BNPB), as of 10 December 2018, 2,101 individuals have died, 1,373 are missing 133,631 were displaced, and 20,000 children had child protection issues (Humanitarian Country Team, Central Sulawesi Earthquake & Tsunami: Situation Report #10, 10 December 2018).
4 Internally Displaced Persons (IDPs) in settlements and camp-like settings; households displaced next to their homes living alone; IDPs living in apartments; IDPs living with host community in shelters; host communities living inside of their original homes; host communities living in apartments.
Health issues are likely to be compounded by unresolved issues around nutrition and sanitation; the poor nutrition and sanitation environment, along with the high instance of diarrhoea among IDP households may lead to additional need for health services.

Displaced households, particularly those living in informal settlements and those living in tents or makeshift shelters next to their former homes, were found to be the most vulnerable groups and remain the most affected by the disaster. They have suffered more economic loss, and will require more support rebuilding their businesses and resuming their livelihoods in a displaced setting.

Although a plurality of displaced households were living in other households’ homes or were directly supported by the host community, they also experienced difficulties in accessing some services, particularly shelter support, and often had more difficulties receiving aid due to being more difficult to identify among the local population.

Access to services in Palu was largely dependent upon displacement status; non-displaced households tended to access basic services more easily and sufficiently than IDP households. In Donggala and Sigi, service access was more dependent upon how far the sub-district was from Palu Town. Most households in Parigi Moutong were not affected and many of the household’s complaints were focused more on longer-term issues, such as a lack of access to healthcare or insufficient water.

Although inadequate sanitation issues noted during the early response have largely been resolved, displaced households reported worrying levels of open defecation, and while there are sufficient communal latrines in informal settlements, many lack many basic protection features.

A majority of households likely want to repair or rebuild their former homes; however, without support they will be unable to do so, and a majority of households expressed a desire to stay in their current locations for the following 6 months, even though many of them are living in difficult displacement situations. Many of the displaced households that are living in informal settlements or temporary shelters outside of their former homes do not have a place in the government transitional shelters and a majority reportedly feel stuck where they are without support to rebuild their homes.

Food was the most needed type of aid reported by households, regardless of regency or displacement status. Although most food security indicators were acceptable and the most commonly received type of aid was food, a lack of dietary diversity in food aid is likely contributing to potential nutritional deficiencies in children and other household members that consume it.

Households living in liquefaction and tsunami-affected areas are unable to return and rebuild on their lands. Many have been relocated to government-built transitional shelters; however, many others are still unable to return home and may need additional support in relocating to safer areas. In addition, much of the Central Sulawesi area that was not affected by liquefaction is liquefaction prone, and populations living there are vulnerable to future disasters.  

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5 The Conversation, “2012 research had identified Indonesian city Palu as high risk of liquefaction,” 2018.
# Contents

## Summary ........................................................................................................ 2

List of Acronyms ............................................................................................. 4

Geographical Classifications ............................................................................. 4

List of Figures, Tables and Maps ..................................................................... 4

## Introduction .................................................................................................... 5

## Methodology .................................................................................................. 6

## Findings .......................................................................................................... 9

### Respondent Metadata and Population ......................................................... 9

#### Population .................................................................................................... 9

### Displacement and Protection ..................................................................... 10

#### Displaced Households ............................................................................... 11

#### Non-displaced Households ...................................................................... 11

#### Desired Movement ................................................................................... 12

### Shelter ......................................................................................................... 13

#### Shelter Types ............................................................................................. 13

#### Eviction ....................................................................................................... 13

#### Tenancy and Ownership .......................................................................... 13

#### Shelter Support and Reconstruction ...................................................... 14

### Protection .................................................................................................... 15

#### Protection of Women’s Rights ................................................................. 15

#### Child Protection ....................................................................................... 15

#### Psychosocial Support .............................................................................. 15

#### Disabilities, Elderly, Minorities ............................................................... 16

### Water, Sanitation, and Hygiene ................................................................. 16

#### Water .......................................................................................................... 16

#### Sanitation ................................................................................................... 17
Hygiene ........................................................................................................................................... 18
Economy ......................................................................................................................................... 19
Food Security ................................................................................................................................... 20
Health ............................................................................................................................................... 22
Education ......................................................................................................................................... 23
Communicating with Communities ................................................................................................. 24
CONCLUSION .................................................................................................................................. 25
Recommendations .............................................................................................................................. 27
ANNEXES ......................................................................................................................................... 28
Annex 1: Household population and minimum sample size by Sub-district........................................... 28
Annex 2: Household Questionnaire .................................................................................................... Error! Bookmark not defined.
List of Acronyms

DTM  Displacement Tracking Matrix
HFI  Humanitarian Forum Indonesia
IDP  Internally Displaced Person
IFRC  International Federation of Red Cross and Red Crescent Societies
IOM  International Organization for Migration
KII  Key Informant Interview
MOSA  Ministry of Social Affairs (Kemensos)
ODK  Open Data Kit
UNICEF  United Nations Emergency Children’s Fund
UNISMUH  Universitas Muhammadiyah Palu
WASH  Water, Sanitation, And Hygiene

Geographical Classifications

Province  Administrative level below country
Regency/City  Administrative level below province; urban regencies are considered as cities
Sub-district  Administrative level below regency/city; assessment’s smallest unit of analysis
Village  Administrative level below sub-district; smallest formal administrative level

List of Figures, Tables and Maps

Figure 1: Palu Coordination Structure of Indonesia ........................................... 6

Table 1: Assessment Metadata........................................................................... 8
Table 2: Household information......................................................................... 10
Table 3: Main reported health issues in the previous 30 days.............................. 22

Map 1: Assessed sub-districts in Central Sulawesi Province, 22 January - 6 February 2019..............................................................
Map 2: Open Defecation by Sub-district............................................................... 12
Map 3: Households reporting that a family member sought medical treatment for diarrhoea in the last 30 days, by sub-district............................

Graph 1: % of Households by Current Displacement Status/Living Location...........................................................
Graph 2: Distance of Displaced Households from their Original Homes.................................
Graph 3: Desired Movement in the 6 Months following Data Collection, by Displacement Status..........................
Graph 4: Current Shelter Type, by Displacement Status ..........................................
Graph 5: Home ownership agreement, by Regency/City...........................................
Graph 6: % of Households Reporting having lost Ownership Documents, by Displacement Status...........
Graph 7: : Most Desired Assistance for Improving Housing Situation ............................
Graph 8: Households with a family member experiencing emotional distress (nightmares, lack of sleep, stress, nervousness, etc.) following the disaster..............
Graph 9: Main water source by Regency/City and displacement status...................
Graph 10: Defecation Method by displacement status...........................................
Graph 11: Defecation method by Regency/City.....................................................
Graph 12: % of households without a access to handwashing facilities, by displacement status....................................................
Graph 13: % of households reporting all household members are unemployed, by displacement status.........
Graph 14: % of households with a family member that is able and willing to work but unable to find a job, by primary reason for unemployment.........................
Graph 15: Food Consumption Score, by Regency/City..........................................
Graph 16: For households with at least one child not attending school, main reporting the reasons that the child is not attending school, by regency/city..........................................................
Graph 17: % of households that reported having received aid in the previous month, by regency/city and displacement status..........................................
Graph 18: Top 3 Priority Needs, by displacement status and Regency/City..................
INTRODUCTION

Following a magnitude 7.7 earthquake on 28 September 2018, large parts of Palu, the capital of Central Sulawesi Province, along with the surrounding regencies of Sigi, Donggala, and Parigi Moutong on the Island of Sulawesi were destroyed by liquefaction and a tsunami. Buildings, including houses, shops, mosques and hotels, collapsed, were swept away, or suffered extensive damage. Whole villages were submerged when the land they were built upon liquefied. According to the most recent assessments, as of 20 December 2018, 2,227 people were killed, 164,626 people were displaced into informal settlements and in tents outside of their homes, and 20,257 were in need of temporary shelters out of a previous population of over 1.2 million individuals before the disaster. An unknown number are still living in their damaged homes or have left Central Sulawesi entirely, and are living in cities and villages across Sulawesi and other Islands in Indonesia.

Four months after the disaster, very little information is available on the needs and displacement situation of the population in Central Sulawesi Province. A system for collecting 5W information (who, what, where, when, how many) on implementing organizations has been implemented, and several rapid assessments have been conducted in the first weeks, including a Joint Needs Assessment (JNA), which was conducted at the village level in the first two weeks of the response, and International Organization for Migration’s Displacement Tracking Matrix (DTM)’s Rapid Site Assessment, which was conducted in October and December 2018, and generated timely evidence to plan the initial phase of the response.

However, rapid assessments have focused on settlements and camp-like settings only. Until now there is no data available concerning populations living outside settlements and camp-like settings. The 5W system, while successful, has only provided information on where humanitarian actors are working and the activities being carried out, other than the needs of the populations themselves. Information gaps concern in particular those displaced adjacent to their original damaged/destroyed house, displaced being hosted by other households or living in empty houses, those renting, and the community that is not displaced and still living in their own homes.

These information gaps risk driving humanitarian actors to focus on settlements only and there is a risk that inequitable service delivery will attract people to settlements and camp-like settings. In addition, rapid assessment data is very cursory, and do not provide detailed, household-level information on needs and vulnerabilities of the affected population. There is therefore the need of an in-depth multi-sector household level survey to structure the response in the mid-term and transition to early recovery.

In order to fill these gaps, REACH, as a standby partner to the United Nations International Children’s Emergency Fund (UNICEF) supported Humanitarian Forum Indonesia (HFI) and Universitas Muhammadiyah (UNISMUH) to conduct a household-level multi-sector needs assessment on behalf of the Ministry of Social Affairs (Kemensos) and the Government of Central Sulawesi Province. The overall objective was to provide information on the needs of the population to help guide the response as it enters the early recovery phase. The assessment covered 4,264 randomly selected households in four regencies of Central Sulawesi Province that were interviewed between January 22 and February 6 2019. The information covered household needs across a majority of the sectors in the Indonesian cluster system, and was designed to help provide as much relevant information as possible to all of the clusters and their partners.

The next section provides an overview of the methodology used in the report, including how the assessment was designed, respondents were selected and how the tool was developed. This is followed by the findings, which are covered in detail, structured according to the Indonesian cluster system. The report concludes with the key

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6 Liquefaction occurs when the strength and stiffness of water-saturated soil is reduced by earthquake shaking or other tremors, causing it to lose its integrity and the soil loses its ability to support buildings and other structures. University of Washington, Department of Civil Engineering, “What is soil liquefaction?” 27 January 2000.


messages and conclusions from the data, in addition to broader recommendations on how to best respond to the key findings of the assessment.

**METHODOLOGY**

The assessment was conducted using a statistically representative household survey, which was administered in 38 of 62 sub-districts located in the four regencies and city of Donggala, Sigi, Parigi Moutong, and Palu that were affected by the earthquake, tsunami, or liquefaction events. Sub-districts were selected based on their ability to be safely accessed by enumerators from Palu Town; areas that were prone to landslides, were out of communication, or were too far to be checked on by the assessment team in Palu were excluded.

In collaboration with the humanitarian partners of the Displacement and Protection Cluster (KlasNas PP), Health Cluster, Economy Cluster, and Education Cluster, a joint set of indicators and questionnaire was developed. The final tool was validated by the respective Information Management focal points in the Information Management Working Group in January 2019. A tool was programmed using the Kobo online tool suite and downloaded onto the phones of 71 enumerators, who were students from UNISMUH. They were broken into teams of 8-9, each with a team leader, who were lecturers and staff from the Economics and Public Health departments of UNISMUH. Approximately half of the enumerators and lecturers were women.

Figure 1: Palu Coordination Structure of Indonesia

Households were the unit of measurement for the survey, defined as “a group living together generally eating with one pot (sharing food).”

Households were randomly selected using the following process: data of shelters from the 38 assessed sub-districts was downloaded from open street map, and combined with location and population data of informal settlements from the most recent DTM survey by IOM in December 2018. The number of household interviews needed for

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The random selection of points was done based on the total number needed for a 95% confidence interval and 10% margin of error for each sub-district, with a 10% “buffer sample” of additional shelters on top of the total number of points in the event that a shelter was empty or could not be reached, and to account for surveys that might be deleted during the data cleaning process. Shelter points were also selected from the IOM DTM data denoting camp sites, with the number of interviews to be conducted at each location based on the size of the household population at the site and the proportion of the population in the sub-district that was estimated to be living in the site.

The randomly selected points were downloaded onto the “OSMAnd” application on each enumerator’s phone, and they navigated to the points that appeared and interviewed the households there. If the shelter was empty, inaccessible, or the households refused to be interviewed, enumerators were instructed to go to the nearest shelter and interview that household instead. If no other households were available nearby, they went to the next available point. Before starting the interview, the enumerator explained the purpose of the survey, the process of the interview and requested a formal consent to participate on a volunteer basis. If the consent was not granted, the household was not interviewed.

Prior to interviewing a household, the REACH team asked how many households were living in the shelter. If the enumerators were assessing a shelter with two or more households inside, the household to be interviewed was

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10 https://www.humanitarianresponse.info
11 The list of the total number of household interviews needed for each sub-district is available in Annex 1.
randomly selected. Using the Kish sampling method, each household was given a randomly selected number. A random number was generated with the KOBO survey, and the enumerator interviewed the household with the corresponding number. The head of household, or someone familiar enough with household affairs to provide the same information, was interviewed.

The following six population groups were taken into consideration for the purpose of this assessment:

1. Internally Displaced Person (IDP) households in settlements and camp-like settings.
   a. Identified by DTM as informal settlements with a minimum of 16 people living in them in a concentrated area.
2. Households displaced next to their homes living alone.
   a. Identified as single households living alone, usually next to or nearby their original shelter.
3. IDP households living in apartments
   a. Identified as IDP households renting an apartment because they have been displaced from their former homes.
4. IDP households living with host community in shelters.
   a. Identified as IDP households living with host communities in the host community household’s shelter or staying in a shelter that belongs to another household.
5. Host community households living inside of their original homes.
   a. Identified as non-displaced households living in their original homes.
6. Host community households living in rented apartments
   a. Identified as households that were renting the same locations that they were renting before the disaster

Due to the large overall population size, a total of 96 interviews was needed for the data to be representative of the population with a 95% confidence interval and a 10% margin of error at the crisis level for each displacement group. No additional adjustments to the sample based on the household’s displacement status was made, as it was assumed that during the sampling enough interviews would be done naturally for each population group to meet the needed threshold. However, if it was not met, then the confidence level and margin of error would be adjusted to reflect the results. The necessary numbers of interviews were conducted for all sub-districts, but not for all population groups; as a result, the confidence levels and margins of error were adjusted accordingly. Table 1 below shows the resulting sample sizes, confidence levels, and margins of error for each group. Similar information per sub-district is available in Annex 1.

Table 1: Assessment Metadata

<table>
<thead>
<tr>
<th>Disaggregation</th>
<th>Confidence level</th>
<th>Margin of Error (+/-)</th>
<th>Sample size</th>
<th>Respondent age (average)</th>
<th>% of Female Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>99%</td>
<td>2%</td>
<td>4,264</td>
<td>44</td>
<td>49%</td>
</tr>
<tr>
<td>Donggala</td>
<td>95%</td>
<td>5%</td>
<td>1,213</td>
<td>44</td>
<td>58%</td>
</tr>
<tr>
<td>Palu</td>
<td>95%</td>
<td>5%</td>
<td>892</td>
<td>44</td>
<td>48%</td>
</tr>
<tr>
<td>Parigi Moutong</td>
<td>95%</td>
<td>5%</td>
<td>572</td>
<td>43</td>
<td>35%</td>
</tr>
<tr>
<td>Sigi</td>
<td>95%</td>
<td>5%</td>
<td>1,587</td>
<td>43</td>
<td>45%</td>
</tr>
<tr>
<td>Own house</td>
<td>95%</td>
<td>2%</td>
<td>3,195</td>
<td>45</td>
<td>48%</td>
</tr>
<tr>
<td>Other house</td>
<td>95%</td>
<td>7%</td>
<td>375</td>
<td>41</td>
<td>49%</td>
</tr>
<tr>
<td>Shelter next to house</td>
<td>95%</td>
<td>7%</td>
<td>233</td>
<td>46</td>
<td>46%</td>
</tr>
<tr>
<td>Informal settlements</td>
<td>95%</td>
<td>6%</td>
<td>331</td>
<td>42</td>
<td>58%</td>
</tr>
<tr>
<td>Renting (non-displaced)</td>
<td>95%</td>
<td>13%</td>
<td>74</td>
<td>39</td>
<td>61%</td>
</tr>
<tr>
<td>Renting (displaced)</td>
<td>95%</td>
<td>13%</td>
<td>53</td>
<td>40</td>
<td>44%</td>
</tr>
</tbody>
</table>

All tools were translated into Bahasa Indonesia before being used in the field. Training was conducted with the nine team leaders on 19 January, and training with the enumerators was conducted between 20-21 January. Data collection was conducted between 22 January and 6 February 2019. Throughout data collection, each team leader monitored their team both personally on the ground and using WhatsApp groups that all enumerators belonged to. The team leaders liaised directly with the assessment team in Palu, who conducted daily field visits to each of the teams to ensure that the survey was being administered properly.

Data was cleaned by the assessment team between 8-17 February, with support from field teams. The cleaned data was then weighted by population using the sample size household-level population groups, and disaggregated by gender, sub-district, displacement status, and regency.

The assessment had several key limitations that should be kept in mind when reading the results. Households that did not want to participate were not interviewed. In addition, sub-districts and villages that the assessment team identified as being too dangerous, difficult to access, or too far away were not interviewed by the assessment team. As a result, the assessment findings are not generalizable to those areas.

Additionally, no households staying in the government transitional shelters, or Huntara Collectifs (which are being constructed by the government to house those who have lost their homes and were living in areas that they cannot rebuild in) were interviewed. The huntara collectifs in Palu city were completed and many households relocated to them during the data collection, though this occurred after the assessment team had already fully assessed these sub-districts.

**Findings**

Findings in this section are organized by Cluster under the Indonesian Palu Coordination System. Findings did not deviate consistently enough to organize the analysis around individual Kabupaten or displacement group results. The information is presented generally, followed by variations by geographic or displacement status. When possible, graphs and maps are included to illustrate the variations.

**Respondent Metadata and Population**

**Population**

Displaced households were found to have slightly higher dependency ratios, suggesting that many families may be split and productive members of the household may have left the area to find work in other parts of the country.\(^{(13)}\)

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\(^{(13)}\) Age dependency ratio is the ratio of non-working age members of the household (typically those aged 0-15 and 65+) divided by working age adults (16 – 64). It gives an indication of how dependent the household is on productive members to provide for those who are not. Numbers higher than 1 indicate a more dependent population, while those below 1 are less dependent. Due to the data from the age categories collected by the assessment, the age dependency ratio was calculated by using age 0-17 and 60+ as dependent households members and age 18-59 as the productive members of the household.
Table 2: Household information

<table>
<thead>
<tr>
<th>Disaggregation</th>
<th>Age of head of household (average)</th>
<th>Female-headed households (%)</th>
<th>Dependency ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>46</td>
<td>11%</td>
<td>0.7</td>
</tr>
<tr>
<td>Donggala</td>
<td>47</td>
<td>14%</td>
<td>0.8</td>
</tr>
<tr>
<td>Palu</td>
<td>46</td>
<td>14%</td>
<td>0.7</td>
</tr>
<tr>
<td>Parigi Moutong</td>
<td>44</td>
<td>5%</td>
<td>0.7</td>
</tr>
<tr>
<td>Sigi</td>
<td>46</td>
<td>7%</td>
<td>0.7</td>
</tr>
<tr>
<td>Own house</td>
<td>47</td>
<td>12%</td>
<td>0.7</td>
</tr>
<tr>
<td>Other house</td>
<td>43</td>
<td>14%</td>
<td>0.7</td>
</tr>
<tr>
<td>Shelter next to house</td>
<td>47</td>
<td>6%</td>
<td>0.8</td>
</tr>
<tr>
<td>Informal settlements</td>
<td>44</td>
<td>10%</td>
<td>0.9</td>
</tr>
<tr>
<td>Renting (non-displaced)</td>
<td>41</td>
<td>8%</td>
<td>0.8</td>
</tr>
<tr>
<td>Renting (displaced)</td>
<td>41</td>
<td>15%</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Displacement and Protection

Four months after the disaster, the majority of households were not displaced: 74% of households were either living in a house that they owned or had been renting an apartment both before and after the disaster. A further 10% of the households were either being hosted by another household or living in an empty house that belonged to another household. According to field teams, this was usually a house belonging to family or friends. These households were generally found to be in a more stable situation and expressed less desire to move or change their current living situation in the near term. The remaining 26% of households were living in a variety of displacement situations; 9% were staying in informal camp-like settlements, 5% in temporary shelters next to their original homes, and 2% were renting apartments after being displaced from their shelters.

The vast majority of renting households were located in Palu, where 11% of the households were renting shelters. Renters in other regencies were mostly located in peri-urban areas of Donggala (Banawa, Sindue), Sigi (Dolo, Maraawola), and Parigi (Parigi) Kabupaten, but represented a negligible portion of the population there.

The proportion of displaced households varied by location: over one third (34%) of households in Donggala were not living in their pre-disaster accommodation, while about a quarter in Sigi (28%) and Palu (26%) reported the same. In Parigi Moutong, which was much less affected by the disaster, only 6% of households were displaced. Displaced populations tended to be concentrated in particular areas, usually areas far from Palu or in places affected by liquefaction, including Dolo Selatan, Sindue, Sirenja, Balaesang, Sigi Biromaru sub-districts. About 10% of households in Sigi, Donggala, and Palu were displaced in informal settlements, which is about the same proportion documented by a government report in December.¹⁴ This suggests that the displacement situation has been largely stable since late 2018, and conditions are unlikely to change dramatically in the near future.

Displaced Households

Most households that had been displaced from their original land have stayed close to their original accommodation, usually in a nearby safer location; 50% of households that were no longer living on their original property were living next or extremely close to their original homes. Another 24% were less than 2kms away for their original homes, and 10% were between 2km and 5km. The remaining were either living farther than 5km or were unsure of the distance.

Examining this by displacement status, several patterns can be observed: those in informal settlements have moved much further away than other households, while households that were living in a friend or relative’s house were much closer. This was confirmed by observations from field teams, which noted that many displaced households have moved in with friends or relatives nearby. Renters had moved the farthest, which is consistent with observations that apartment availability was limited, so households often had to travel far to find vacancies. Most of those in informal settlements moved with their communities. Tsunami victims typically moved inland from their former homes to elevated areas, while those affected by liquefaction or earthquakes usually displaced to unaffected areas nearby.

Although the assessment did not ask specifically what type of disaster caused their displacement, it is easy to surmise the type of damage that was caused by looking at the Kabupaten/Kota or sub-district of origin. Displaced households in Palu Kota, which was the most affected by tsunami and liquefaction, reported having moved much further away than those in Sigi and Donggala, where most of the population was affected by earthquake. In Parigi Moutong, the least affected sub-district, all displaced households reported living nearby their former homes.

Non-displaced Households

Only 6% of non-displaced households living in their own home or apartment reported hosting displaced households. However they hosted up to 18% of the displaced population, though the exact proportion is unclear as many displaced households may have split their household between multiple hosting households, and many of those

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Households were categorised based on whether they were still living on their original land, or if they were displaced by the disaster. Those living in their original home, renting (in the same location both before and after the disaster) or living in a tent/makeshift shelter next to their original home were living on their original land and considered to be non-displaced. Those living with friends or family, in an informal settlement, or renting after they were displaced from their homes were no longer living on their original land and had been displaced by the disaster. For households living in their original home, categorization of displacement was the same, except that those staying in tents next to their original home were considered to be displaced.
living in other houses may be living alone and unsupported by the host community. The average size of households being hosted was 3, a little over half of the average size of hosting households (5).

Households in Palu (8%) were more likely to be hosting households than in Donggala (6%) or Sigi (5%), and both were more likely than those in Parigi Moutong. Interestingly, the average hosted IDP household size was much higher in Parigi Moutong; this suggests that only a few households are bearing most of the burden in supporting most of the IDP population there.

Those displaced in shelters next to their homes were more likely to be hosting IDP households than those in their own homes, meaning that the effects of the disaster have been unevenly distributed, and those more affected in one sector are more likely to experience difficulties in other sectors as well.

Desired Movement

The vast majority of households (87%), regardless of displacement status, reported wanting to remain in their current location in the six months following data collection. Although this was highest for those staying in their own homes (94%), it was also reported by a majority of those displaced (58%). There may be numerous reasons for this, but it is most likely linked to a lack of alternative accommodation.

The population group that reported the least desire to stay in their current location where those living in informal settlements. Although a plurality still intended to stay in their current location, almost a quarter reported intending to move to the government Huntara Collectifs, and less than a fifth wanted to return to their homes. While most of those living in tents outside of their homes (70%) reported intending to stay where they were, 16% intended to move to a government Huntara, and a tenth did not know. Surprisingly few displaced households expressed a desire to return to their homes, which may be the result of a combination of factors, including psychosocial stress and a lack of resources to rebuild their homes.

Surprisingly few displaced households wanted to return to their previous location; this is likely due to their former households being destroyed and having few other options in terms of places to move; 58% reported their previous shelter as destroyed or severely damaged, 35% reported that it was heavily damaged, and 19% that it was mildly damaged. Due to a limited number of spaces in the government huntaras, it is likely that those unable to move into the transitional shelters want to stay where they are due to a lack of better options.

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16 This number was calculated as follow: 6% of non-displaced households hosting displaced households is equivalent to 4.5% of the total population, which is about 18% of the displaced population (assuming that all members of each displaced household being hosted are not a single household split between different hosting households).
Shelter

Shelter Types

Current shelter types were largely a reflection of current living conditions. The vast majority of households living in their own homes or another household’s home reported living in houses (99% and 94%, respectively), renters reported living in apartments (100% for both displaced and non-displaced), while a majority of households living displaced next to their pre-disaster homes or in informal settlements were staying in tents.

The results suggest that, absent a larger government relocation plan or reconstruction of destroyed shelters, many displaced households have started building their own longer-term structures. Four months after the disaster, only 53% of households living in informal settlements were still living in tents; 27% were staying in temporary transitional shelters they had either constructed themselves or that NGOs had built for them, and 17% were living in makeshift shelters made from scavenged materials. Field teams in South Donggala and South Sigi regencies observed that many IDPs had built their own temporary shelters to improve on their situation. More concerning were households that were living in shelters next to their homes: nearly 80% of these households were still living in tents, while less than 10% were living in more robust individual transitional shelters.

Eviction

About 2% of all households reported being at risk of eviction from their current location. Other than renters, of whom 70% were reportedly facing eviction due to a lack of money, the percentage of households reporting this was relatively low. About half of the households facing eviction reported that either authorities asking them to move (56%) or the owner of the land asking them to move (52%) were the dominant reasons they were at risk of eviction. Worryingly, 11% of households were facing eviction due to concerns over their safety from hosting communities that did not accept their presence, suggesting that there may be concerns of inter-communal tensions as displacement becomes protracted.

Tenancy and Ownership

Tenancy arrangements for housing are complicated in Indonesia, and the survey questionnaire did not adequately capture the complexity of housing arrangements that exist in Central Sulawesi province. Many ethnic groups in

Graph 5: Home ownership agreement, by Regency/City

- Sigi: 1% Don’t Know, 44% No Agreement, 42% Own House, 4% Written (not expired)
- Parigi Moutong: 14% Don’t Know, 33% No Agreement, 1% Own House, 21% Written (not expired)
- Palu: 1% Don’t Know, 60% No Agreement, 21% Own House, 8% Written (not expired)
- Donggala: 34% Don’t Know, 52% No Agreement, 7% Own House, 2% Written (not expired)
- Total: 1% Don’t Know, 46% No Agreement, 35% Own House, 6% Written (not expired)
Central Sulawesi Province do not own land and instead live without formal agreement on the land of other family members, who often own what amounts to large estates shared by entire villages or extended families. Only about a third of households reported owning their original home. Most people living in their own homes (78%), living in tents outside of their homes (46%), or in settlements (63%) did not have any kind of agreement for the house on their land. The rates of no tenancy agreements were highest in Palu, where ties to land are the weakest and much of the population has moved from abroad. Home ownership was highest in Donggala and Sigi (reported by 52% and 42% of households, respectively).

Most households (94%) reported having some kind of documentation or agreement in place to prove the right to live in their original home, or knew the people who owned it who would be able to help them prove that they could live there. However, about 6% of the households reported having lost their documents due to the disaster; this disproportionately affected displaced households (29%). Due to the informal nature of home-ownership in much of Indonesia, displaced households may face issues in re-settlement and may need support in re-establishing themselves on their land.

All of this suggests that ownership is likely to be a larger issue in Palu where much of the population does not have any ties to the land and is unlikely to have the formal or informal networks to ensure solid ownership of land. Attention should be given to the population in these areas and those who may have difficulty identifying their former homes or new places to stay.

Shelter Support and Reconstruction

Most households wanted to rebuild or repair their houses and restore their previous living circumstances. Over two-thirds of households (67%) reported that their original home had been damaged or destroyed by the disaster. This

Graph 7: Most Desired Assistance for Improving Housing Situation

includes houses that were completely destroyed as well as those that were damaged, both mildly and heavily. When asked about the top three types of support that they would like to receive for their original shelters, over two-thirds of households (68%) reported that they wanted to rebuild or repair their homes in the following 6 months, while 38% wanted to improve the house to be resistant to hazards, and 25% wanted to improve utilities for the house, like running water and electricity. A lower proportion of households living in informal settlements expressed a desire to rebuild or repair their houses, though largely because they had other options, including moving into the government huntara collectives.

Renters expressed the most desire to move to completely new locations (40% of displaced and 22% of non-displaced), which is unsurprising given that renters would be more likely to move to a new apartment if their first apartment is damaged. This is supported by geography: the desire to rebuild homes was highest in Sigi and Donggala (reported by 74% and 80% of households, respectively) where renting is much less common, and lower in Palu and in Parigi Moutong (65% and 31%).

**Protection**

A small number of protection issues were covered in order to provide broad information to help guide the protection response. However, due to the sensitive nature of protection issues, it is recommended that protection organizations conduct their own detailed sector specific assessments on these issues.

**Protection of Women’s Rights**

Pregnant or lactating women were reported in 16% of households. This was slightly higher for displaced families, which is supported by other research that finds displaced families often have higher fertility rates due to stressful situations.\(^\text{18}\)

**Child Protection**

About 3% of households reported that they had at least one child in the household that was separated from their normal caregivers. This was similar across most sub-districts, although it was significantly higher (8%) in Mantikule. This may be due to Mantikule being the most populated sub-district assessed, and is located in an urbanized area, and more likely have families who are available to support separated children who cannot find their families.\(^\text{19}\)

**Psychosocial Support**

Due to the technical nature of diagnosing post-traumatic stress and other trauma, the assessment team asked a proxy question: if anyone in the household was still experiencing stress, including loss of sleep, nightmares, emotional difficulties, or mood swings as a direct result of the disaster. Over half of households (51%) reported having at least one member still experiencing distress; this was even higher for those in displaced settings. This is much higher than what was reported in an Indonesian Red Cross (PMI) report from December 2018 according to which 9% of respondents were experiencing stress-like symptoms, though the discrepancy is likely due to differences in methodologies used.\(^\text{20}\) Latent distress over the loss of their homes and livelihoods may explain part of why households were less willing to return to their homes than expected.

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\(^\text{18}\) Parlow, Birth and Fertility during War: Afghanistan from 2007 to 2010.

\(^\text{19}\) UNICEF, Displaced families face after math of Indonesia earthquake and tsunami, 17 October 2018

\(^\text{20}\) UNOCHA, Saura Komunitas 2, December 2018. PMI received feedback from 225 people through various modes of communication, including: PMI’s hotline, Interactive radio talk shows, broadcast on Radio, Nebula and RRI the national channel, PMI volunteers working face to face with people in all disaster affected areas in Central Sulawesi and mobile phone using KOBO Collect, a digital survey tool.
Disabilities, Elderly, Minorities

About 3% of all households reported having members who were mentally or physically disabled. Generally, this was consistent across geographic areas and demographic groups, although a surprisingly high proportion (11%) reported having disabled members in their households in Labuan Sub-district. Any reconstruction efforts should be made with this population in mind.21

Water, Sanitation, and Hygiene

Water

In contrast to concerns from previous assessments, water, sanitation, and hygiene conditions appear to have improved considerably since the disaster. However, although more clean water sources are available, the few public sources that exist are potentially not enough to serve the entire population. Nearly all households were getting water from an improved source, either piped directly into their homes, from a protected well or spring, or a public borehole or tap stand (see table below).22 Only 6% of the households reported relying on an unprotected source as their main water source, though this was much more common for those living in shelters outside of their homes (13%), and across all groups in Donggala Kabupaten (15%). Regardless of the source, 95% of households across all demographics and areas reported that they were drinking treated water that was safe to drink.

Households in Palu Town were most commonly relying on water from bottled water or kiosks, as was the renting population, reflecting a more market-dependent population. Populations in displaced locations were mostly getting their water form public sources like boreholes or tap stands, as reported by 30% of households living in informal settlements and 33% of those staying in tents outside of their homes. However, the use of communal sources has

21 Humanity and Inclusion Indonesia, Disability Checklist (Revised), 2017.
Central Sulawesi Earthquake, Tsunami, and Liquefaction: Population Needs – February 2019

led to water shortages for many displaced communities; only 73% of households living in tents next to their homes, and 72% in informal settlements reported having enough water for all of their daily needs (cooking, cleaning, washing, etc.) compared to 87% of the average population. In addition, 19% of households in informal sites and 9% of households in tents outside of their homes were also getting the majority of their water from bottled water or kiosks, making them dependent on aid and markets for much of their daily water needs. Significant efforts by UNICEF and other NGOs were made to increase access of water to IDPs in informal settlements during the first three months of the response, resulting in an increase of supply of water for 52,889 individuals.23

Sanitation

Generally, the sanitation situation in Central Sulawesi Province has improved since the initial disaster, when WASH, particularly in informal settlements, were of chief concern.24 Though not directly comparable, the first DTM round found that almost 40% of all informal displacement sites did not have toilets available. According to household respondents, 71% of households were using individual latrines for defecation, and a further 18% were using communal latrines. Still, 9% of households still reported practicing open defecation, including 8% of those living in their own homes, which is concerning, as it increases the likelihood of the spread of disease.25

While open defecation was overall reported by a relatively low proportion of households, it was found to be a major issue among those living in tents next to their homes (27%), suggesting that most WASH support has been limited to areas of

concentrated IDPs, while those spread out have not received that same support. This is better than baseline data, from which BPS found that only 80% of the population in Central Sulawesi is only 80% had access to improved sanitation, suggesting that both efforts to install communal latrines following the earthquake have had a major effect.

The same report notes that rural areas, such as Donggala and Sigi, had worse levels of improved sanitation, which is reflected by the assessment data with 23% of Donggala households reporting practicing open defecation. This is likely due to a combination of cultural practices and lower infrastructure. Map 2 shows that open defecation tends to be more common in areas far from Palu Town, including Dolo Selatan, Gumbasa, Kulawi Selatan, and Lindu.

Graph 10: Defecation Method by displacement status

Graph 11: Defecation method by Regency/City

Use of communal latrines was more prevalent among households in informal settlements (75%), showing that humanitarian WASH interventions have been successful in reducing levels of open defecation in informal settlements. On average 13 households were sharing each communal latrine, though the average number of households was twice as many in informal settlements (26). This was highest in Palu Barat (45), where most of the population from Balaroa, a liquefaction zone, is displaced in informal settlements, although numbers were also high in Kulawi and Banawa, where other large informal settlements are located. Regardless of the overall burden, households reported that most communal latrines had adequate lighting and locks on their doors. However, only 12% of the same households reported that they were using communal latrines that had separate toilets for men and women.

Hygiene

Most households reported having access to hand washing facilities, either from a pouring device (59%) or bucket (32%). Only 9% of households reported having no access to hand washing facilities. This was higher for displaced populations (see graph below), particularly those in informal settlements (19%) and living outside of their homes in tents (16%). In addition, 92% of households with access to handwashing facilities reported that water was readily available for handwashing, although only 64% reported that soap was available.

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26 WHO South-East Asia, Situation Analysis: Earthquake & Tsunami, Sulawesi, Indonesia, October 2017.
Most households reported that garbage in their area was disposed of through burning (49%). A quarter (24%) of households reported that it was dumped in designated areas, though 12% reported it was dumped in non-designated areas as litter. Overall, burning was a common practice in Donggala, Sigi, and Parigi Moutong while in Palu Town, disposal with bins and designated areas was more common. According to most households, garbage was collected the same day or week. However, a full third reported that it was never collected or removed from the area, indicating that improvements could be made in the disposal of garbage in the area.

**Economy**

Overall, livelihoods in Central Sulawesi were found to have mostly recovered in the six months prior to data collection, though further economic recovery can still be seen in lower income and higher rates of unemployment, particularly among displaced populations. Households reported that the main occupations that provided the household’s income before the disaster were agriculture (32%), small business (18%), and government and services (8% each). Agriculture was most common in Donggala, Parigi Moutong, and Sigi regencies, but not in Palu, where small business, government jobs and services were more common.

As of early February 2019, the main types of occupations reported by households were about the same, indicating that most livelihoods across the affected area have mostly recovered. However, since the disaster the proportion of households reporting that they had no main occupation and were unemployed has more than doubled, from 4% to 10%. This is almost entirely in Palu, Sigi, and Donggala; Parigi Moutong had almost no households with no main occupation before the disaster (1%) and was found to have the same proportion in February 2019. No sector was found to have been affected disproportionately by the disaster, and all types of employment were reportedly equally affected. Female-headed households were more likely to have no main occupation and be unemployed than male households, likely reflecting traditional gender roles and a lack of opportunities for women to obtain necessary skills for jobs.

The effects of unemployment were also seen in purchasing power; households reported that they had lost an average of 10% income since the disaster. Groups that were displaced were disproportionately affected, and reported an average income loss of 20%. A World Food Programme (WFP) Market survey conducted in December
2018 found that although most businesses had reopened and prices and stocks of good had returned to pre-crisis levels, 61% of traders reported experiencing an overall decline in sales and overall output.28

One-fifth of households also reported having at least a member who could work, but was unable to find a job. This was noticeably higher for displaced groups, including those in informal settlements (32%) and other houses (27%). This suggests that displacement has uprooted many IDPs from their traditional livelihoods and they have had difficulties sustaining themselves away from their traditional land and houses.

The main reported reasons were that their businesses were destroyed (42%) land destroyed (12%), or that they were not qualified for the available jobs (11%). Destroyed businesses was a larger issue in Palu and Donggala (reported by 57% and 46% of households having at least one member willing and able to work but unable to find a job, respectively) than in Sigi or Parigi Moutong, where destroyed land was a larger contributor to unemployment (41% and 23%). This is consistent with the main types of employment available in each regency.

Food Security

Food security across the affected area was found to have greatly improved, though there were worrying signs that deeper nutritional issues need to be addressed. As the WFP had already carried out a detailed market analysis, the assessment team focused on the demand side of food security issues, and examined what access to food households had and how they dealt with food shortages and other related issues.29 REACH calculated both a Food Consumption Score (FCS) and a reduced Coping Strategies Index (rCSI) in order to identify key trends in food security across Central Sulawesi. Overall, FCS were mostly found to be acceptable (89% of households). A further 10% were borderline, and 1% were poor.30 Scores tended to be worse in Donggala and Sigi, particularly in the remote sub-districts of northern Donggala and southern Sigi.

Graph 14: % of households with a family member that is able and willing to work but unable to find a job, by primary reason for unemployment

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28 WFP, Market Assessment in Central Sulawesi, Indonesia, December 2018.
29 WFP, Market Assessment in Central Sulawesi, Indonesia, December 2018.
30 FCS is a measure of food security that looks at how often foods are consumed over a 1 week period, in order to give an indication if the household is eating a sufficient amount of food. FCS was calculated using the WFP CARI methodology, by asking respondents how many days per week their household consumed different groups of food, which are then multiplied by a coefficient based on the food group, added up, and ascribed a ranking (acceptable, borderline, or poor) based on the number.
WFP, Consolidated Approach for Reporting Indicators of Food Security (CARI), 2014.
rCSI, which looked at the household’s practices to make food last longer in the absence of sufficient food levels, suggested that most households were doing reasonably well. Overall, 3.3 was the average score, suggesting that most households have not had to adopt extreme coping strategies in order to make food last.\textsuperscript{31} Like FCS, rCSI scores were higher and more worrying in remote areas: households in Donggala and Palu were found to have much higher rCSI scores, while those in Parigi Moutong and Sigi had far lower scores. The scores diverge when looking at displacement status. Those in informal settlements were found to have an average rCSI score of 6.6, and those living in tents outside their homes of 4.5, while most other population groups were below 3.

Table 4: Reduced Coping Strategy Index, by Regency/City

<table>
<thead>
<tr>
<th>Kabupaten/Kota</th>
<th>rCSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>3.3</td>
</tr>
<tr>
<td>Donggala</td>
<td>5.2</td>
</tr>
<tr>
<td>Palu</td>
<td>3.8</td>
</tr>
<tr>
<td>Parigi Moutong</td>
<td>0.7</td>
</tr>
<tr>
<td>Sigi</td>
<td>1.8</td>
</tr>
</tbody>
</table>

However, both FCS and rCSI tend to be measures of the quantity of food, rather than the quality, and therefore do not tell the full story. Households from all population groups and regencies reported that food was both their greatest need and the most received type of aid in the previous month. Much of this aid is Indomei, (instant noodles), or grains.\textsuperscript{32} It suggests that most households are lacking dietary diversity, and while they are receiving sufficient calories, there is likely very little nutrition in what most households are consuming. This can create severe health issues for much of the population later if the issue is not addressed, particularly for children, whom UNICEF noted in December 2018 were receiving insufficient breastfeeding and feeding practices.\textsuperscript{33}

The vast majority of households were obtaining their food through market purchases, although in a few very remote sub-districts of South Sigi regency, some households were reportedly growing their own food. In addition, WFP found that most households were extremely close to the markets that they shop at.\textsuperscript{34} This increases the importance of the restoration of livelihoods in order for households to be able to have more money to purchase additional food.

\textsuperscript{31} rCSI is a measure of food security that looks at a set list of five commonly practiced coping strategies that households might be using to make food last longer in the absence of sufficient foods. rCSI was calculated by asking respondents how many days per week their household adopted these coping strategies. The number of days was then multiplied by a coefficient based on severity of the coping strategy and the products were added up. There are no officially established thresholds, but generally, scores between 0 and 3 are considered to be good, 4 to 9 is worrisome, and those scores 10 or above are concerning (WFP VAM Unit, Afghanistan, Guidance note: calculation of household food security outcome indicators, December 2012).

\textsuperscript{32} World Instant Noodles Association, Emergency Food Aid, 2019.

\textsuperscript{33} UNICEF, Indonesia Humanitarian Situation Report No. 5, 9 December 2019.

\textsuperscript{34} WFP, Market Assessment in Central Sulawesi, Indonesia, December 2018.
Health

Health access was found to be similar across households from all displacement statuses and regencies; 78% reported having no issues for accessing health care, though a sizable minority (9%) reported health care costs were prohibitively high for them, particularly in Donggala and Parigi Moutong.

Overall 40% of households reported that someone in their household had experienced a health issue requiring medical attention in the 30 days prior to data collection. Reported health issues were noticeably more common among displaced households (51% in informal settlements, 50% in tents, and 51% living in other people’s houses), than among non-displaced households (37% in own homes, 26% displaced renters, 31% renters). This suggests that both the exposure and stresses associated with displacement have health implications for the population. In addition, higher proportions of households in Sigi and Donggala, more rural areas with worse health infrastructure, reported health issues than those in Palu or Parigi Moutong.

Fever and coughing dominated as the primary health issues of the previous 30 days, though 26% of households reported diarrhoea as a major issue. This was the largest issue for households living in tents outside of their homes (45%), which is unsurprising given the poor sanitation conditions reported by the same households. A third (33%) of households in informal settlements also reported diarrhoea as a main issue in the previous 30 days. In addition, reports of household members seeking treatment for diarrhoea were more common in more remote areas with worse WASH infrastructure, such as Donggala and Sigi. Higher proportions of households with at least one member seeking medical treatment for diarrhoea in the previous month were found in Donggala and Palu (29% and 28%, respectively) and Parigi (24%) and Sigi (19%). Very high levels were observed in north Donggala (Balaesang, Balaesang Tanjung, and Sirenja Sub-districts).

Table 3: Main reported health issues in the previous 30 days

<table>
<thead>
<tr>
<th>Reported health issue in the previous 30 days</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>53%</td>
</tr>
<tr>
<td>Coughing</td>
<td>50%</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>26%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>10%</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>6%</td>
</tr>
<tr>
<td>Breathing Issues</td>
<td>5%</td>
</tr>
<tr>
<td>Injury</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>14%</td>
</tr>
</tbody>
</table>

In addition, 41% of households reported that there were no health issues that needed to be addressed in the 30 days prior to data collection. However, 29% of households reported that they had needed medication, and 35% that they had accessed health services to treat health issues. This was particularly prevalent in Parigi Moutong, where complaints over inadequate healthcare also were common among households (see, “Communicating With...”)

Map 3: Households reporting that a family member sought medical treatment for diarrhoea in the last 30 days, by sub-district.
Communities, below). Over a quarter of households in Parigi Moutong (26%) had also accessed health services for regular check ups.

Furthermore, 18% of households reported that there was at least one child in their household that had not been vaccinated. On top of the stressful conditions of displacement, this further exposes children to contagious diseases, putting them at risk of further illness and potentially death. This was slightly higher among displaced households in informal settlements (22%) and those living in other homes (22%) compared to those in their homes (16%) or living next to their former homes (19%). If Measles, Mumps, and Rhubella (MMR) immunization campaigns have not yet been conducted following the disaster, displaced families should be targeted first to reduce this gap.

**Education**

In order to complement a detailed assessment on attendance and school quality conducted by Save the Children on behalf of the Ministry of Education and Culture, the assessment team focused on broader attendance-based questions and reasons for non-attendance. Overall, 4% of households reported that at least one child in the household was not attending formal education at the time of data collection (1 child on average). This suggests a large improvement since December 2018 when a UNICEF report found that only 70% of children had resumed schooling. This proportion was relatively stable across geographic areas and displacement statuses. This was also consistent with pre-disaster proportions reported by the Indonesian Bureau of Statistics, suggesting that attendance has largely recovered since the disaster, and most of the households who have children not attending school are those that did not have children attending school before the disaster. However, support is needed for household in informal settlements, who were twice as likely to report at least 1 child in the household not in school.

Most households with children who were not attending school reported that the main reason was that the school had been damaged or destroyed (32%) or was no longer safe (23%). Destroyed schools were found to be a bigger issue in Palu (reported by 51% of households) and Parigi Moutong (36%) than in Donggala or Sigi (13% and 11%). This is likely because Palu was more severely affected by natural disasters and Parigi Moutong had overall a far lower proportion of households with children not attending school (2% of households). Households in Parigi Moutong were also significantly more likely (28%) than other households to report that their children were not attending school before the disaster as well.

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35 While high, this is not that far from the 12.8% found by UNICEF (Indonesia, Humanitarian Situation Report No. 5, 9 December 2019.)
36 Save the Children Indonesia, Joint Education Needs Assessment, December 2018 (forthcoming)
Most schools were reportedly affected by the disaster, including many that are still functional: 25% of households reported that the nearest school had been lightly damaged, 29% moderately damaged, and 14% severely damaged or completely destroyed. Only 20% of households reported that the nearest school was in good conditions. An exception to this was Parigi Moutong, where most schools were reported to be in good conditions. A high proportion of households in informal settlements (40%) reported that the nearest school was destroyed; this is likely because the school was destroyed along with the surrounding buildings.

In Palu regency, the largest issues related to school attendance was the school being damaged (51% of households); reconstruction of schools should be a priority to ensure that students feel safe returning to school. In Sigi, households mainly felt unsafe and that the school might collapse (33% of households). In Donggala, the largest issue was school fees being too expensive (29%). Household in Parigi Moutong appears to be experiencing issues with damaged schools (36%) and children not attending school for other reasons before the disaster (28% of households reported that their children were not attending school before the disaster). These issues related to non-attendance before the earthquake may become issues as well as schools are repaired and other problems related to the disaster are addressed in other parts of Central Sulawesi Province.

Communicating with Communities

Almost a third of households reported having received aid in the month prior to data collection. Displaced households, particularly those living in informal settlements and tents next to their houses, were far more likely to have received aid. While this generally reflects the overall needs of the population (those living in obvious displacement sites are likely in greater need than those who have not been displaced or have the resources to rent an apartment), it also shows that displaced households that are not easily identifiable are likely to be missed. Only a third of displaced households living in other houses, such as those of friends or relatives, reported having received aid. In addition, more obviously affected areas were more likely to receive aid as well, with the highest proportion of households receiving aid in Donggala and almost no households reporting having received aid in Parigi Moutong. More efforts need to be made to reach affected households outside of displacement settings.

Graph 17: % of households that reported having received aid in the previous month, by regency/city and displacement status

<table>
<thead>
<tr>
<th>Region</th>
<th>Total</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sigi</td>
<td>62%</td>
<td>38%</td>
<td>24%</td>
</tr>
<tr>
<td>Parigi Moutong</td>
<td>98%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Palu</td>
<td>72%</td>
<td>28%</td>
<td>17%</td>
</tr>
<tr>
<td>Donggala</td>
<td>66%</td>
<td>34%</td>
<td>28%</td>
</tr>
<tr>
<td>Renting (displaced)</td>
<td>82%</td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td>Renting (non-displaced)</td>
<td>84%</td>
<td>16%</td>
<td>27%</td>
</tr>
<tr>
<td>Informal settlements</td>
<td>34%</td>
<td>66%</td>
<td>20%</td>
</tr>
<tr>
<td>Shelter next to house</td>
<td>47%</td>
<td>53%</td>
<td>20%</td>
</tr>
<tr>
<td>Other house</td>
<td>67%</td>
<td>33%</td>
<td>38%</td>
</tr>
<tr>
<td>Own house</td>
<td>76%</td>
<td>24%</td>
<td>30%</td>
</tr>
<tr>
<td>Total</td>
<td>70%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Most aid reportedly came from the government (indicated to be the main source of aid by 48% of households that received aid during the previous month), regardless of the regency/city. NGOs were only found to be a substantial source of aid in Sigi and Donggala; and only in Parigi Moutong was the Indonesian Red Cross (PMI) reported to be a major source of assistance.

Most households that received aid in the previous month reported that they received food aid (91%) followed by water (17%) and shelter materials (17%). Displaced households were more likely to have received aid than non-displaced (89% of households compared to 76%).

Over two-third (69%) of households that received aid in the previous month reported being satisfied with the aid that they had received. Those that were not (29%) reported that the main reasons they were not happy were because the aid was not enough (86%). Very few other complaints were registered.

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39 These indicators are a combination of displacement profiles. Displaced households were Renting (displaced), Informal Settlements, Shelter next to house, and Other house. Non-displaced are Own house and Renting (non-displaced).
The most needed type of aid by households in all four regencies was reportedly food (although a far lower proportion of households in Parigi Moutong considered it a top 3 need than other households, which makes sense, given that it was less affected than other areas). As noted in the food security section (above), the main need of households was also food, suggesting that a greater diversity of food needs to be delivered in order to avoid complications from malnutrition.

Kitchenware was also a major priority need across all displacement statuses, likely due to the general need for additional NFIs. In Parigi Moutong, Healthcare was reported a top 3 need by 32% of households, which reflects an overall need for improved health services. Livelihoods opportunities were also requested, particularly among the displaced population, suggesting that additional support is needed to improve the livelihoods of the displaced population and population in general.

Graph 18: Top 3 Priority Needs, by displacement status and Regency/City

CONCLUSION

Four months after the earthquake, tsunami, and liquefaction events, the population has still a large number of humanitarian needs. In order to understand the scope, needs, and vulnerabilities of the affected population, under the authority of the Kemensos-lead PP Cluster and Central Sulawesi government, HFI and UNISMUH, with support from REACH conducted a household-level assessment of 38 sub-districts in four affected regencies of Central Sulawesi Province. Below are the summary of key findings and recommendations based on the data.

While 26% of households are displaced outside of their own homes or apartments, only 9% are staying in the informal settlements targeted by previous assessments and interventions. Much of the displaced population is hosted (10%) either directly the houses of non-displaced households, or living in empty houses they do not own. Another 5% are living in tents outside of their homes.

The results show that needs tend to vary based on displacement status, rather than geography. Most households in Palu, Sigi, and Donggala have similar needs, in terms of food security and WASH. In Parigi Moutong, which was much less affected by the disaster, needs were often different and more related to health and education.

40 The assessment found similar needs to those highlighted by AHA centre in October 2018, suggesting that many of the requested items have either worn out or were not enough to meet the needs of the population (AHA Centre, Situation Update NO. 12, M 7.4 Earthquake & Tsunami, Sulawesi, Indonesia, 15 October 2018).
Displaced populations, particularly those living in informal settlements and those living in tents or makeshift shelters next to their former homes, were found to be the most vulnerable groups and remain the most affected by the disaster. They have suffered more economic loss, both in terms of income and employment, and will require more support rebuilding their businesses and resuming their livelihoods in a displaced setting. They are also twice as likely to have children who are not in school, and therefore in need of additional educational support. Displaced populations were significantly more likely to report health issues as well.

Although a plurality of the displaced population was living in other households’ homes or being directly supported by the host community, they also experienced difficulties in accessing some services, particularly shelter support, and often had more difficulties receiving aid due to being more difficult to identify in the local population. Renters, although the most likely to be ignored by aid, generally reported the best service access, suggesting that ability to pay rent also generally implied an ability to access sufficient services.

The greatest need reported by households from different displacement settings was food, although food security indicators were positive and the most commonly received type of aid was food. This is likely due to a lack of diet diversity, in which starches and instant noodles are the main foods distributed to households. Additional diversity is critical to avoid nutritional complications that are likely to occur from this particular diet.

Education access has largely returned to the same levels as before the disaster; however, many children in Parigi Moutong were reported to have not been attending school before the disaster, suggesting underlying issues beyond school repair. Repairing damage to schools is unlikely to solve underlying issues leading children to not attend school.

Health issues, primarily coughing and fevers, were reported to be common, particularly by households that were displaced in informal settlements and in shelters next to their homes. These issues are likely to be compounded by unresolved issues around nutrition and sanitation; including the poor nutrition and sanitation environment and high instance of diarrhoea among IDP households.

Although WASH issues noted during the early response have largely been resolved, households displaced in tents or makeshift shelters next to their homes reported worrying levels of open defecation, and although there are sufficient communal latrines in informal settlements, they are overcrowded in many locations and lack many basic protection standards, particularly separate latrines for men and women.

Geographically, access to services in Palu was largely dependent upon displacement status: non-displaced households tended to access basic services more easily and sufficiently than IDPs. In Donggala and Sigi, the more remote the sub-district, the more difficult service access became. Households in North Donggala (Balaesang, Sirenja, and Balaesang Tanjung) and South Sigi (Kulawi, Kulawi Selatan, Lindu, Gumbasa, and Dolo Selatan) had a more difficult time accessing sufficient food, and WASH services than those in sub-districts closer to Palu Town. Most households in Parigi Moutong were not affected and many of the household’s complaints were focused more on development issues, like a lack of access to healthcare or insufficient water.

A majority of households, regardless of displacement setting, wanted to repair or rebuild their former homes and resume their former lives. However, households living in liquefaction and tsunami affected areas are unable to return and rebuild on their lands. Many have been relocated to government-built transitional shelters; but many others are still unable to return home and may need additional support in relocating to safer areas. In addition, much of the Central Sulawesi area that was not affected by liquefaction is liquefaction prone, and populations living there are vulnerable to future disasters.41

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41 The Conversation, “2012 research had identified Indonesian city Palu as high risk of liquefaction,” 2018.
Recommendations

Based on these findings, the following actions are recommended:

- Most households, regardless of displacement status, want to stay in their current locations for the next six months. Without alternatives like government transitional shelters or rebuilt homes, they will remain where they currently are; those households living in tents may require replacement shelters that may have worn out in the last 6 months.
- Shelter support should focus on empowering the local population to rebuild or repair their shelters. New areas to construct shelters will need to be found for those populations unable to return to their locations (such as liquefaction zone or tsunami vulnerable areas) and who do not have a place in the transitional shelters.
- Additional WASH support should be provided to households that are living in tents outside of their original shelters and informal settlements to reduce open defecation and improve overall sanitation and hygiene practices. This is particularly important due to numerous cases of diarrhoea and other diseases reported in these locations.
- Health services should be improved and made more easy to access, particularly in Parigi Moutong regency. Alongside sanitation interventions, additional preventative efforts should be made to limit the spread of diarrhoea and other contagious diseases, particularly in informal settlements and for households living in shelters next to their homes, where household members are reported to being more prone to diseases.
- Attendance rates of children attending schools were affected both by displacement and damage to the school. Resettlement of households and repair of schools are both likely to improve attendance rates. However, the higher proportion of households in Parigi Moutong with children not attending school likely indicates that there are deeper issues related to child attendance that will need to be addressed.
- Greater efforts need to be made to identify displaced households living in shelters they do not own and living with other households, as they are likely being missed by the aid providers.
- Improvement of healthcare access for displaced populations and households in Parigi Moutong should be ensured; this is likely to take the form of more affordable healthcare and more access to medicine.
- Additional psychosocial work to address potential trauma in the population need to be made; many households have members struggling with emotional issues related to the disaster and it likely has implications on health, movement intentions, and other areas of concern.
- Additional efforts should be made to improve the diversity and quality of food being distributed; the instant noodles and plain starch foods that have been distributed thus far lack nutritional value and are likely to contribute to malnutrition in the future if not supplemented with more nutritious foods.
- Economic recovery, particularly assistance re-establishing businesses and lines of credit, is critical for households across Central Sulawesi to meet their needs, particularly those related to food gaps, since most households reported getting most of their food from market purchases. Economic recovery is likely to be linked to an improvement in nutrition and food outcomes for the population.
- Aid has generally been directed towards the most needy sub-districts and displacement groups. However, the quantity and type of aid may need to be adjusted based on the needs of households in different areas and displacement statuses.

Over the next six months, households will continue to recover and rebuild their lives that were disrupted by earthquakes, tsunamis, and liquefaction in September 2018. However, many households, particularly those that have been displaced, still face challenges, and without additional support, may continue to struggle in their recovery. By targeting aid to the most in need, additional efforts can be made to help the population recover and rebuild following the disaster. With earthquakes continuing to occur across Central Sulawesi, the risk for additional displacement and new needs for the population is likely.42

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42 Earthquakes continue to occur across Central Sulawesi as of March 2019 (Badan Meteorologi, Klimatologi, Dan Geofisika (BMKG), Gempabumi Dirasakan, March 2019).
## Annex 1: Household population and minimum sample size by Sub-district

<table>
<thead>
<tr>
<th>Sub-district</th>
<th>Number of households</th>
<th>Sample size</th>
<th>Sample including buffer size 10%</th>
<th>Total number of planned interviews</th>
<th>Total number of actual interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balaesang</td>
<td>6,776</td>
<td>95</td>
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<td>Banawa</td>
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<td>Banawa Selatan</td>
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<td>Banawa Tengah</td>
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<td>98</td>
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<td>Dolo</td>
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<td>Dolo Barat</td>
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<td>Parigi Tengah</td>
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<td><strong>Grand Total</strong></td>
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<td><strong>359</strong></td>
<td><strong>3,932</strong></td>
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