

WFP



World Food Programme and
National Disaster Center

March 2016



El Nino food security impact in Papua New Guinea

The impact of the 2015/16 El Nino on food security in Papua New Guinea

KEY MESSAGES



Between January 28th and February 24th 2016, the World Food Programme (WFP) in close consultation with the the National Disaster Center (NDC) conducted a mobile survey to assess the impact of the 2015/ 16 El Nino on food security and livelihoods in PNG. The survey was carried out in all 231 LLGs classified by NDC in September 2015 as experiencing severe, very severe or extreme drought conditions (categories 3, 4 and 5). A total of 3,708 people were interviewed by phone from the Digicel call center in Port Moresby. This report presents the results of this phone survey.



Food security has been highly or severely impacted by drought and frost in 54 LLGs, affecting 1.47 million people - out of PNG's total population of 8.1 million (2015 population numbers projected based on the 2011 census). Out of these 54 LLGs, priority emergency food assistance is needed in the 6 most severely impacted LLGs, where an estimated 162,000 people are facing extreme food shortages.



Supply of food in local markets is limited, and prices of most locally produced staples have doubled - or almost tripled in the case of kaukau (sweet potato). Prices of imported rice have also gone up significantly.



Almost half of the people interviewed have a sick child in their household. Of these, 60 percent have a child suffering from diarrhoea or other stomach problems. This poses significant risks of further deterioration in levels of child malnutrition.



Water stress is a significant concern across the country, not only in terms of lack of drinking water, but also in terms of impacts on health and livelihood activities (notably sago processing).



While the government has provided some assistance since September 2015, this has been insufficient to prevent the deterioration of food security conditions. The levels of food insecurity found in this assessment show a clear need for assistance on a larger scale, with priority given to areas in which the needs are most acute.

INTRODUCTION

Since April 2015, Papua New Guinea (PNG) has been severely impacted by the effects of a severe global, ongoing, El Nino Southern Oscillation (ENSO) event. The last time the country was hit by a disaster of similar scale was during the 1997/98 El Nino, which at its peak affected an estimated 1.24 million people - of which 260,000 were classified as critically food insecure (national assessment).

Agriculture is the core of the PNG economy, accounting for approximately 25 percent of GDP (2013 est.). Eighty percent of the population is semi-dependent on rainfed subsistence farming, and more than three quarters of the food consumed in the country is locally grown. As a result, any disruption to household food production - such as the one caused by El Nino-induced climatic shocks - has an immediate, severe and lasting impact on food security in the country.

Some of the earliest impacts of El Nino were felt around March 2015, when severe floods damaged crops and infrastructure throughout the country. A few months later, successive frost episodes in August- September 2015 caused widespread damage to critical root crop production in the highlands (areas above 2200m altitude).

The most severe impacts of El Nino, however, have been related to drought - with lack of rainfall throughout much of the country causing widespread water scarcity and crop failure.



Photo 1 - Banana garden affected by drought, Mougulu, Western Province. Photo: Sally Lloyd

Up to late January 2016, rainfall has continued to be significantly lower than average in the western and southern half of PNG, particularly Western, Gulf, Central, Oro and Milne Bay provinces (Map 1). From November 2015 to January 2016, some of these areas received less than half of the rainfall normally received during this period. Coastal areas (including the northern coast) and small islands have been particularly affected.

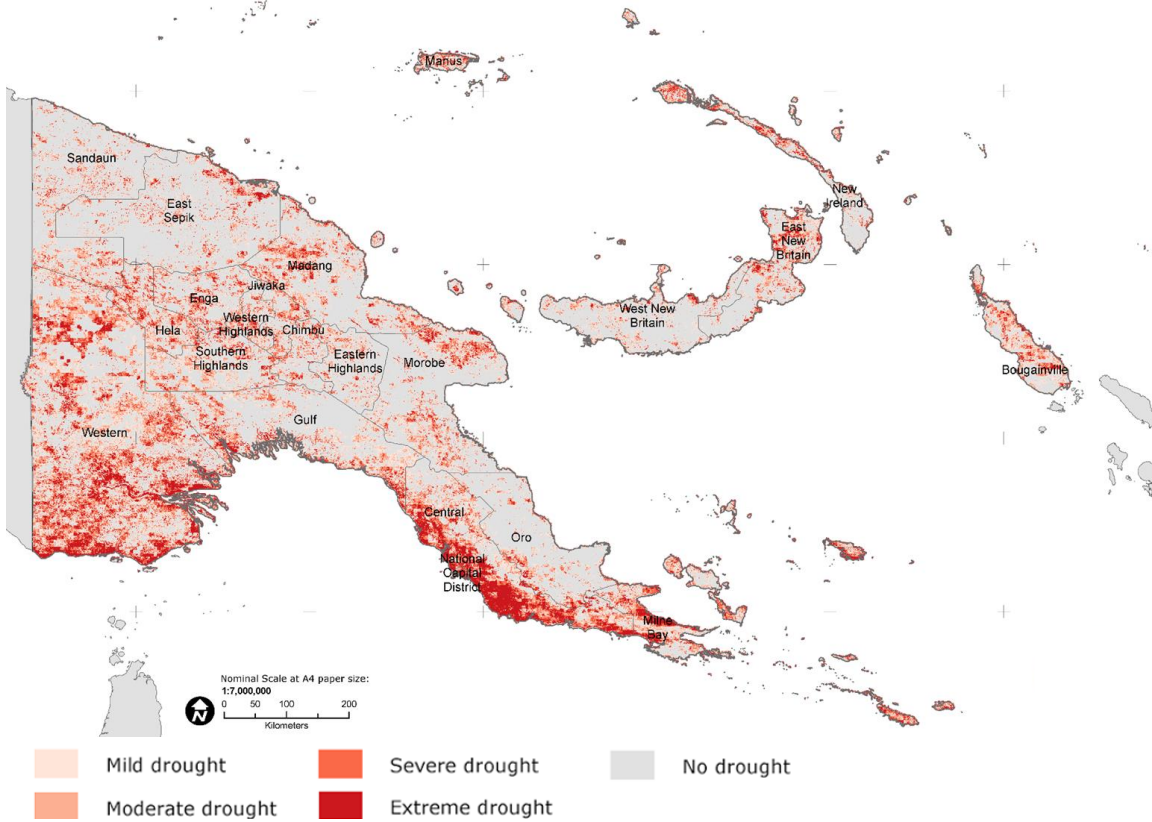
These rainfall trends are largely corroborated by satellite measures of vegetation cover, with the vegetation health index for January 2016 showing severe to extreme drought conditions in much of Western, Central, Gulf and Milne Bay provinces (see Map 2).

In September 2015, the National Disaster Center (NDC) conducted a nationwide field assessment, which enabled each district to be classified according to the severity of the food supply situation.

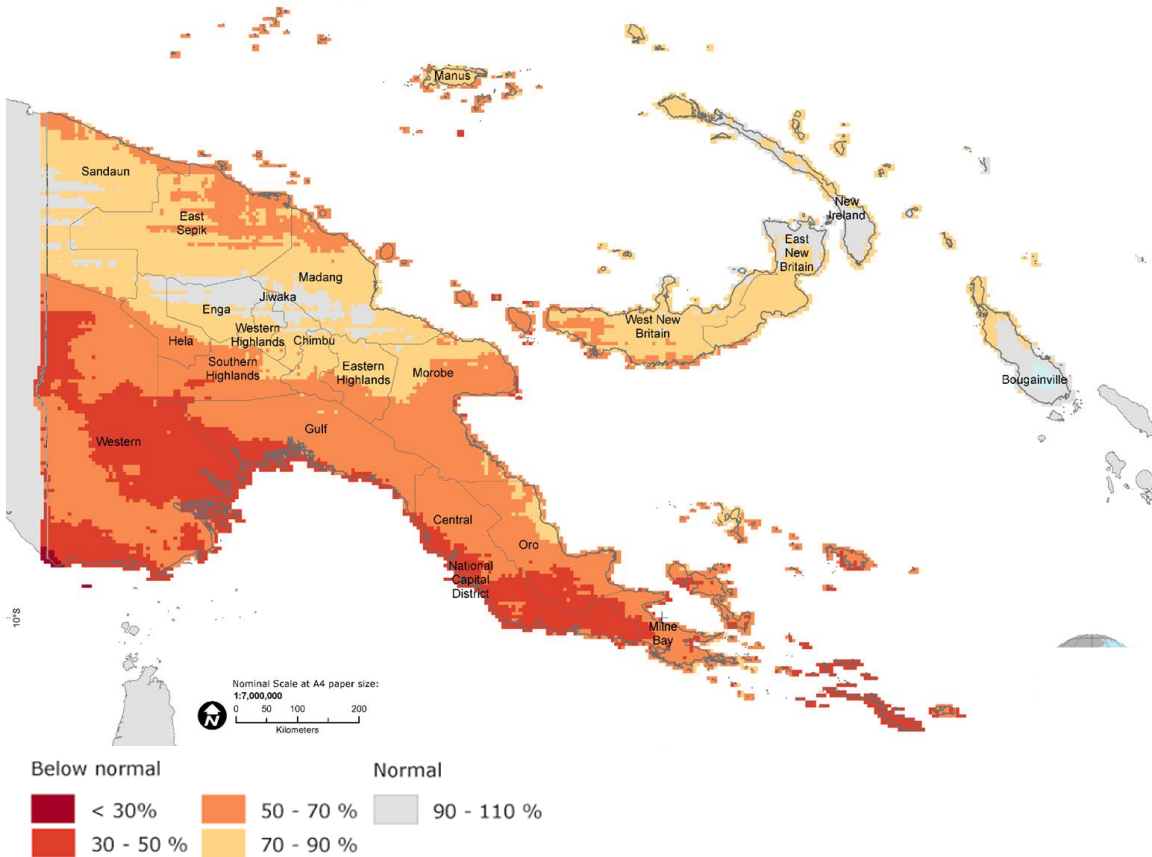
Given the ongoing drought conditions, the NDC conducted a follow-up assessment in January-February 2016, with support from the World Food Programme (WFP), to update the initial assessment. This new assessment was done through a mobile phone survey conducted with the mobile operator Digicel PNG, using WFP's mobile Vulnerability Analysis and Mapping (mVAM) survey method.

The present report presents the findings of this mobile survey, and is divided into the following sections:

1. Methodology
2. Food Security impact
3. Markets and prices
4. Livelihood impact
5. Health impact
6. Access to water
7. Assistance provided



Map 1 - Vegetation health index as of January 2016 (classification based on Kogan, 2002). Map created by WFP using data from GAUL, NASA, and government of PNG.

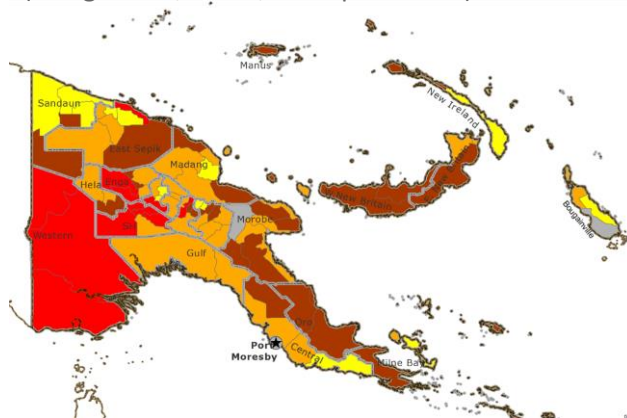


Map 2 - Rainfall anomaly over the period Nov'15- Jan'16 (% of 1981-2014 average). Map created by WFP using data from GAUL, NASA, CHIRPS, GCS WGS 1984, and government of PNG.

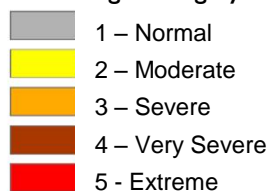
METHODOLOGY

All the data in this household and community assessment was collected remotely, through a mobile survey. A total of 3,708 people were interviewed by phone by Digicel operators, from January 28 to February 24 2016.

Households were selected randomly from Digicel's mobile subscriber database, and were given a 2 kina airtime credit incentive after completing the survey. The survey was conducted in all of the Local Level Government (LLGs) classified in NDC's September 2015 assessment as experiencing severe, very severe or extreme drought conditions (categories 3, 4 or 5, in Map 3 below).



NDC Drought Category – Sep' 15



Map 3 - Drought categories (September 2015)

Within each LLG, the sample targeted 19 households for interview. However, due to the location of Digicel's mobile phone reception towers and the current location of the mobile phone subscribers, this was not always possible. Some LLGs were therefore oversampled, while others were undersampled. The sample ranged from 4 households in some LLGs, to 62 in one LLG. Details on the number of households sampled per LLG are provided in Annex 3. Map 4 shows the geographic distribution of survey calls.

3,708 individual phone interviews

231 LLGs covered (all of NDC's cat. 3, 4, and 5)

19 households per LLG

22 days of interviews (28 Jan to 24 Feb 2016)



Map 4 - Geographic distribution of phone calls

The survey was divided into three sections, with questions relating to:

- 1 - Overall community food security situation;
- 2 - Household-level food security experience; and
- 3 - Aid assistance received until now

Questions on the overall community food security situation were used to classify each LLG into one of four food security phases: low, moderate, high and severe food security impact. Subsequently, questions on household-level food security indicators were used to capture how respondents were experiencing and coping with food insecurity at the household level. These "household experience" questions were analysed and disaggregated using the four food security phases just mentioned.

This allowed triangulation between household-level and overall community phase classification results: in LLGs classified as having high or severe food security impacts, we would expect worse household-level food security experience outcomes, compared to LLGs classified as minimally or moderately impacted.

Methodological limitations

Mobile phone surveys tend to skew results towards better-off households in urban areas, who own mobile phones. Nearly 70% of the population in PNG do not have access to a mobile phone - the country currently has 2.7 million unique subscribers, out of a population of 7.3 million (GSMA, 2015).

In addition, women in PNG are much less likely than men to have access to a mobile phone, primarily due to cost, technical literacy, cultural and infrastructure constraints. This may have led to bias in the sample due to the underrepresentation of women. Out of the 3,708 respondents in this survey, 955 were female.



Photo 2 - Operator carrying out an interview for this survey in Digicel's PNG call center in Port Moresby. Photo: Venkat Dheeravath/WFP.

Six out of the 11 Digicel operators were female, to ensure that female respondents felt comfortable participating in the survey.

Due to the nature of phone calls, surveys needed to be as short and simple as possible. As such, only a limited amount of information could be collected. Given the inherent bias in mobile surveys, it is important to note that the results of this survey should not be seen as precise estimates of food insecurity, but rather as a way of capturing patterns and relative levels of food insecurity from one area to the other.



Photo 3 - Operator carrying out an interview in the presence of NDC, WFP, and UNDP staff. Photo: Vetau Roga/Digicel.

“There is no more food available in the village and we are now only eating pumpkin and greens [...]. Recently, because of the rain, we are starting to make gardens but it will take time to be ready for harvest, so we are still struggling to survive.”

Female respondent from Goilala, Tapini Rural LLG.

FOOD SECURITY IMPACT

Food security phase classification

The surveyed LLGs were classified into four categories: low, moderate, high or severe food security impact. This was then used to create the food security phase classification map on page 8 (Map 5). The criteria for each category is also described on page 8 (Figure 1), with additional details on the classification method provided in Annex 2.

- 1 **Low** food security impact
- 2 **Moderate** food security impact
- 3 **High** food security impact
- 4 **Severe** food security impact

Of the total 231 LLGs surveyed, 48 were classified as being *highly* impacted, and 6 as being *severely* impacted. Combining these figures, this means that a total of 54 LLGs are affected by high or extreme food shortages, with many or most households in these areas suffering from hunger and surviving on famine foods (such as wild yams, tree leaves and banana roots).

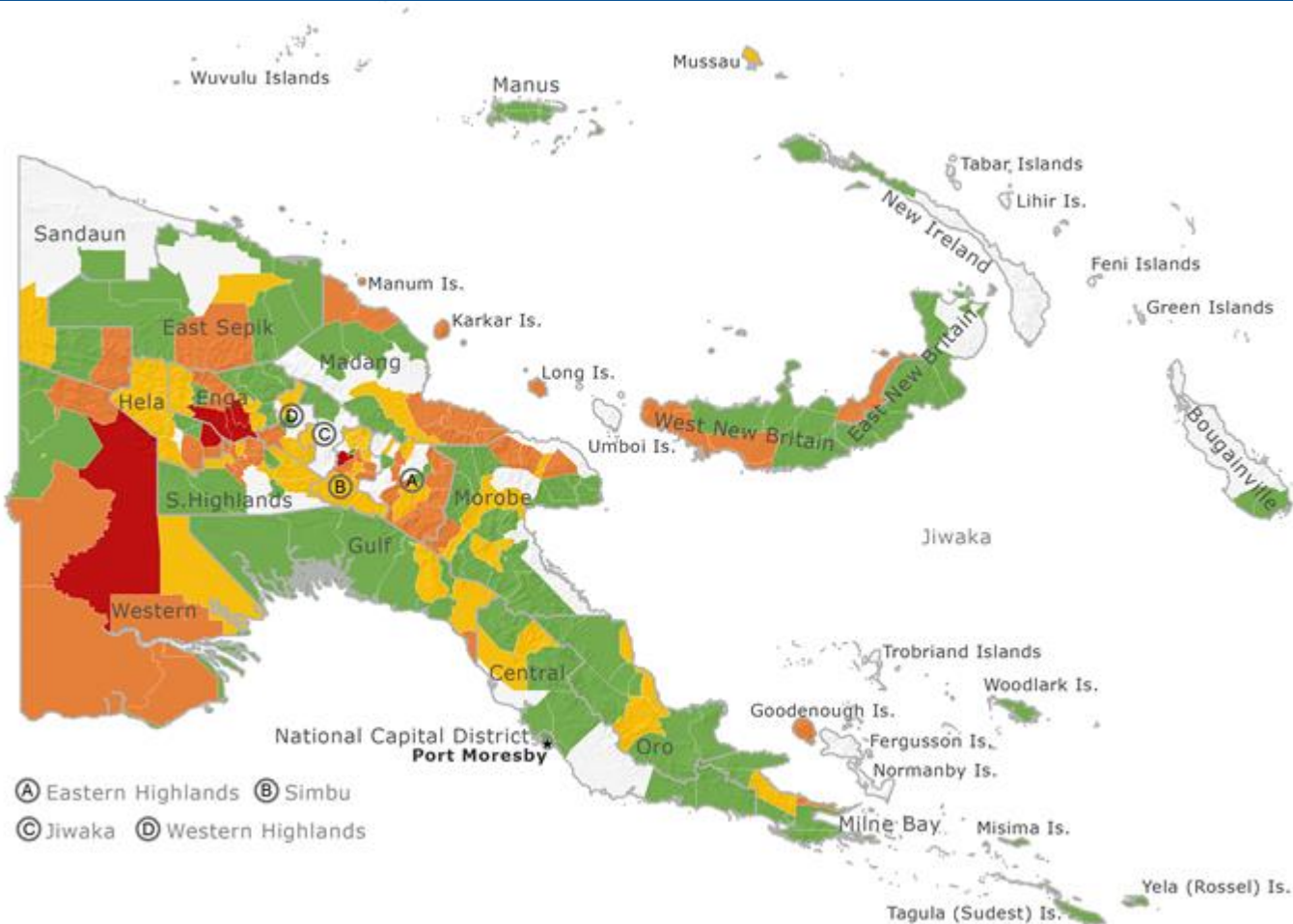
Most of the highly and severely impacted LLGs are located in Western Province, in highland areas, and along the northern coast.

The table below lists of all severely impacted LLGs, in which a total of 162,000 people live. These LLGs are affected by localized famine conditions and need immediate life-saving assistance.

| Province | LLG | Population |
|----------|-----------------------|------------|
| Western | Nomad Rural | 15,724 |
| Hela | Upper Wage | 16,696 |
| Enga | Wage Rural | 34,245 |
| Enga | Kandep Rural | 47,394 |
| Enga | Pilikambi Rural | 33,482 |
| Chimbu | Bomai/ Gumai Rural | 13,911 |

Table 1 - Severely impacted LLGs requiring immediate humanitarian assistance. Population numbers for 2015 were projected based on the 2011 Population Census.

The severity of the food security situation in highly and severely impacted LLGs is confirmed by the fact that these are generally the same areas in which respondents reported high numbers of people dying because of the drought (see Map 6 on page 9).



Map 5 - Food Security Phase Classification, by LLG.

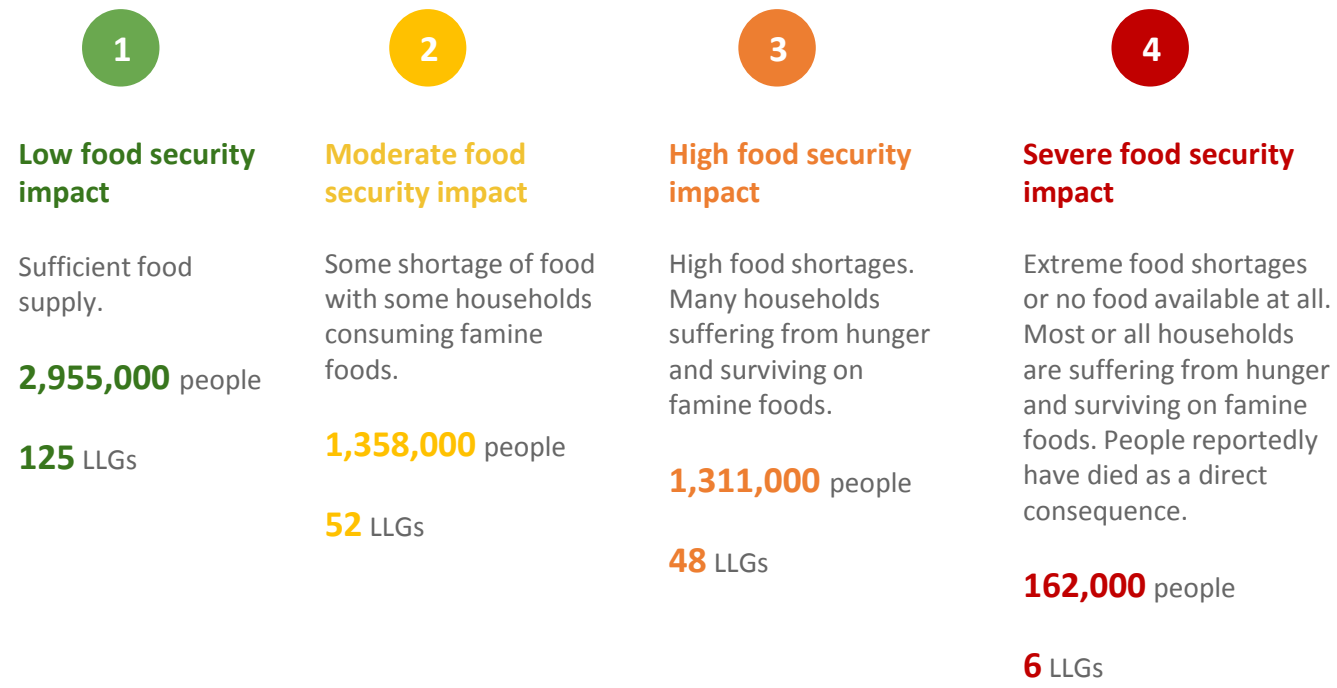


Figure 1 - Food Security Phase Classification definitions and numbers. Population numbers for 2015 were projected based on the 2011 Population Census.

Fatalities reported

Close to half of all respondents (47 percent) reported that some people in their community had died as a direct consequence of the drought. The average number of reported deaths in the community was an alarmingly high 2.4 people. Not surprisingly, reports of drought-related deaths were even more common in phase 3 and 4 LLGs, where 58 percent and 63 percent of respondents reported drought-related deaths in their community.

Map 6 below shows LLGs with the highest average number of deaths reported. These areas broadly match areas identified as the most food insecure (phase 4 areas in Map 5) - as such, this provides a possible means to confirm priority hotspots areas in need of assistance.

It is important to note, however, that these numbers should be interpreted and used with caution, as they have not been verified through the normal administrative channels.

Nevertheless, taken in conjunction with the phase classification results, these figures do show that the ongoing drought is having extremely serious and immediate impacts, leading to a clear need for immediate assistance.



Map 6 - LLGs in which the average number of drought related deaths in the community reported by respondents was 5 or higher.

Food security experience indicators

In addition to questions of the overall food security situation in their community, respondents were also asked questions about how they were experiencing and coping with food insecurity at the household level.

These food security experience indicators confirm the findings of the phase classification analysis, in regards to the severity of the situation in LLGs identified as having high and severe food security impact. As shown in more detail on page 10, in those areas, in the week prior to the survey:

- Over 40 percent of respondents had gone 24 hours without eating anything, once or more.
- More than three quarters had gone to bed feeling hungry; and
- Almost all had eaten fewer and smaller meals.

In comparison, in areas with low food security impact, in the week before the survey:

- Less than a quarter had gone 24 hours without eating;
- About half had gone to bed feeling hungry;
- About two thirds had eaten fewer and smaller meals.

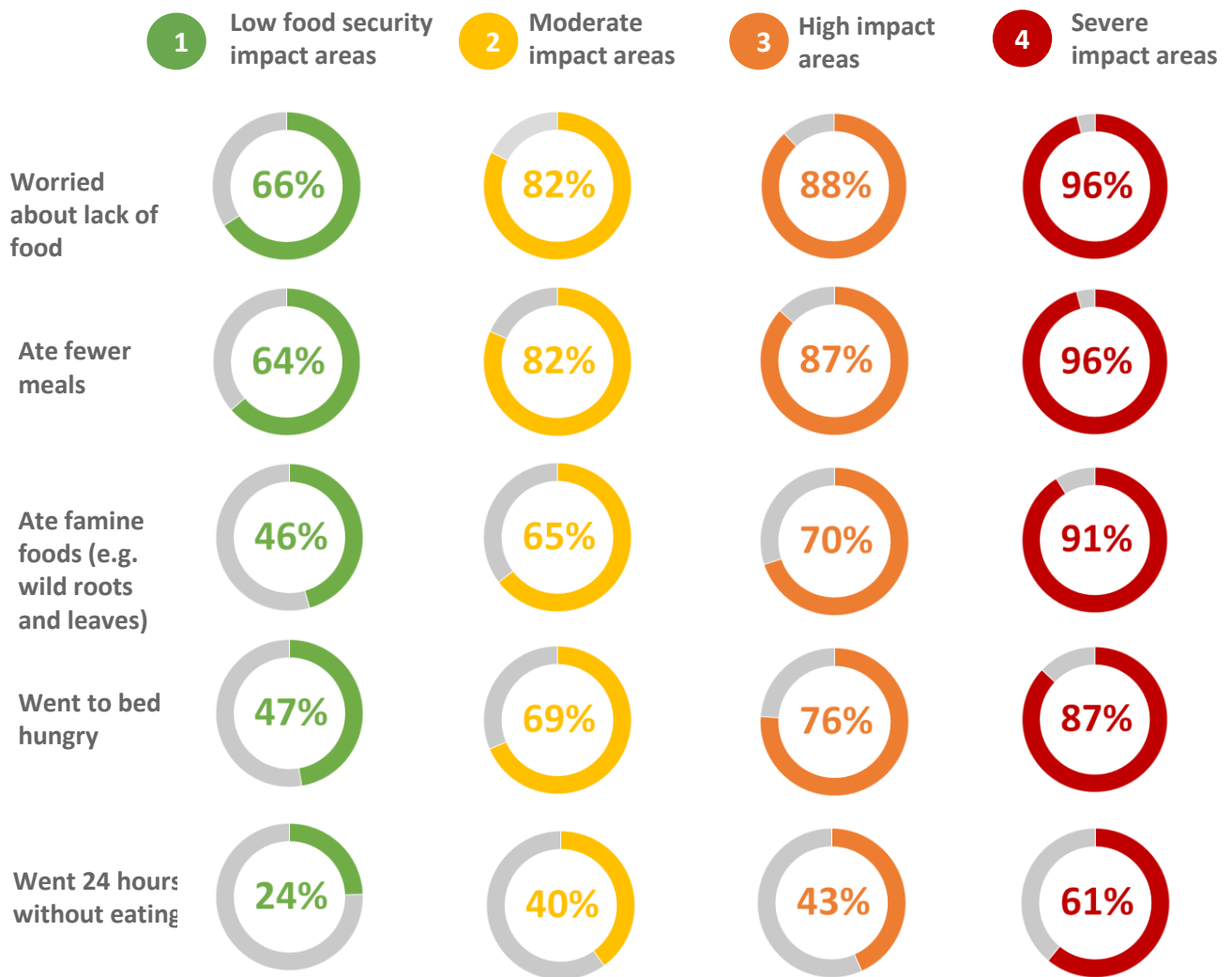


Figure 2 - Household-level food security indicators, disaggregated using the phase classification areas shown on pages 7 and 8.

Less extreme indicators of food insecurity - such as worrying about lack of food in the household and consuming fewer meals - are very common in all four phase classification areas. The share of respondents who report eating fewer meals, for example, ranges from 64 percent in phase 1 areas, to 96 percent in phase 4 areas.

In contrast, more severe indicators of food insecurity - eating famine foods, going 24 hours without eating anything, or going to bed hungry - tend to be much more common in phase 3 and 4 areas than in phase 1 and 2 areas. The share of respondents who had resorted to eating famine foods, in particular, was significantly higher in phase 4 areas (91 percent) than in all other areas (where it ranged from 46 to 70 percent).

It's important to stress, however, that these results are still worrisome even in less impacted areas: even in phase 1 areas, close to half of respondents reporting having gone to bed hungry at least once during the week prior to the survey.

These household-level food security indicators confirm the phase classification results (shown on p. 8), as respondents living in phase 3 and 4 generally have a much worse food security experience at the household level than those living in LLGs classified in phase 2 and 1.

No significant differences in food security outcomes was found between male and female-headed households.

Community perceptions of food security

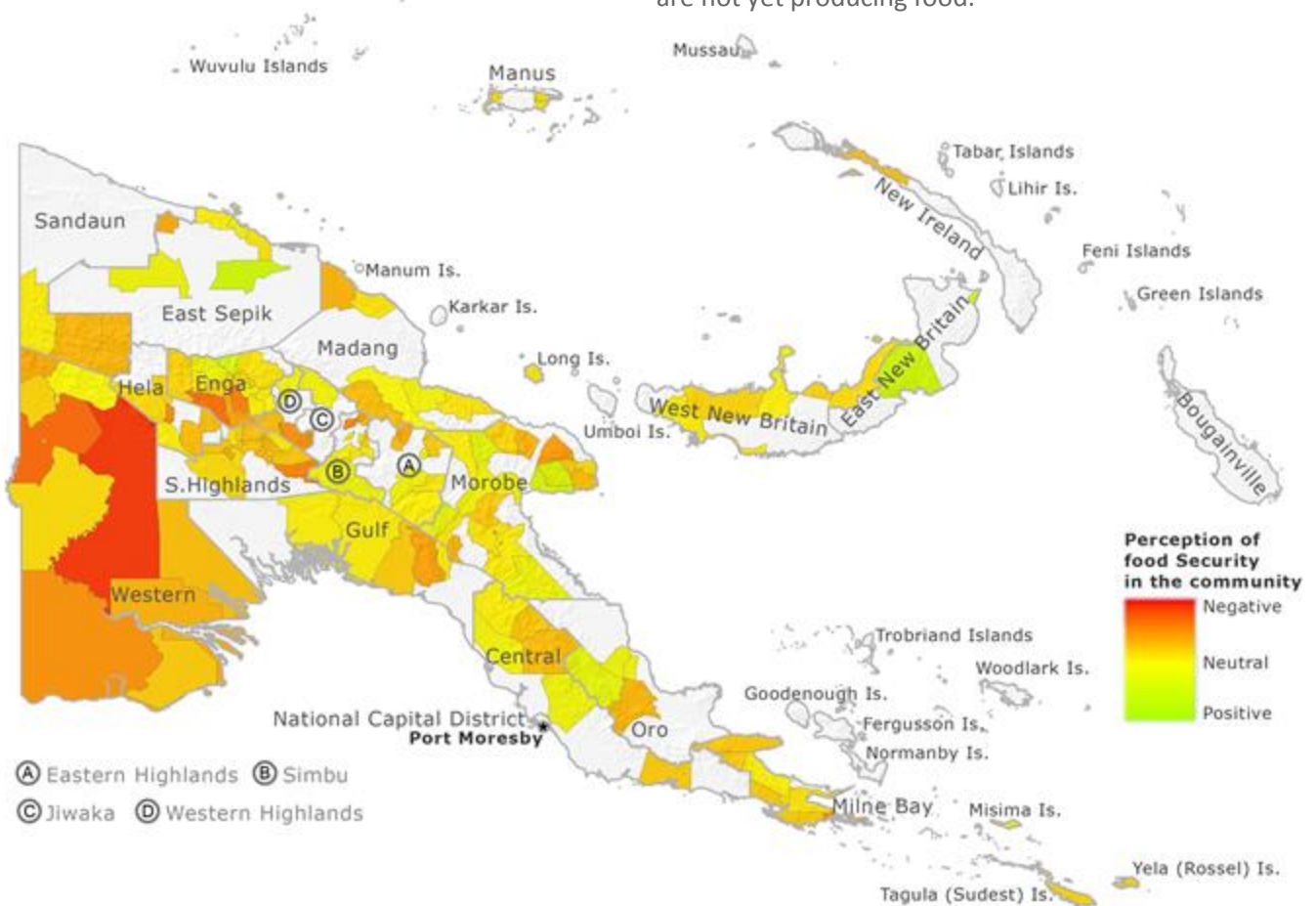
Households were also asked an open-ended question on the general food situation in their village: *“Would you like to tell us more about the food situation in your community?”*

Responses to this question were analyzed through computer algorithm scores that measure their polarity, i.e. how positive/negative a statement is on a scale of -1.0 (very negative) to +1.0 (very positive). The strongest negative food security sentiment was found in Western province., while respondents in East Sepik and East New Britain provinces expressed more positive perceptions.



Figure 3 - Word cloud of the words most frequently used by respondents when asked about the general food situation in their community.

The most common themes mentioned by respondents when answering this question include the “water” situation (mentioned by 26 percent of respondents) and “shortages” of food (mentioned by 22 percent). Moreover, many respondents emphasized that, despite some recent rainfall, the food security situation is not improving, as gardens are not yet producing food.



Map 7 - Respondents' perception of the food security situation in their community, by LLG. Red and orange indicate more negative perceptions, while yellow and green indicate more positive ones.

MARKETS AND PRICES

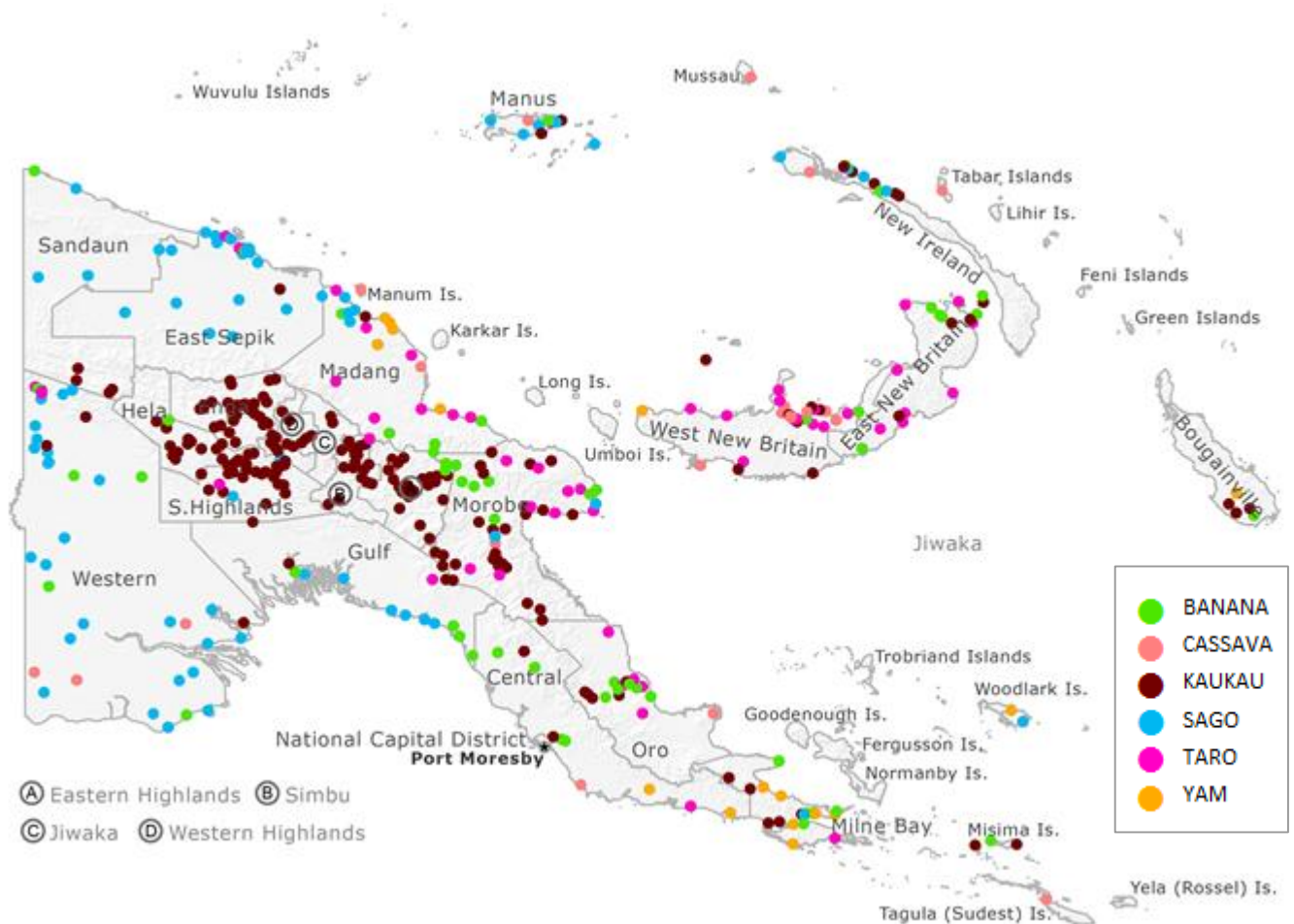
While much of the rural population in PNG traditionally relies on home production for its main food needs, markets still play an important role - especially in areas where home production has been severely reduced due to the drought. Significant decreases in food availability or increases in prices in local markets therefore pose a serious threat to household food access. In times of need, rice bought in markets and local shops is the fall-back staple food for households.

Kau kau (sweet potato) is the main staple crop in the highlands. Sago dominates in lowland areas in the western half of the country (Gulf, Western, Sandaun, and parts of East Sepik), while a mixture of banana, taro and yam dominate in the eastern half - including islands (see map 8). The most food insecure areas rely primarily on kau kau and sago.

Households in almost all LLGs reported that their main staple was either not available at all in their nearest local markets, or was much scarcer than normal.



Map 9 - LLGs where households report that their main staple crop is either not available at all or very scarce, in the local market.



Map 8 - Primary staple crop, by LLG.

Prices for all staples have increased dramatically, relative to six months before the drought. Kaukau has seen the sharpest increase, having almost tripled in price. All other staples have approximately doubled.

| Local staple | Average price increase | Increase factor |
|-----------------------|------------------------|------------------|
| Kaukau (sweet potato) | 257% | Almost triple |
| Cassava | 214% | More than double |
| Yam | 207% | More than double |
| Taro | 205% | More than double |
| Banana | 178% | Almost double |
| Sago | 162% | Almost double |

Table 2 - Average price increase of local staples

Rice (which is almost all imported) plays a critical role in food security in PNG. In normal years, rice is a key staple mostly for urban households, but rural households depend on it in bad years, when home-grown crops have failed. While rice prices have increased less than those of locally produced staples, they have still risen sharply since before the drought.



Figure 4 - Average increase in the price of rice on local markets

The price increases reported in the household phone survey have been corroborated by price data from the National Statistical Office.

LIVELIHOOD IMPACTS

The dominant livelihood is cultivation of garden crops (46 percent of respondents), followed by cash crops (13 percent).

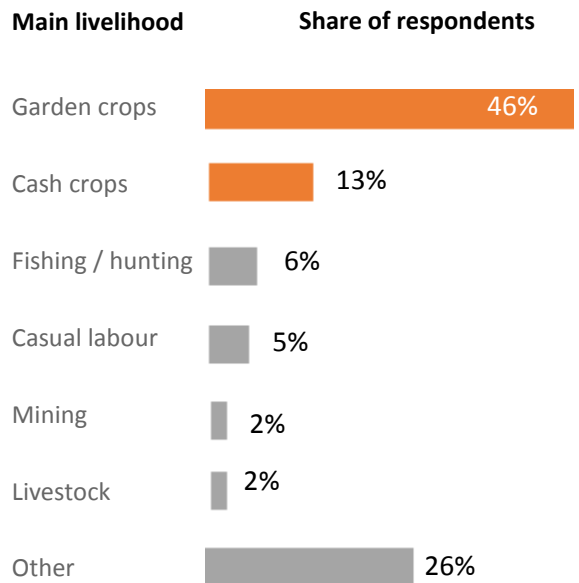
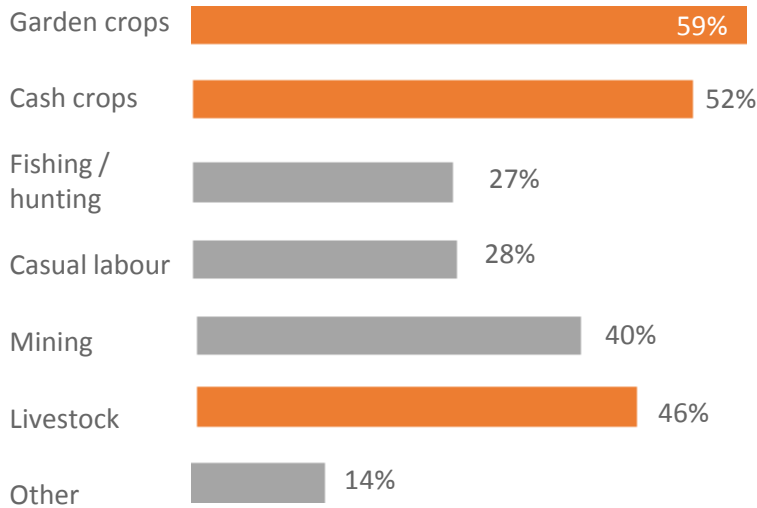


Figure 5 - Most commonly reported livelihoods

While all livelihoods have been significantly affected by the drought, garden crops and cash crops have been hit the hardest: 59 and 52 percent of households whose main source of income are garden crops and cash crops, respectively, reported that income from these activities had been highly impacted by the drought, i.e. had reduced by over 30 percent (see Figure 6 on the next page).

Livelihood Share of respondents reporting income from this livelihood has reduced by over 30% due to El Nino



Food security and survival, particularly in remote areas, is based on phased garden production. Subsistence-farming households maintain a number of gardens and - at any given time - will have one or two gardens in preparation, in fallow, at the growing stage, or being harvested.

This delicate system of food production has been significantly disturbed throughout the country by the drought and frost. It will take at least 6 to 12 months to re-establish garden production, depending on the severity of climate impacts, the type of crop, and the altitude in each area.

Figure 6 - Drought impact on income earnings, by type of livelihood.



Map 10 - LLGs where households report that most or all gardens are still not producing any crops.

HEALTH IMPACTS

Almost half of all interviewed households reported that one or more of their children was currently sick. Of these households, close to two thirds (60 percent) had a child suffering from diarrhoea, dysentery, vomiting or stomach problems. Skin problems, dengue, malaria, or coughing are also a big concern, with close to 20 percent of households reporting one of their children suffered from one of these.



Percentage of households with a sick child.

Of the households with a sick child, percentage which have a child suffering from:

- 60%** Diarrhoea, dysentery, vomiting or stomach problems
- 25%** Coughing/TB/Respiratory problems
- 24%** Malaria
- 19%** Skin problems
- 7%** Fainting and dizziness

Figure 7 - Prevalence of child illnesses



Map 11 - LLGs where extreme or severe shortage of drinking water were reported.

ACCESS TO WATER

While it is difficult to attribute the high prevalence of child sickness directly to the current drought, it is clear that water stress - both lack of drinking water and contamination of water sources - has made the situation significantly worse.

Drying up of water sources also had a direct negative impacts on livelihoods - particularly for households and companies engaged in sago production, which requires a lot of fresh water during processing. In Western province, where sago is the main staple, processing came to a halt at the height of the drought, in November and December.

Map 11 shows the LLGs where households reported extreme or severe shortages of water.

“Water is a major problem because we are now drinking from moist creek causing diarrhea to so many children.”

Male respondent from Middle-Fly, Nomad Rural LLG.

ASSISTANCE PROVIDED

Less than half (43 percent) of households reported that they had received some form of assistance in the past 3 months, in response to the drought. Of those who had received assistance, the vast majority of respondents (81 percent) said it had been provided by the government. The remaining assistance was provided by private companies, hospitals, aid organisations, family members and employers.

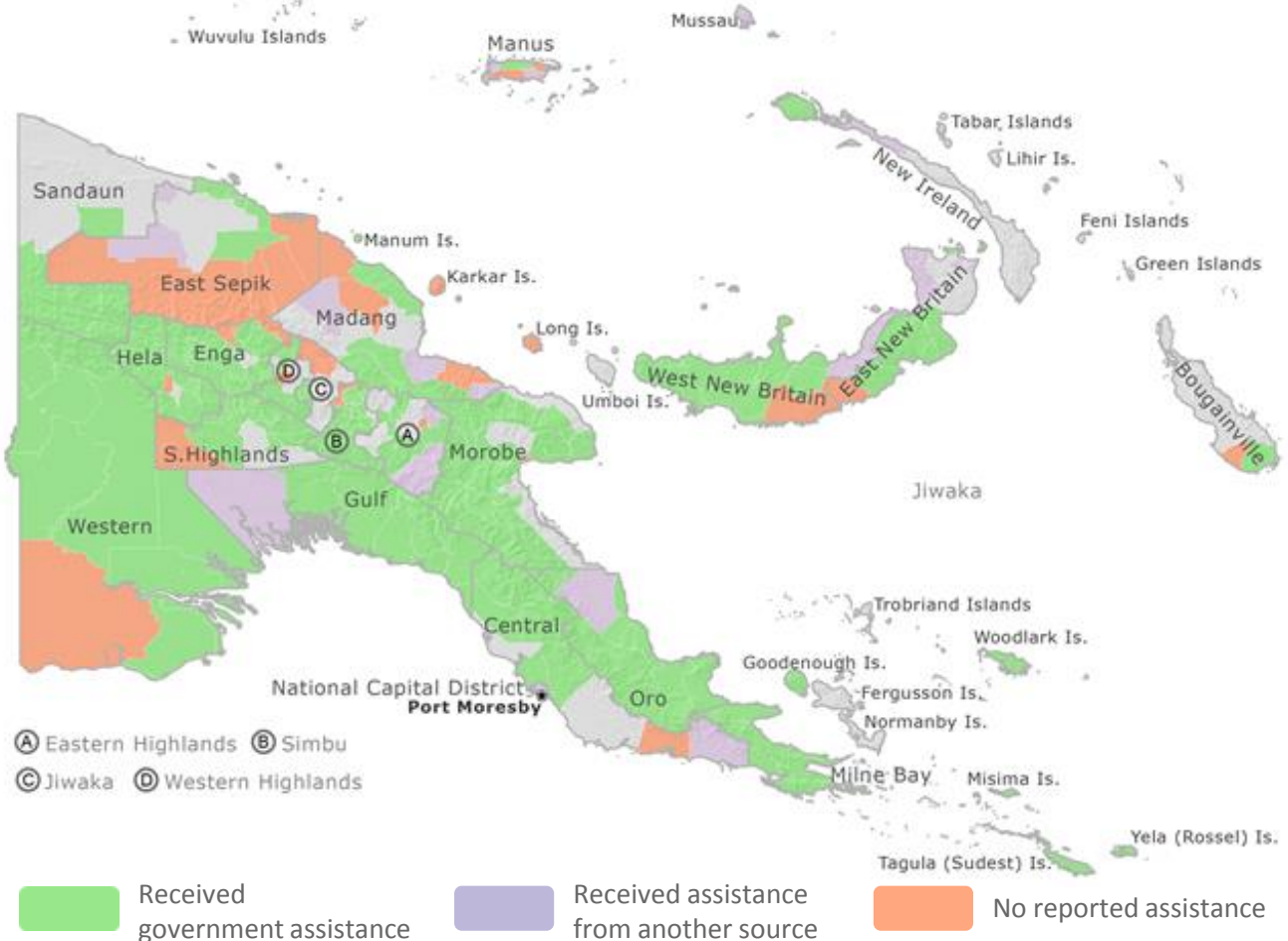
It is important to note, however, that these figures do not show the quantity or nature of the assistance received: they merely indicate whether or not any assistance was received - regardless of how much or how little, or of whether it was food, water, medicine, seeds, or anything else. Thus, a household having received a one-off donation of 1 kg of rice (for example) would be counted as having received assistance - even though this donation would have had almost no effect on that household's food security situation.

These results are therefore more of an indication of which areas have been prioritized for assistance so far, rather than an indication of whether needs have been met.

Considering the levels of food insecurity found in this survey, there is clearly a need for assistance on a much larger scale. At the same time, it is critical to target this assistance in a more systematic and data-informed way, to reach those who are most in need.

“Food supplied was not enough for us, we still face hunger. We need more food assistance.”

Male respondent from Western Highlands, Tambul-Nebilyer LLG



Map 12 - LLGs in which households reported that some type of assistance had been provided in their community the past 3 months.

ANNEX 1

Mobile questionnaire

Sample script for mVAM phone surveys

Questionnaire Information

| | |
|------------------|---------------------------------|
| Operator | |
| Respondent ID | |
| Site ID | PG(four numbers) example PG6601 |
| Date of the call | (dd/mm/yy) |

Introduction:

OPERATOR: Hello, my name is [.....] [name enumerator]. I am calling on behalf of the National Disaster Centre. NDC is conducting a phone surveys to monitor the food security situation. I would like to ask you some questions. Your participation in this survey is voluntary. Each survey will take maximum 10 minutes of your time. All your answers will remain confidential. You'll receive phone credit of 2 kina after completing the survey.

OPERATOR: Are you interested in participating in this survey?

NO → Can I call you at another time? YES NO → End of the survey

YES → Continue the survey

Question 1

OPERATOR: The sex of respondent a man or a woman? [Report man or woman]

Question 2

OPERATOR: Is the head of your household a man or a woman? [Report man or woman]

Question 3

OPERATOR: What is your age? [Report year] If the age of the respondent is under 16, end survey

Section 1: Geographic info

Question 1

OPERATOR: In which province are you currently living in? [Report the name of the Province]

Question 2

OPERATOR: In which District are you currently living in? [Report the name of the District]

Question 3

OPERATOR: In which LLG are you currently living in? [Report the name of the LLG]

Section 2: Community food security section

OPERATOR: I would like to ask you some questions about the food situation in your village.

Question 1

OPERATOR: What is the current food supply situation in your village?

Question 2

OPERATOR: What is the current supply of drinking water in your village?

SUFFICIENT SOME SHORTAGE EXTREME SHORTAGE NO WATER AVAILABLE

Question 3

OPERATOR: How many household in your village are CURRENTLY suffering from hunger?

NONE SOME MANY ALL

Question 4

OPERATOR: How many households in the village are currently ONLY consuming famine foods such as foods found in the forest, for example wild yam, wild berries, banana corm or green pawpaw.

NONE SOME MANY ALL

Question 5

OPERATOR: How many gardens in the village currently fail to produce any crops?

NONE SOME MANY ALL

Question 6

OPERATOR: What is the MAIN FOOD ITEM in your area?

KAUKAU SAGO BANANA CASSAVA TARO YAM

Question 7

OPERATOR: What is the supply of [MAIN STAPLE] in your nearest market/shop?

NORMAL LESS MUCH LESS NONE O N/A

Question 8

OPERATOR: Currently, how much does 1 heap of [MAIN STAPLE] cost? [Report with the amount you pay for 1 heap in PGK. If respondent does not know, enter A; if item is not present in the market, enter B]

Question 9

OPERATOR: How much did 1 heap of [MAIN STAPLE] cost about 6 months ago before the drought? [Report with the amount you used to pay for 1 heap in PGK. If respondent does not know, enter A; if item normally not present in the market, enter B]

Question 10

OPERATOR: Currently, how much does 1 kg of rice cost? [Report with the amount you pay for 1 package of 1 kg of rice in PGK. If respondent does not know, enter A; if item is not present in the market, enter B]

Question 11

OPERATOR: How much does 1 kg of rice cost about 6 months ago before the drought? [Report with the amount you used to pay for 1 kilo package in PGK. If respondent does not know, enter A; if item normally not present in the market, enter B]

Question 12

OPERATOR: Did anyone in your village die as a direct consequence of the drought? How many? [Report the number of people]

Section 3: Household Food Security Experience Section

OPERATOR: I would like to ask you some questions about your household food DURING THE PAST 7 DAYS.

Question 1

OPERATOR: DURING THE PAST 7 DAYS, did you at any time worry that there wasn't enough food to eat for your household? YES/NO

Question 2

OPERATOR: Was your household able to eat the kind of food that you normally eat? YES/NO

Question 3

OPERATOR: Did your household eat a more limited variety of food than normal? YES/NO

Question 4

OPERATOR: Did your household eat food at any stage that no one really wanted to eat but there was no other choice? YES/NO

Question 5

OPERATOR: Did your household eat smaller meals than needed because there was not enough food? YES/NO

Question 6

OPERATOR: Did your household eat fewer meals per day than usual because there was not enough food? YES/NO

Question 7

OPERATOR: During the past 7 days, did it happen that your household had no food to eat of any kind? YES/NO

Question 8

OPERATOR: Did anyone in your household go to bed feeling hungry because there was not enough food? YES/NO

Question 9

OPERATOR: Did anyone in the household go a whole day and night without eating because there was not enough food? YES/NO

Question 10

OPERATOR: What is your household's main income activity?

Garden crops

Cash crops

Livestock

Fishing/Hunting

- Mining
- Casual labour
- Other _____

Question 11

OPERATOR: To what extent has the drought/frost impacted **income or food derived from [MAIN INCOME ACTIVITY]**?

- HIGHLY (>30%)
- MODERATELY (10-30%)
- LITTLE (<10%)
- NOT

Question 12

OPERATOR: Are any of your children currently suffering from any sickness?

- YES
- NO
- NO CHILDREN

Question 13

OPERATOR: If, yes what are they suffering from?

- DIARRHOEA / DYSENTRY / VOMITING / STOMACH PROBLEMS
- RASH/SKIN PROBLEM
- MALARIA
- DENGUE
- COUGHING / TB / RESPIRATORY PROBLEMS
- FAINTING AND DISINESS
- OTHER _____

Section 4: Aid Assistance Section

Question 1:

OPERATOR: In the past 3 months, have you received any food assistance because of the drought/frost situation? YES/NO

Question 2:

OPERATOR: If yes, from whom did you receive the assistance? (Multiple answers possible)

- Wantok
- Churches
- NGO
- Government
- Other _____
- I don't remember

Open Question:

OPERATOR: Would you like to tell us more about the food situation in your village?
 [Free text]

If respondent does not want to respond to the open ended question, go to the conclusion.

Conclusion:

OPERATOR: Thank you very much for your time! You will soon receive a phone credit of 2 kina.

Instructions for Operator: If respondent does not want to respond to the OPEN QUESTION, please end the survey ticking one of the box below Survey completed Survey incomplete

ANNEX 2

Conditional food security phase classification

Three community-level criteria were used to classify each LLG into one of four food security impact phases (low, moderate, high and severe), as shown on page 8.

Criteria 1: The food supply situation, as reported by the majority of respondents in each LLG. For example, If the majority of respondents in a given LLG said the food supply in their community was sufficient, that LLG was classified as phase 1. If the majority said there were some shortages, the LLG was classified as phase 2 or 3, and if the majority said there were extreme shortages, it was classified as phase 3 or 4. .

Criteria 2: The number of households suffering from hunger and consuming famine foods in each LLG. If the majority of respondents reported that

they were not suffering from hunger and were not consuming famine foods, the phase classification obtained through criteria 1 (above) was downgraded by one phase. Conversely, if the majority of respondents reported suffering from hunger and consuming famine foods, that LLG’s phase classification was increased by one phase.

Criteria 3: The number of deaths in the community reported by respondents. If the average number of deaths reported by respondents in a category 3 LLG was 5 people or more, then that LLG was increased to phase 4. Conversely, if the average number of deaths reported in a phase 4 LLG was lower than 5, that LLG was downgraded to phase 3. Number of deaths did not affect the classification of phase 1 and 2 LLGs.

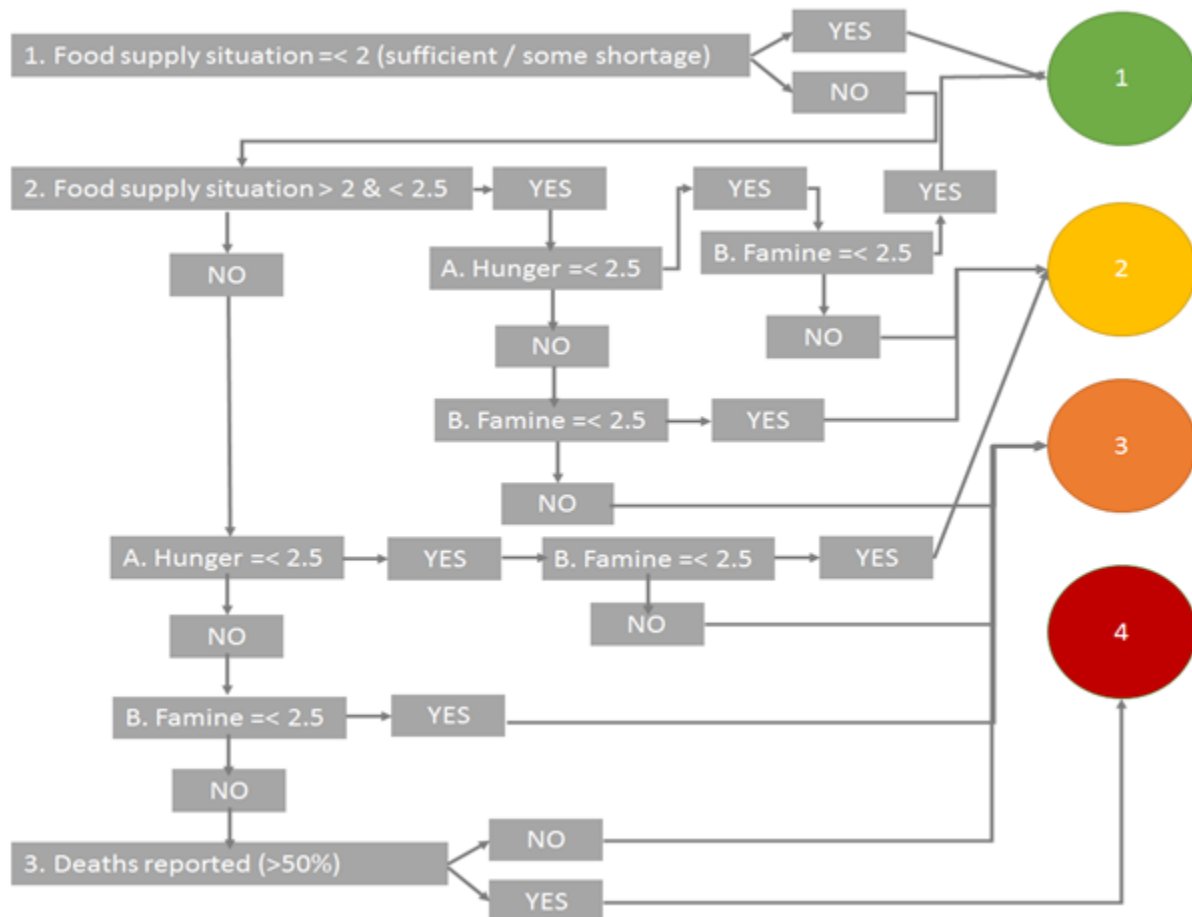


Figure 8 - “Decision-tree” used to create the conditional phase classification.

ANNEX 3

Number of households sampled, by LLG

| No | Province_Name | District_Name | LLG_Name | Total | No | Province_Name | District_Name | LLG_Name | Total |
|----|-------------------|----------------------|----------------------------|-------|-----|-------------------|---------------------|----------------------|-------|
| 1 | Bougainville | South_Bougainville | Buin | 6 | 61 | Eastern_Highlands | Obura-Wonenara | LAMARI_RURAL | 25 |
| 2 | Bougainville | South_Bougainville | Siwai | 7 | 62 | Eastern_Highlands | Obura-Wonenara | YEUJA_RURAL | 15 |
| 3 | Central | Abau | AMAZON_BAY_RURAL | 6 | 63 | Eastern_Highlands | Okapa | EAST_OKAPA_RURAL | 22 |
| 4 | Central | Abau | CLOUDY_BAY_RURAL | 14 | 64 | Eastern_Highlands | Okapa | WEST_OKAPA_RURAL | 7 |
| 5 | Central | Gailala | GUARI_RURAL | 17 | 65 | Eastern_Highlands | Unggai-Bena | Lower_Benna | 22 |
| 6 | Central | Gailala | TAPINI_RURAL | 24 | 66 | Eastern_Highlands | Unggai-Bena | Unggai_Rural | 5 |
| 7 | Central | Gailala | WOITAPE_RURAL | 21 | 67 | Eastern_Highlands | Unggai-Bena | Upper_Bena_Rural | 20 |
| 8 | Central | Kairuku-Hiri | HIRI_RURAL | 5 | 68 | Enga | Kandep | KANDEP_RURAL | 24 |
| 9 | Central | Kairuku-Hiri | KOIARI_RURAL | 19 | 69 | Enga | Kandep | WAGE_RURAL | 25 |
| 10 | Central | Kairuku-Hiri | MEKEO_KUNI_RURAL | 14 | 70 | Enga | Kompiam-Ambum | AMBUM_RURAL | 24 |
| 11 | Chimbu | Chuave | CHUAVE_RURAL | 29 | 71 | Enga | Kompiam-Ambum | KOMPIAM_RURAL | 36 |
| 12 | Chimbu | Chuave | ELIMBARI_RURAL | 14 | 72 | Enga | Kompiam-Ambum | WAPI-YENGIS_RURAL | 8 |
| 13 | Chimbu | Gumine | BOMAI-GUMAI_RURAL | 6 | 73 | Enga | Lagai-p-Porgera | LAGAIIP_RURAL | 28 |
| 14 | Chimbu | Gumine | GUMINE_RURAL | 33 | 74 | Enga | Lagai-p-Porgera | MAIP_MURITAKA_RURAL | 19 |
| 15 | Chimbu | Gumine | MT_DIGINE_RURAL | 19 | 75 | Enga | Lagai-p-Porgera | PAIELA-HEWA_RURAL | 13 |
| 16 | Chimbu | Karimui-Nomane | KARIMUI_RURAL | 22 | 76 | Enga | Lagai-p-Porgera | PORGERA_RURAL | 33 |
| 17 | Chimbu | Karimui-Nomane | NOMANE_RURAL | 8 | 77 | Enga | Lagai-p-Porgera | Pilikambi_Rural | 15 |
| 18 | Chimbu | Karimui-Nomane | SALT_RURAL | 20 | 78 | Enga | Wabag | WABAG_RURAL | 68 |
| 19 | Chimbu | Kerowagi | GENA-WAUGLA_RURAL | 12 | 79 | Enga | Wabag | MARAMUNI_RURAL | 17 |
| 20 | Chimbu | Kerowagi | KEROWAGI_RURAL | 7 | 80 | Enga | Wapenamanda | WAPENAMANDA_RURAL | 29 |
| 21 | Chimbu | Kerowagi | Upper-Lower_Koronigi | 4 | 81 | Enga | Wapenamanda | TSAK_RURAL | 17 |
| 22 | Chimbu | Kundiawa-Gembogl | KUNDIAWA_URBAN | 23 | 82 | Gulf | Kerema | CENTRAL_KEREMA_RURAL | 10 |
| 23 | Chimbu | Kundiawa-Gembogl | MITNANDE_RURAL | 22 | 83 | Gulf | Kerema | EAST_KEREMA_RURAL | 9 |
| 24 | Chimbu | Kundiawa-Gembogl | NIGUKANDE_RURAL | 5 | 84 | Gulf | Kerema | KAINIBA_RURAL | 16 |
| 25 | Chimbu | Kundiawa-Gembogl | WAIYE_RURAL | 10 | 85 | Gulf | Kerema | KEREMA_URBAN | 10 |
| 26 | Chimbu | Sina_Sina-Yonggomugl | TABARE_RURAL | 16 | 86 | Gulf | Kerema | KOTIDANGA_RURAL | 21 |
| 27 | Chimbu | Sina_Sina-Yonggomugl | SUAI_RURAL | 9 | 87 | Gulf | Kerema | LAKEMAMU-TAURI_RURAL | 8 |
| 28 | Chimbu | Sina_Sina-Yonggomugl | YONGGOMUGL_RURAL | 10 | 88 | Gulf | Kikori | BAIMURU_RURAL | 12 |
| 29 | East_New_Britain | Gazelle | LASSUL_BAINING_RURAL | 11 | 89 | Gulf | Kikori | EAST_KIKORI_RURAL | 11 |
| 30 | East_New_Britain | Gazelle | LIVUAN-REIMBER_RURAL | 6 | 90 | Gulf | Kikori | IHU_RURAL | 15 |
| 31 | East_New_Britain | Gazelle | VUNADIDIR-TOMA_RURAL | 7 | 91 | Gulf | Kikori | WEST_KIKORI_RURAL | 7 |
| 32 | East_New_Britain | Kokopo | BITAPAKA_RURAL | 15 | 92 | Hela | Komo-Magarima | HULIA_RURAL | 16 |
| 33 | East_New_Britain | Kokopo | DUKE_OF_YORK_RURAL | 10 | 93 | Hela | Komo-Magarima | KOMO_RURAL | 14 |
| 34 | East_New_Britain | Kokopo | RALLIANA_RURAL | 5 | 94 | Hela | Komo-Magarima | Lower_Wage | 10 |
| 35 | East_New_Britain | Pomio | CENTRAL-ISLAND_POMIO_RURAL | 22 | 95 | Hela | Komo-Magarima | Upper_Wage | 34 |
| 36 | East_New_Britain | Pomio | EAST_POMIO_RURAL | 5 | 96 | Hela | Korobe-Kopiago | AWI-PORI_RURAL | 25 |
| 37 | East_New_Britain | Pomio | MELKOI_RURAL | 7 | 97 | Hela | Korobe-Kopiago | LAKE_KOPIAGO_RURAL | 6 |
| 38 | East_New_Britain | Pomio | WEST_POMIO-MAMUSI_RURAL | 11 | 98 | Hela | Korobe-Kopiago | NORTH_KOROBA_RURAL | 18 |
| 39 | East_New_Britain | Rabaul | BALANATAMAN_RURAL | 6 | 99 | Hela | Korobe-Kopiago | SOUTH_KOROBA_RURAL | 11 |
| 40 | East_New_Britain | Rabaul | RABAU_URBAN | 21 | 100 | Hela | Tari-Pari | TAGALI_RURAL | 6 |
| 41 | East_Sepik | Ambunti-Dreikikir | AMBUNTI_RURAL | 14 | 101 | Hela | Tari-Pari | TARI_URBAN | 10 |
| 42 | East_Sepik | Ambunti-Dreikikir | DREIKIKIER_RURAL | 13 | 102 | Hela | Tari-Pari | TEBI_RURAL | 10 |
| 43 | East_Sepik | Ambunti-Dreikikir | TUNAP-HUSTEIN_RURAL | 7 | 103 | Iwaka | Anglimp-South_Waghi | ANGUMP_RURAL | 7 |
| 44 | East_Sepik | Angoram | ANGORAM-MIDDLE_SEPIK | 11 | 104 | Iwaka | Jimi | JIMI_RURAL | 14 |
| 45 | East_Sepik | Angoram | KARAWARI_RURAL | 10 | 105 | Madang | Bogia | ALMAMI_RURAL | 21 |
| 46 | East_Sepik | Angoram | KERAM_RURAL | 6 | 106 | Madang | Bogia | IABU_RURAL | 6 |
| 47 | East_Sepik | Angoram | MARIENBERG_RURAL | 4 | 107 | Madang | Bogia | YAWAR_RURAL | 15 |
| 48 | East_Sepik | Angoram | YUAT_RURAL | 5 | 108 | Madang | Middle_Ramu | ARABAKA_RURAL | 8 |
| 49 | East_Sepik | Wewak | BOIKIN-DAGUA_RURAL | 25 | 109 | Madang | Middle_Ramu | JOSEPHSTAAL_RURAL | 4 |
| 50 | East_Sepik | Wewak | TURUBU_RURAL | 16 | 110 | Madang | Rai_Coast | ASTROLABE_BAY_RURAL | 23 |
| 51 | East_Sepik | Wewak | WEWAK_ISLANDS | 21 | 111 | Madang | Rai_Coast | NAHO_RAWA_RURAL | 8 |
| 52 | East_Sepik | Wewak | WEWAK_RURAL | 21 | 112 | Madang | Rai_Coast | RAI_COAST_RURAL | 18 |
| 53 | East_Sepik | Wewak | WEWAK_URBAN | 24 | 113 | Madang | Rai_Coast | Nayuda_Rural | 7 |
| 54 | Eastern_Highlands | Goroka | Mimanala_Rural | 4 | 114 | Madang | Sumkar | KARKAR_RURAL | 4 |
| 55 | Eastern_Highlands | Kainantu | Agarabi_Rural | 15 | 115 | Madang | Sumkar | SUMGILBAR_RURAL | 8 |
| 56 | Eastern_Highlands | Kainantu | Gadsup-Tairora_Rural | 8 | 116 | Madang | Usino-Bundi | BUNDI_RURAL | 15 |
| 57 | Eastern_Highlands | Kainantu | Kamano_No1_Rural | 14 | 117 | Madang | Usino-Bundi | USINO_RURAL | 13 |
| 58 | Eastern_Highlands | Kainantu | Kamano_No2_Rural | 5 | 118 | Manus | Manus | AUA_WUVULU | 7 |
| 59 | Eastern_Highlands | Kainantu | KAINANTU_URBAN | 32 | 119 | Manus | Manus | NIGOHERM | 6 |
| 60 | Eastern_Highlands | Lufa | Yagarla_Rural | 9 | 120 | Manus | Manus | BISIKANI-SOPARIBEU | 12 |

ANNEX 3

Number of households sampled by LLG

| No | Province_Name | District_Name | LLG_Name | Total | No | Province_Name | District_Name | LLG_Name | Total |
|-----|---------------------------|---------------------------|---------------------------|-------|-----|--------------------|---------------------|--------------------------------|-------|
| 121 | Manus | Manus | POMUTU-KURTI-ANDRA | 10 | 177 | Oro | Ijivitari | Cape Nelson Rural (Tufi)_Rural | 4 |
| 122 | Manus | Manus | LELEMADIH_BUPICHUPE | 24 | 178 | Oro | Sohe | KOKODA_RURAL | 17 |
| 123 | Manus | Manus | LORENGAU_URBAN | 29 | 179 | Oro | Sohe | HIGATURU_RURAL | 13 |
| 124 | Manus | Manus | LDS_NEGROS | 15 | 180 | Oro | Sohe | TAMATA_RURAL | 7 |
| 125 | Manus | Manus | NAU_SOPAT_PENABU | 18 | 181 | Oro | Sohe | KIRA_RURAL | 4 |
| 126 | Manus | Manus | TETEDU | 6 | 182 | Sandaun | Telefomin | NAMEA_RURAL | 5 |
| 127 | Manus | Manus | POBUMA | 9 | 183 | Sandaun | Telefomin | OKSAPMIN_RURAL | 23 |
| 128 | Manus | Manus | BALOPA | 6 | 184 | Sandaun | Telefomin | TELEFOMIN_RURAL | 38 |
| 129 | Manus | Manus | RAPATONA | 4 | 185 | Sandaun | Telefomin | YAPSIE_RURAL | 11 |
| 130 | Milne_Bay | Alotau | MAKAMAKA_RURAL | 17 | 186 | Southern_Highlands | Ialibu-Pangia | EAST_PANGIA_RURAL | 22 |
| 131 | Milne_Bay | Alotau | DAGA_RURAL | 20 | 187 | Southern_Highlands | Ialibu-Pangia | IAIBU_URBAN | 62 |
| 132 | Milne_Bay | Alotau | WERAU_RURAL | 19 | 188 | Southern_Highlands | Ialibu-Pangia | KEWABI_RURAL | 35 |
| 133 | Milne_Bay | Alotau | MARAMATANA_RURAL | 6 | 189 | Southern_Highlands | Ialibu-Pangia | WIRU_RURAL | 13 |
| 134 | Milne_Bay | Alotau | HUHU_RURAL | 24 | 190 | Southern_Highlands | Imbonggu | IAIBU_BASIN_RURAL | 18 |
| 135 | Milne_Bay | Alotau | SUAU_RURAL | 14 | 191 | Southern_Highlands | Imbonggu | IMBONGGU_RURAL | 40 |
| 136 | Milne_Bay | Alotau | ALOTAU_URBAN | 25 | 192 | Southern_Highlands | Imbonggu | LOWER_MENDI_RURAL | 25 |
| 137 | Milne_Bay | Kiriwina-Goodenough | GOODENOUGH_ISLAND_RURAL | 8 | 193 | Southern_Highlands | Kagua-Erave | KUARE_RURAL | 7 |
| 138 | Milne_Bay | Samarai-Murua | BWANABWANA_RURAL | 19 | 194 | Southern_Highlands | Mendi-Munihu | KARINTS_RURAL | 26 |
| 139 | Milne_Bay | Samarai-Murua | LOUISIADE_RURAL | 19 | 195 | Southern_Highlands | Mendi-Munihu | LAI_VALLEY_RURAL | 35 |
| 140 | Milne_Bay | Samarai-Murua | YALEYEMBA_RURAL | 17 | 196 | Southern_Highlands | Mendi-Munihu | MENDI_URBAN | 52 |
| 141 | Milne_Bay | Samarai-Murua | MURUA_RURAL | 9 | 197 | Southern_Highlands | Mendi-Munihu | UPPER_MENDI_RURAL | 60 |
| 142 | Morobe | Bulolo | MUMENG_RURAL | 23 | 198 | Southern_Highlands | Nipa-Kutubu | LAKE_KUTUBU_RURAL | 17 |
| 143 | Morobe | Bulolo | WARIA_RURAL | 31 | 199 | Southern_Highlands | Nipa-Kutubu | MT_BOSAWI_RURAL | 4 |
| 144 | Morobe | Bulolo | WATUT_RURAL | 17 | 200 | Southern_Highlands | Nipa-Kutubu | NEMBI_PLATEAU_RURAL | 19 |
| 145 | Morobe | Bulolo | WAU-BULLOD_URBAN | 32 | 201 | Southern_Highlands | Nipa-Kutubu | NIPA_RURAL | 21 |
| 146 | Morobe | Bulolo | WAU_RURAL | 28 | 202 | Southern_Highlands | Nipa-Kutubu | POROMA_RURAL | 36 |
| 147 | Morobe | Bulolo | Buang_Rural | 5 | 203 | West_New_Britain | Kandrian-Gloucester | GASMATA_RURAL | 4 |
| 148 | Morobe | Flinschhafen | HUBE_RURAL | 18 | 204 | West_New_Britain | Kandrian-Gloucester | GLOUCESTER_RURAL | 8 |
| 149 | Morobe | Flinschhafen | KOTTE_RURAL | 13 | 205 | West_New_Britain | Kandrian-Gloucester | KANDRIAN_COASTAL_RURAL | 14 |
| 150 | Morobe | Flinschhafen | YABIM_MAPE_RURAL | 22 | 206 | West_New_Britain | Kandrian-Gloucester | KANDRIAN_INLAND_RURAL | 10 |
| 151 | Morobe | Flinschhafen | Burum_Kwat | 13 | 207 | West_New_Britain | Kandrian-Gloucester | KOVE-KAUAI_RURAL | 18 |
| 152 | Morobe | Flinschhafen | Flinschhafen_Urban | 5 | 208 | West_New_Britain | Talasea | BIALLA_RURAL | 13 |
| 153 | Morobe | Huon | WAMPAR_RURAL | 12 | 209 | West_New_Britain | Talasea | BAU-WITU_RURAL | 8 |
| 154 | Morobe | Kabwum | DEYAMOS_RURAL | 19 | 210 | West_New_Britain | Talasea | HOSKINS_RURAL | 14 |
| 155 | Morobe | Kabwum | Selepeta_Rural | 10 | 211 | West_New_Britain | Talasea | KIMBE_URBAN | 23 |
| 156 | Morobe | Kabwum | YUS_RURAL | 16 | 212 | West_New_Britain | Talasea | MOSA_RURAL | 11 |
| 157 | Morobe | Kabwum | Komba_Rural | 13 | 213 | West_New_Britain | Talasea | TALASEA_RURAL | 18 |
| 158 | Morobe | Lae | AHI_RURAL | 5 | 214 | Western_Highlands | Mul-Baiyer | MUL_RURAL | 5 |
| 159 | Morobe | Lae | LAE_URBAN | 8 | 215 | Western_Highlands | Mul-Baiyer | BAIYER_RURAL | 26 |
| 160 | Morobe | Markham | ONGA-WAFFA_RURAL | 9 | 216 | Western_Highlands | Tambul-Nebilyer | MT_GILUWE_RURAL | 23 |
| 161 | Morobe | Markham | UMI-ATZERA_RURAL | 20 | 217 | Western_Highlands | Tambul-Nebilyer | NEBILYER_RURAL | 41 |
| 162 | Morobe | Markham | WANTOAT-LERON_RURAL | 17 | 218 | Western | Middle-Fly | BAUMO_URBAN | 10 |
| 163 | Morobe | Menyamya | Kapao_Rural | 6 | 219 | Western | Middle-Fly | BAMU_RURAL | 15 |
| 164 | Morobe | Menyamya | KOME_RURAL | 19 | 220 | Western | Middle-Fly | GOGODALA_RURAL | 17 |
| 165 | Morobe | Menyamya | WAPI_RURAL | 15 | 221 | Western | Middle-Fly | LAKE_MURRAY_RURAL | 17 |
| 166 | Morobe | Menyamya | Nanima_Kariba | 27 | 222 | Western | Middle-Fly | NOMAD_RURAL | 19 |
| 167 | Morobe | Nawae | LABUTA_RURAL | 17 | 223 | Western | North-Fly | KIUNGA_RURAL | 20 |
| 168 | National_Capital_District | National_Capital_District | National_Capital_District | 8 | 224 | Western | North-Fly | KIUNGA_URBAN | 28 |
| 169 | New_Ireland | Kavieng | MURAT_RURAL | 9 | 225 | Western | North-Fly | NINGERUM_RURAL | 20 |
| 170 | New_Ireland | Kavieng | LDVONGAI_RURAL | 9 | 226 | Western | North-Fly | OLSOBIP_RURAL | 16 |
| 171 | New_Ireland | Kavieng | TIKANA_RURAL | 31 | 227 | Western | North-Fly | STAR_MOUNTAINS_RURAL | 21 |
| 172 | New_Ireland | Kavieng | KAVIENG_URBAN | 15 | 228 | Western | South-Fly | DARU_URBAN | 18 |
| 173 | Oro | Ijivitari | ORO_BAY_RURAL | 9 | 229 | Western | South-Fly | KIWAI_RURAL | 19 |
| 174 | Oro | Ijivitari | Safia_Rural | 4 | 230 | Western | South-Fly | MOREHEAD_RURAL | 23 |
| 175 | Oro | Ijivitari | AFORE_RURAL | 19 | 231 | Western | South-Fly | ORIOMO-BITURI_RURAL | 19 |
| 176 | Oro | Ijivitari | POPONDETTA_URBAN | 15 | | | | | |