

# **Post-Earthquake Shelter Assessment**

# **Bohol Province, Region VII, Philippines**

# PROVISIONAL INTERIM REPORT 11 November 2013



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# **KEY FINDINGS**

The proportion of totally destroyed shelters and shelters with major damage seems significantly lower than current government estimates. In contrast, the high proportion of partially damaged shelters points to the need for broader based support including in areas which are currently ranked as low priority for intervention.

Amongst households that sustained any type of shelter damage, **masonry structures were by far the most affected**, while huts and timber structures displaying significantly more resilience.

Type of housing and level of damage are strongly related to the recovery intentions of households, especially for those who chose to relocate. Access to land and tenure security are critical concerns for households whose homes were totally destroyed or sustained major damage, and who wish to relocate to areas where they do not own property. The vast majority of households have not begun repairing, rebuilding, or relocation processes. This lag in the process along with few households able to recover with their own resources suggests little capacity for self-recovery.

Designs, materials, and labor are reported as the highest needs in terms of shelter assistance. Particular attention should be given to the specific needs of vulnerable households, such as women-headed households, in terms of shelter assistance.

Another significant need is psycho-social support, which can be inferred by high number of respondents citing fear of aftershocks as the predominant reason for sleeping outside of their homes.

Few affected households whose homes were totally destroyed or sustained major damage have received shelter assistance provided solely by national responders in the form of tarpaulins.

Households with severely damaged or destroyed homes in Sikatuna had not received any shelter assistance while households in Carmen affected by the similar level of shelter damage had. There is need to **ensure affected areas and households are served proportionally by the shelter response.** 

Livelihoods remained largely unaffected by the earthquake, and the overall resilience of livelihoods can be attributed to the predominance of agricultural work as an income source and the relative lack of damage to agricultural lands during the earthquake.

Access to sanitation facilities (toilet) and to water sources remain largely unchanged. Needs in terms of access to water may be understated in this interim report due to both the limited scope of the assessed areas and the local nature of water source issues.

Food, water, and financial support are the top priority needs cited by respondents, despite the limited impact of the earthquake on water sources and taking into account that food, water and cash support comprise the bulk of the assistance delivered thus far to affected households.

# BACKGROUND

At 08:12 on 15th October 2013 an earthquake with a magnitude of 7.2 occurred in Region VII of the Philippines, the epicentre of which was located in the eastern part of Bohol Province. As of 2<sup>nd</sup> October 2013 a total of 3,189 aftershocks had been recorded. According to governmental data a total of 3,158,009 individuals have been affected by the earthquake.

Assessments conducted by the Department for Social Welfare and Development (DSWD) and the National Disaster Risk Reduction Management Council (NDRRMC) have recorded, as of 2<sup>nd</sup> November 2013, a total of 222 fatalities and 978 injuries, with an additional 8 individuals still missing.

Damage to housing and critical infrastructure has been evaluated by the DSWD and NDRRMC, with a total of 54,646 houses, 41 bridges, and 18 roads identified as having sustained damage. In addition, seaports, airports, churches, government buildings, schools, and hospitals in the affected area sustained damage during the earthquake. According to NDRRMC reports, a total of 1,426,542,000 PHP (33,098,627 USD) worth of damage has been sustained in the affected area.

As of 2<sup>nd</sup> November, critical infrastructure damaged by the earthquake has been largely repaired with 38 bridges and 16 roads made passable. However, with regards to housing a total of 336,934 individuals out of the affected population are displaced and are currently staying in one of the 125 government-administered evacuation centres or in spontaneous displacement sites in various locations; the majority of which are in the local communities where the displaced originate.

Through a stand-by partnership with the Global Shelter Cluster, REACH was deployed to Bohol on 23<sup>rd</sup> October in order to facilitate a rapid assessment in Bohol, the province most affected by the earthquake according to government data. In order to achieve this, the Global Shelter Cluster deployed an assessment team comprised of 8 team leaders, 31 enumerators, and 6 focus group discussion facilitators.

## **METHODOLOGY**

This interim report presents the initial findings from household-level assessments conducted in Carmen, Sevilla, and Sikatuna municipalities between 29<sup>th</sup> October and 1<sup>st</sup> November 2013. Data collection in the other municipalities affected by the emergency is currently ongoing and a final assessment report, including household level data from 12 municipalities, will be released on 15<sup>th</sup> November 2013.

In order to give a complete picture of the situation on Bohol Province in the aftermath of the 15th October earthquake, the Global Shelter Cluster and REACH utilised a multi-stage cluster sampling methodology, which is briefly outlined below.

### SELECTION OF MUNICIPALITIES FOR ASSESSMENT

Based on governmental data related to poverty, damage categorisation, number of damaged houses, affected population, and number of displaced individuals, REACH assigned municipalities a priority category (high, medium, or low). A total of 12 municipalities, 4 in each category, were randomly selected for assessment.

#### **SELECTION OF BARANGAYS WITHIN MUNICIPALITIES**

A maximum of 20 Barangays were selected at random based on a distribution of population classes. In municipalities with fewer than 20 Barangays, all Barangays were assessed. Representative household samples for each municipality were distributed with a higher number of households targeted for assessment in Barangays with larger populations. See Annex 1 for a breakdown of households targeted per Barangay.

## SELECTION OF HOUSEHOLDS FOR ASSESSMENT

In each of the targeted Barangays, enumerators randomly selected households for assessment. Due to approximately 30% of households not being present at the time of assessment, field teams were instructed to oversample from each Barangay to ensure that a representative sample size of present households was reached at the municipal level.

Table 1 – Sampled locations			
Priority Category	Municipality	Target Sample size	
	Maribojoc	352	
Lliah	Tubigon	370	
пуп	Carmen*	369	
	Catigbian	355	
	Sevilla*	325	
Madium	Duero	347	
weatum	Guindulman	363	
	Candijay	361	
	Baclayon	349	
Low	Loay	344	
LOW	Sikatuna*	296	
	Batuan	333	

\* Municipalities represented in the interim report

Table 1 provide a list of the 12 municipalities selected for assessment, the assigned priority category, and representative sample size.

#### FOCUS GROUP DISCUSSIONS & KEY INFORMANT INTERVIEWS

In order to add depth and contextual knowledge to household data, team leaders conducted key informant interviews with the Barangay Captains or other prominent members in each Barangay targeted for assessment. Furthermore, in order to capture those households still resident in evacuation centres (both formal and informal) at the time of assessment, a team of facilitators conducted a series of focus group discussions.

#### **REPRESENTATIVENESS AND LIMITATIONS OF THE DATA**

It is important to note that the methodology used in this assessment is representative at the municipal level with a 95% confidence interval and 5% margin of error. Regarding, other categories of households, including but not limited to housing type, damage level, and vulnerability, the data presented is not representative and conclusions should be drawn carefully.

While both the interim data and final data are of a sample size to be representative at the province level, the methodology designed for the assessment allows the extrapolation of findings based on municipal categories. Information found for a given municipal category is indicative of the situation in municipalities that share that are also members of that category.

For this interim report, municipal categories are the high, medium, and low priority rankings mentioned above, each of which is represented by a single municipality (Table 1). Additional categorization will be part of a full analysis presented in the final assessment report.

# **ASSESSMENT RESULTS**

#### **DEMOGRAPHIC OVERVIEW**

A total of 1,046 households were surveyed in Sevilla, Carmen, and Sikatuna municipalities. Additionally, through the random household selection 406 shelters were assessed where no household members were present at the time of assessment.

An average household size of 5 individuals, with a roughly equal gender split, was reported. Among the surveyed population, 10 to 11% of the respondents identified themselves as women single-head of household. The 19-39 years age-group is the largest population cohort, making up 28% of the total population. The dependency ratio across the three municipalities is roughly the same. approximately 50%, and well below the national average of 62 2%<sup>1</sup>





13% of the population of the targeted municipalities were reported to belong to vulnerable groups, with the highest proportion in Sikatuna (24%); the majority of which were identified as having chronic illnesses.

<sup>&</sup>lt;sup>1</sup>http://data.worldbank.org/indicator/SP.POP.DPND/countries/JP-PT-DE-US-BR-CN-PH?display=graph, retrieved 03/11/13



#### Figure 2 – Categories of vulnerable groups per municipality

Across the municipalities targeted for assessment, 1% of the population was reported to have been seriously injured during the earthquake. The municipality with the highest proportion of the population reported as having been seriously injured, 5%, was Sikatuna.

## SHELTER TYPES AND LEVEL OF DAMAGE

The three municipalities targeted for assessment have relatively similar shelter profiles, with huts or timber based shelters making up the majority, 66% in Carmen, 76% in Sevilla, and 77% in Sikatuna. While on the whole similar, Carmen has the highest proportion of concrete / masonry shelters, 34% of the total housing stock.



Overall, the predominant level of damage identified by enumerators (see Annex 2) is 'partial damage' (60%). Only a very small proportion of the housing stock (2%) was identified as being totally destroyed. Whilst relatively similar levels of damage were identified across the three municipalities, the highest proportion of shelters with major damage or totally destroyed were found in Carmen (21% of the total housing stock).

Figure 4 – Level of shelter damage per municipality



The higher level of major / total damaged identified in Carmen can be explained by the prevalence of masonry structures which were more severely affected by the earthquake than huts or timber-based structures. While 60% of assessed of huts were left undamaged, 23% of masonry structure sustained major or total damage.

The difference in levels of damage per shelter types can be explained by the inability for rigid masonry structures to absorb the increased lateral and vertical forces placed on them during earthquakes. This is confirmed by household level data indicating that 75% of shelter damage result from shaking during the earthquake.

Additionally the recent earthquake occurred as a result of a newly discovered fault line, thus housing in Bohol province was on the whole not built with earthquake resilience in mind.

#### Figure 5 – Level of damage per shelter type



## **EMERGENCY SHELTER OPTIONS AND NEEDS**

Overall, the majority (56%) of surveyed households reported sleeping inside their house at the time of the assessment. In the meantime, over a third of surveyed households (37%) reported sleeping on their property but outside their house, and overwhelmingly (90%) citing the fear of aftershocks as main reason to do so.

Significant differences regarding where households choose to sleep were identified between the three municipalities. Much fewer households (27%) in Sevilla reported sleeping outside of their house, than in Carmen and Sikatuna (both 47%). This can be attributed to the higher prevalence of major and partial shelter damage sustained in the latter municipalities.





The primary alternative shelter option for households sleeping outside their house are makeshift shelters (61%). Across all municipalities, between 58% and 84% of surveyed households used tarpaulins as roofing material for makeshift shelters.





In municipalities where significant proportions of the population are sleeping outside in makeshift shelters constructed out of unsuitable materials, there is a clear need for the implementation of transitional shelter programming. The need for transitional shelters in affected areas is increased as a result of the extensive technical and material support required by households to make their normal shelter suitable for living.

#### INTENTIONS OF HOUSEHOLDS FOR SHELTER RECOVERY

The future plan of surveyed households regarding their shelter is corollary to the level of damage sustained. For partially damaged shelters, almost all households (93%) reported that they planned to carry out repairs.

The proportion of surveyed households planning to repair is significantly less (64%) with regards to shelter that sustained major damage. For totally destroyed shelters, the majority of households (62%) reported that they planned to demolish their shelter then rebuild.

Additionally, 15% of households with totally destroyed shelters planned on relocating away from their current location; the majority of whom perceived the area as no longer safe.





#### SHELTER RECOVERY STATUS

The vast majority of households whose shelters sustained partial, major, or total damage during the earthquake (87%) reported that they had not started any repairs / rehabilitation at the time of assessment.

With regards to the capacity for self-recovery, at the time of the assessment only a very small proportion of households had been able to complete shelter repairs, or planned to finish doing so with their own resources. Of this small proportion, Sikatuna municipality shows the highest capacity for self-recovery with 11% of the population giving the aforementioned responses.

#### Figure 9 – Status of shelter rehabilitation per municipality



#### SHELTER RECOVERY NEEDS

For households planning to repair their shelter, a large majority (88%) reported that they needed designs. Technical support which ranked second (45%) in terms of support required for shelter repairs.

Figure 10 – Type of support required for shelter repairs



For households planning to demolish their damaged shelter then rebuild in the same location, support is required by a majority in the form of materials (98%) and labour (93%). Similar needs for support were reported by households planning to demolish their current shelters and rebuild in a different location; 80% requiring materials and 50% requiring labour.

<sup>2</sup> Due to land tenure being a sensitive topic in the Philippines, the validity of property ownership findings should be considered carefully

The support requirements related to materials clearly highlights the need for mass distributions of shelter inputs to affected households. Similarly, the need for labour presents an opportunity for large scale cash for work programmes to meet needs, especially for those households identified as vulnerable.





### **TENURE SECURITY AND ACCESS TO LAND**

Regarding land tenure status, the vast majority of households (81%) reported that they owned both the house and the property on which it was situated. Only a very small proportion, less than 1%, reported that they were resident on land without the permission of the landowner<sup>2</sup>. The high levels of property ownership in Bohol province will facilitate shelter interventions as a result of removing the possibility for conflict between tenants and landowners.

#### Figure 12 – Status of tenure security per municipality



#### LIVELIHOODS AND INCOME SOURCES

Across the three municipalities, a relatively similar livelihood profile was identified, with a majority of households (57%) reporting agricultural work as their primary source of income, out of which 58% reported that they owned their agricultural land. Only few of these households (13%) reported damage to agricultural land caused by the earthquake.





The majority of households (61%) across the three municipalities were able to rely on their primary income to meet household needs prior to the earthquake; with the remainder requiring either two or three income sources. For households requiring multiple income sources to meet their daily needs, 16% relied on remittances from family members. The remaining 84% reported household members earning income in employment other than their primary source.





The primary income source of households in the three municipalities was on the whole not affected by the earthquake, with only 2% reporting a change. Similarly, the majority of households (79%) across the three municipalities reported that the sufficiency of their income to meet the basic daily needs of their household remained the same after the earthquake. The remaining 21% reported that they were less able to cover their household needs with their income than they were before the earthquake.





On the whole the earthquake had no significant effect on the ability of households to continue with their livelihoods. This can be attributed to the predominance of agricultural work as an income source and the lack of damage to agricultural lands. Additionally, one income source was sufficient in meeting daily household needs for the majority of households in the three municipalities.

#### ACCESS TO SANITATION FACILITIES AND WATER

Toilet usage remained largely unchanged for most households, with 93% - 97% of households across all three municipalities reporting no change in the toilet facilities (i.e. they used outdoor facilities both before and after) or reporting using indoor rather than outdoor facilities.

Approximately 4% of households in Carmen and Sikatuna reported moving from indoor to outdoor facilities, while 1% in Carmen and 3% in Sevilla reporting moving from indoor facilities to open defecation. Community level hygiene promotion activities should be considered in municipalities where there has been a decrease in sanitary practises, notably Sevilla. The situation in terms of access to water also remains unchanged for the most part, though Carmen was most affected with 22% of households reporting using a different water source than before the earthquake, including 8% households using now a communal water source instead of private/individual one, and 12% households relying now on bottled water. In both Sevilla and Sikatuna, a shift from a municipal source to bottled water was the most prevalent change, at 10% and 7% respectively.





## ASSISTANCE RECEIVED BY AFFECTED HOUSEHOLDS

The Government of the Philippines runs the *Pantawid Pamilyang Pilipino Program* (4Ps) which targets poor households for social assistance and development, notably through cash support. Overall 17% of the population of the three municipalities were registered in the 4Ps prior to the earthquake. Sevilla has the highest instance of 4Ps registration with 22% of the population receiving this type of assistance.



Across the three municipalities, only 7% of households severely damaged or destroyed shelters had received shelter assistance at the time of the assessment. Households with severely damaged or totally destroyed shelters in Carmen (13%) had received the most shelter assistance; while households in the same situation in Sikatuna had received no shelter assistance of any sort. There is need to ensure affected areas and households are served proportionally by the shelter response All households who have received shelter assistance at the time of the assessment reported receiving tarpaulins.

The primary source of shelter assistance was the Government (54%) and the remainder came from local charities and local non-governmental organisations. No households in the three municipalities reported that they had received shelter assistance from the international community at the time of the assessment.





In spite of the low proportion of households receiving shelter assistance, 96% reported that they had received other types of assistance. All households who reported receipt of assistance had received food at the time of assessment. In addition to food, a high proportion of households reported receiving water in Carmen (39%), in Sevilla (55%) and in Sikatuna (33%).

Figure 19 – Other assistance received per municipality



## **PRIORITY NEEDS OF AFFECTED HOUSEHOLDS**

Households selected for assessment were asked to rank their top three priority needs. Across the three municipalities, 67% of households ranked food as the top priority need. This is in spite of food aid being the primary form of assistance received in the three municipalities.

Financial support was ranked by a considerable proportion of the target population as a first, second and third priority need; 16%, 31% and 27% of the population respectively. Although households for the most part did not change their water source after the earthquake (*see above*), 31% households reported this as a second top priority and 13% households ranked it as third priority.

	1st Priority	2nd Priority	3rd Priority
Food	67%	16%	11%
Household items	2%	5%	7%
Hygiene items	0%	1%	2%
Emergency shelter	3%	3%	2%
Financial	16%	31%	27%
Permanent housing	3%	4%	11%
Water access	6%	31%	13%
Toilets	0%	1%	1%
Livelihoods	2%	5%	12%
Health access	0%	1%	3%
Medicine	1%	3%	11%

Table 2 – Top three priority needs

# Household Breakdown per Barangay

Municipality	Barangay	Number of households
	Alegria	15
	Biaco	30
	Buenavista	29
	Calatrava	21
	El Progreso	11
	El Salvador	7
Carmon	Guadalupe	22
Garmen	Katipunan	98
	La Libertad	13
	La Paz	72
Sub-Total:	La Salvacion	15
541 HH	La Victoria	12
	Montehermoso	16
	Montesuerte	30
	Nueva Fuerza	59
	Tambo An	29
	Vallehermoso	23
	Villarcay	39
	Bayawahan	28
	Cabancalan	27
	Calinga An	22
	Calingainan Norte	28
Sevilla	Calininan Sur	24
	Cambagui	39
Sub-total:	Ewon	35
439 HH	Guinob An	36
	Lagtangan	30
	Licolico	34
	Lobgob	83
	Magsaysay	53
	Abucay Norte	24
	Abucay Sur	39
	Badiang	30
Sikatuna	Bahaybahay	20
	Cambuac Norte	73
Sub-total:	Cambuac Sur	105
465 HH	Canagong	33
	Libjo	68
	Poblacion I	54
	Poblacion II	19
	TOTAL	1445

# **ANNEX 1: GUIDANCE FOR ENUMERATORS ON SHELTER DAMAGE CATEGORY**



	Name	Dwelling Type	Photo example	Damage Type	Category
1	HUT	NIPA ROOF SAWALI OR PAMERO KNITING WOODEN FOST		<ol> <li>Collapsed totally</li> <li>Building Tilting sideways (right or left)</li> <li>Wooden Posts/beams bent/cracked/ dislocated</li> <li>Walls collapsed</li> <li>Roof collapsed inwards /sideways</li> <li>Doors and windows damaged</li> <li>Floors – collapsed/broken</li> </ol>	Major Major Major Major Major Partial Partial
		NIPA HUT HOUSE		8. Stairs / collapsed 9. Foundation off line from wooden posts	Partial Maior
	Timber Frame	NIPA OR COLOR ROOF WOOD PLANKS WOOD PLANKS WOOD PLANKS WOOD PLANKS 27 TIMBER HOUSE		1. Collapsed totally	Major
				2. Building Tilting sideways (right or left)	Major
				3. Wooden Posts/beams damaged - dislocated	Major
2				4. Walls collapsed	Major
2				5. Roof collapsed inwards /sideways	Major
				6. Doors and windows damaged	Partial
				7. Stairs / collapsed	Partial
				8. Foundation off line from wooden posts	Major

# PROVISIONAL - Post-Earthquake Shelter Assessment - Bohol, Philippines – Nov.2013

	Name	Dwelling Type	Photo example	Damage Type	Category
3		ber	CONCRETE RosFING Wood FLANK Hallow Backs Concrete Hallow Backs	1. Collapsed totally	Major
				2. Tilting sideways (right or left)	Major
				3. Concrete columns/beams	
	Timber			damaged/bent/cracks/tilt	Major
	and Concrete	Concerte the conce		4. Timber Walls/dislocated/broken	Major
	lone	CONCRETE CONCRETE CONCRETE		5. CHB work /collapsed/tilt/cracks	Major
	(one storey)	Hellow Blacks (21 / 1997)		6. Roof collapsed inwards /sideways	Major
	storey			7. Doors and windows damaged	Partial
		TIMBER AND CONCRETE HOUSE			
		(ONE STOREY)		8.Plaster/damaged/cracks/removed	Partial
		CGIS ROFING CONCRETE		1. Collapsed totally	Major
				2. Tilting sideways (right or left)	Major
				3.Concrete columns /beams/	
	Concrata			damaged/bent/cracks/tilt	
	House	Post Post		4. CHB work/collapsed/tilt/cracks	Major
4	lone	CONCRETE House Block		5. Ceiling collapsed (inside)	Partial
	(one Storey)	8 11 9/115 F/16		6. Roof collapsed/inwards/outwards	Partial
	July	CONCRETE HOUSE. (ONE STOREY)		7. doors and windows damaged	Partial
			and the second	8. Floor Slab / broken/cracks/split	Partial
				9. Plaster/damaged/cracks/split	Partial

# PROVISIONAL - Post-Earthquake Shelter Assessment - Bohol, Philippines – Nov.2013

	Name	Dwelling Type	Photo example	Damage Type	Category
5	Timber and Concrete	hber nd crete wo		1. Collapsed totally	Major
				2. Tilting sideways (right or left)	Major
				3.Concrete/Timber columns /beams/	
				damaged/bent/cracks/tilt	Major
				4. CHB work/collapsed/tilt/cracks	Major
				5. Ceiling collapsed (inside)	Partial
	House			6. Roof collapsed/inwards/outwards	Partial
	(two		7. Doors and windows damaged	Partial	
	Storey)				
		TIMBER AND CONCRETE HOUSE (TWO STOREY)		8. Floor Slab / broken/cracks/split	Partial
				9. Plaster/damaged/cracks/split	Partial
				10. First Floor Failed /Collapsed	Major
		rete se o		1. Collapsed totally	Major
				2. Building Tilting sideways (right or left)	Major
				3.Concrete/Timber columns /beams/	
			and an and and	damaged/bent/cracks/tilt	Major
	Concrete			4. CHB work/collapsed/tilt/cracks	Major
6	House			5. Ceiling collapsed (inside)	Partial
	Iwo Storev		6. Roof collapsed/inwards/outwards	Major	
	storey			7. Doors and windows damaged	Partial
		CONCRETE HOUSE (Two STOREY)	and the second s	8. Floor Slab / broken/cracks/split	Partial
				9. Plaster/damaged/cracks/split	Partial
				10. First Floor Failed /Collapsed	Major
			*		