



## Summary EMMA Report Bantayan Island

### Background

Bantayan Island is located in Northern Cebu, consist of three municipalities of Bantayan, Madridejos and Santa Fe. The island was affected by Haiyan typhoon, Oxfam has been carrying out its emergency response covering 39 barangays in 3 municipalities.

Bantayan Island is in the early recovery area: market is functioning, some areas have received electricity, tourism activity have resumed, student resumed to school. Specific to WASH aspect, the issue has been more of a chronic issue rather than emergency e.g. low coverage of water pipe network and sanitation. The typhoon impact has exacerbated the WASH situation whilst public health risks has increased as many people have not yet been reconnected to the piped network and many latrines superstructure were damaged.

Specific to drinking water, it is very common people in Bantayan island consume bottled water (gallon size). After the typhoon it was noticeable that the bottled water market has been impacted there are many shops with empty water gallons, irregular supply, and price has increased 36%.

### Objective

Below are some premises to be revealed about the water situation:

- What would be the most appropriate WASH intervention in this context to assist the most vulnerable group without undermining the market economy knowing the situation is already early recovery phase?
- How do poor/most vulnerable people accessing WASH services especially drinking water? What would be the best strategy to intervene ?
- How much is the average income of the poorest group? And how much do the poor group expenses on drinking water? What are the impacts after the disaster?
- How does the bottled market work? Do the poorest group buying bottled water for drinking and to what extent? What are the impacts after the disaster towards the bottled water market?

### Methodology:

- 2 days training EMMA training, attended by 20 participants (PHE and PHP – team leader, officer, assistant and community mobilisers) on 12 – 13 December 2013.
- Field testing on the tools and revision 14 and 17 December 2013.
- The EMMA target specifically bottled water market chain: refilling station, intermediary/transportation, distributor/shops and customers (households).
- Refilling station = 10 refilling stations, 15 intermediary/transportation, and 19 shops/distribution were interviewed in 3 municipalities Santa Fe, Madridejos and Bantayan.



- The household survey covers 5 barangays: Tugas, Maalat, Kangkaibe, Hilantagaan, and Maricaban in 3 different municipalities representing 3 livelihood zone: *coastal, island and island* barangay.
- **Seasonal calendar** *FGD exercises with community leaders.* The objective is to understand critical periods e.g. when when income and expenditure in unequal
- **Wealth breakdown** *FGD exercises with community leaders.* The objective is to understand the various household economic levels in the community especially to reveal how the lowest income group is being characterized e.g. asset ownership, livelihood type, access to public services, access to water and sanitation, income estimation. And how the lowest income group proportion consist in the community. Total number of interviews of HH survey is **204** households done by 10 enumerators. The number of minimum HH survey determined by 10% from the lowest income group from the wealth breakdown exercise. E.g. **percentage of low income group x 10% x No of Family**

## Findings

### 1. Bottled Water Market:

The bottled water market has been disturbed in post disaster situation, in average overall production of bottled water has reduced to 7% by the time the survey was done. The price of bottled water has increased 36% because several factors:

- high reliance on electrical grid
- fuel price increase, most refilling station need to be operated by generator
- market opportunity (as few refilling station is under operation) create
- high demand which increase the market price.

There are around 14 bottled water brands available in the market, some are quite expensive 100% PHP above local market price e.g. Wilkins and Spring Nature – non local production – that brought from Cebu. Average production of 205 gallon/day during normal time indicates that the market niche is still big for 73,657 population in Bantayan Island (*Population census for Santa Fe, Madridejos and Bantayan in 2010*).

After the disaster the behaviour of customer changed, they buy directly from refilling station cutting the chain line short which means, the cost is kept at the same level before. Other factor influencing factor of changing behaviour is due to unreliable distribution, many shops seldom or did not sell bottled water after disaster as there was no delivery from refilling station.

As seen in annex 3 (water market map), the market was hampered due to absence of electrical grid and water supply from the piped network that shift the reliance on generator and fuel to extract water from well. Transportation trough trucks and pick up were hampered; and shifted to more self-delivery transport mode e.g tricycle or self-delivery by the customer.



### *Refilling Station*

- 10 refills stations were interviewed from 14 total brand available on the Bantayan Island. 6 reside in Bantayan, 2 in Madridejos and 2 in Santa Fe municipalities.
- Surveyed brand: PIPO, Aqua Campo, Hydros, Aquifer, Aqua Vista Blanca, 100%, St. Michael, Water Market, Aqua Blanca, and Living Water.
- Source of water: 60% deep weels, 30% piped network, and 10% both piped network and deep well. Depth of well 12 – 60 m (according to respondent self assessment).
- Refilling station that rely on piped network stated that there were instances where water supply disrupted due to electricity disruption.
- Average production before disaster: 205 gallon/day and post disaster 1 refilling station stated is not in operation and in average there was reduction trend of production to 191 gallon/day (7% reduction).
- Price range before disaster 15 – 25 PHP/gallon has increased after disaster to 20 – 35 PHP/gallon or 36.11% price increased. This increase mainly due to the use of generator for pumping and increased price of fuel.
- Despite the reduce production 64% of the respondent claim that they gain higher profit in post disaster phase.

### *Intermediary*

- Intermediary is transportation /delivery of the bottled water most to the shops/distribution points. Water business owner mostly own their trucks/pick up for distribution.
- Transportation used for distribution are: trucks, pick up, tricycle and boat. The EMMA surveyed: 3 trucks, 4 pick ups, 3 tricycle, and 1 boat.
- Average delivery: trucks = 233 gallon/day, pick up=138 gallon/day, tricycle = 40/day and boat = 16 gallon/day.
- As trucks and some pickups owned by the bottled water owner, cost incurred per delivery was not revealed. Transport cost in general remain the same, the price only apply to the bottled water price.
- In Santa Fe bottled water respondents, its trucks have ceased delivery to shops as customers were directly buy to the refilling station to get cheaper price.

### *Distributor/Shops*

- 19 shops were interviewed: 8 in Bantayan, 6 in Madridejos, and 5 in Santa Fe municipalities.
- Average selling 5 gallon/day before disaster; after the disaster 26% of respondent (5 shops) claimed that they stopped selling bottled water due to irregular delivery (84% respondent confirmed) from the refilling station.
- Price of bottled water has increased 29% in average after the disaster.



## 2. Wealth Breakdown

- 5 barangays were selected for household interview from different livelihood zone: *coastal, inland* and *island*. Coastal zone: Maalat and Maricaban; Inland zone: Tugas and Kangkaibe; Island zone: Hilantagaan.
- Main income: the coastal zone and island are dominated by fisherman as main income, the poorest is characterised whilst inland zone main income majority working in farming and poultry sector.
- The low income group is characterised by:
  - the absence of asset boat for those living in coastal zone
  - the absence of land for farming and also for resident/house – except in Hilantagaan even the poorest group owned the housing lot as government awarded inhabitant landownership award/certificate.
  - Type of house, normally made from non-permanent structure: wood, bamboo, nipah roof (palm leave), zinc.
  - Generally have limited access to public services e.g. electricity and piped network
  - Access to drinking water: largely accessing open dug well also buying from neighbour that connected to piped network, or using shared tap (level 2). Except the group in island barangay is found to buy water across the sea spending considerable amount of money.
  - No or limited access to latrine – mostly practice open defecation.
  - Estimated monthly income range from: 500 – 5,000 PHP/month.
  - The proportion in the community is quite dominant ranging from 50% - 79%.

## 3. Seasonal Calendar

- Livelihood: In the coastal and island zone fishing is the primary livelihood in the community of Hilantagaan. August to November is critical season as it's known as typhoon season, as sea current is quite rough, practically no income during these months. Currently almost 30% of the fisherman doesn't have work and only share with their neighbour's boats if available. In terms of inland zone, the community rely mostly on farming, livestock and poultry. Harvest time is from December to January, September to October, however after the typhoon, income on farming went down because there was no harvest on the month of December to January.
- Major Expenses: Expenses increases during holiday seasons from December to January, Fiesta celebration and education expenses from enrolment on June and graduation on March.
- Lending: The money they loan usually goes to basic needs however additional expenses on repairing their houses were noted after the typhoon

## 4. Low income Group Household Survey

- 204 households low income group were surveyed following the wealth breakdown exercise (see annex 1).



- Range of household size is 5 – 12 people; average respondent age 43 years old for both men and women.
- The number of women headed households are 27 (13%) from total 204 respondents.
- 141 households (69%) household indicates that the women/wife has no income; the husband is the bread winner. Women who generate income contribute to 24% of household income before disaster time.
- Out of 171 household where before disaster the man/husband have income 45% of them (74HH) stated that there is no income after disaster.
- Average income before disaster in 5 barangay was 166.26 PHP/month, reduced to 124.73 PHP/month (25%) income reductions.

Expenses on water:

No Type of drinking water	Coastal			Inland			Island		
	Access %	Water Expenses before disaster	Water Expenses after disaster	Access %	Water Expenses before disaster	Water Expenses after disaster	Access %	Water Expenses before disaster	Water Expenses after disaster
Buy Bottled water	12%	7%	9%	18%	7%	9%	-	-	-
Buy non-bottled water	45%	1.8%	2.3%	13%	1.8%	2.3%	44%	35%	74%
Connected to pipe network – buy	21%	3.6%	4.5%	21%	4%	5%	-	-	-
Open dug well and other free access	18%	-	-	48%	-	-	56%	-	-

- To those respondents who buy drinking water, their expenses on is generally high (above 1% income) compare to their income.
- Buying non-bottled water meaning that the people buy their drinking water either from shared pipe network tap for 1 PHP/20 litres or buy across their island e.g in Hilantagaan where people in coastal area buy water to St. Fe in Bantayan Island. The price of water is only 2 PHP/20 litres however the biggest cost element is the transportation (loading, boat transport) the closer the water brought to their premises the most expenses. The cost ranges between 5 – 15 PHP/20 litres.

Coastal Barangay:

- 57% from poor communities in these coastal barangays accessing drinking water through buying water either bottled water (12%) or from their neighbour. (45%) . Monthly income in the coastal barangay before disaster was around 142 PHP/day (4,260 PHP/month) ; has reduced to 114 PHP/day (3,420 PHP/month) --> 20% income reduction. Some of these people may have



pregnant women or lactating mothers, they seem to have good awareness on health, as ground water in several areas likely contaminated by Nitrate, that can cause “blue baby” to new born babies .

- Average expenses for bottled water in the this category will spend around (7%) during normal time; or 9% in post disaster.
- Average expenses for piped water in this category will spend around (1.8.%) during normal time; or (2.3% ) in post disaster
- Average expenses for piped water in this category will spend around (3.6%) during normal time; or (4.5% ) in post disaster

#### Island Barangay

- 44% poor group in this island barangay accessing drinking water through buying water from other island . Monthly income in this island barangay of the poor group barangay before disaster was around 129 PHP/day (3,866 PHP/month) ; has reduced to 60.74 PHP/day (1,822 PHP/month) --> 52% income reduction.
- Average expenses for water in the this category will spend around (35%) during normal time; or 74% in post disaster

#### Inland Barangay

- 18% poor communities in these inland barangays accessing drinking water through buying water either bottled water (18%) or from their neighbour. (13%) . Monthly income in the inland barangay before disaster was around 203.5 PHP/day (6,105 PHP/month) ; has reduced to 162.5 HP/day (4,875PHP/month) --> 20% income reduction.
- Average expenses for bottled water in the this category will spend around (7%) during normal time; or 9% in post disaster.
- Average expenses for piped water (shared) in this category will spend around (1.8.%) during normal time; or (2.3% ) in post disaster
- Average expenses for piped water in this category will spend around (4%) during normal time; or (5% ) in post disaster.

### **Recommendation**

#### Open Dug Well

Access to open dug well for drinking water consist the highest proportion found in the lowest income group (48% - 56%) especially in inland zone as the water quality is considered having higher standard: not salty and has low turbidity also most importantly more economic (free of cost). The issue in open dug well obviously clearly is around the water quality; chemical (e.g.nitrate presence) and bacteriological presence might likely quite rampant as it is open and there are many poultry farming in the island.



Short term recommendation:

- Carry out water quality monitoring in targeted area to reveal the risk of contamination and map out.
- Working along with the LGU in mapping out the water quality monitoring to advocate safe water handling in the long run.
- Well cleaning campaign through Cash for Work activities with EFSVL team.
- Reveal the people's practice on handling drinking water from open dug well through the KAP survey to formulate appropriate messaging.

Mid-long term recommendation:

- Protect the well – install apron and manual hand pump.
- Discourage over extraction to avoid salt water intrusion – e.g. the use of high power motorised pump/submersible pump.

Piped Network

Piped network in general supply water for 24 hours but there are times that these connection disrupted. Disinfection might seem not to be done rigorously to ensure safe water water quality. Meaning the piped network might also pose some public health risks involve e.g. bacteriological presence, nitrate, or salt content (due to over pumping).

Some proportion of lowest income group connected to the piped network through direct connection (21%) both in coastal and inland barangays. Reveal the motivating factor why these proportion is connected. E.g. Is there economic factor? (as other do buy water for higher price 1 PHP/20 litres) or other factor might have been involved.

Higher proportion from the lowest income accessing piped network to shared tap (13% to 45%), it is more economic (50% less cheaper ) option compare to direct connection.

Short term recommendation:

- Carry out water quality monitoring in targeted area to reveal the risk of contamination and map out.
- Working along with the LGU and water works cooperative/association in mapping out the water quality monitoring to advocate safe water handling in the long run.
- Reveal the people's practice on handling drinking water from piped network through the KAP survey to formulate appropriate messaging.

Mid – long term recommendation:

- Encourage the increase coverage of level 2 connection as it is much cheaper option for the community.
- Assess the technical feasibility of enlarging the coverage to understand that the water system can cope with increase connection which means enough pumping, storage and appropriate pipe sizing.



- To be critically mindful of the over pumping risks if number of connection is to be increased, which will aggravate salt intrusion to the fresh water. Carry out feasibility study with San Carlos university to understand the aquifer hydro geological trend/behaviour.

#### Buying water across the sea

This group buy water from open dug well, which is basically pose same risks with those who fetching water it e.g. chemical and bacteriological presence. On top of that, the lowest income group spend considerable proportion of their income to fulfil the needs of water 35% before disaster and 75% post disaster, where the transportation cost takes the most highest element. This group evidently is the most vulnerable community in terms of drinking water provision.

#### Short term recommendation:

- Carry out water quality monitoring in targeted area to reveal the risk of contamination and map out.
- Working along with the LGU and water works cooperative/association in mapping out the water quality monitoring to advocate safe water handling in the long run.
- Reveal the people's practice on handling drinking water from piped network through the KAP survey to formulate appropriate messaging.
- Pilot feasibility survey to carry out Voucher for Water with Comprehensive Exit Strategy, meaning that if this program were ever implemented alternative water sources shall be identified e.g. rainwater harvesting (roof improvement), rehabilitation of pipe network level 2. Where can be combined with cash for work activities. Most importantly rigorous consultation with the community to identify risk involved and managing it, phasing out, and clarity roles and responsibility.

#### Mid-long term recommendation

- Carry out research on water resilience in the island zone and integrated water resources management with local university to understand various alternatives coping mechanism whilst sustaining their livelihood. E.g. tube well with renewable energy sources (solar panel and windmill, drip), drip irrigation, etc. Whilst attempt to answer on what would be most viable credit scheme to construct such system, how to ensure accessibility, accountability and equitability to the most vulnerable ones.





Annex 1: Household Survey in 5 Barangays



Barangay Name	Municipality	Zone	No of Population	No of Family	No of HH	No. of Respondent
Tugas	Madridejos	In land	1,887	462	383	33
Maalat	Madridejos	Coastal	2,439	548	468	41
Kangkaibe	Bantayan	Inland	2,379	660	570	28
Hilantagaan	Santa Fe	Island	3,463	932	880	61
Maricaban	Santa Fe	Coastal	3,140	776	636	41
Total						204



## Annex 2.1: Wealth Breakdown – Barangay Hilantagaan, Santa Fe, Island Zone

<b>No of Participants</b>	Male: 2	Female: 11	<b>Date</b>	21 <sup>st</sup> Dec 2013	<b>Facilitator</b>	Arnel
<b>Total Households</b>	880		<b>Total No. Of Families</b>	932	<b>Total Population</b>	3,463 <b>Livelihood:</b> Female with income 10% <b>Sanitaiton Coverage:</b> 90% without latrines (6 communal latrines). <b>Electricity coverage:</b> 60% coverage

<b>PARTICULARS</b>	<b>Nakakaangat (Better Off)</b>	<b>Katamtaman (Middle Income)</b>	<b>Mahirap (Low Income)</b>
<b>Family Size</b> Bilang ng Miyembro ng Pamilya	1 -2	5 -6	8 - 16
<b>Main Source of Income</b> Pangunahing Ikinabubuhay	OFW, Seaman  F : teachers	Fisherman, buy and sell fish (small scale) F – selling fish, pig raising, working with other family (maid, labourer, housekeeper)	Farming, fisherman  F – farmers and laundry
<b>Housing Materials</b> Uri ng Materyales gawa ang mga bahay	Full concrete (tiles, marble)	Semi concrete + wood (Nipa & Amakan)	Wood (bamboo, nipa, anakan)
<b>Land Ownership</b> Pagmamay-ari ng Lupang kinatitirikan ng bahay:	Owned (with title); the govt give certificate of landownership award	Owned (with title) certificate of landownership award	Owned (inheritance) certificate of landownership award
<b>Vehicle Ownership (car, motorcycle, bicycle)</b> Sasakyang Pagmamay-ari:	Motorcycle	Motor cycle	Motor cycle
<b>Boat ownership</b> Estado ng Pagmamay ari ng bangka	Boat – 5 Big boat (Fuso brand)	Boat – 1 Paddle	Paddle (non motorised) Caretaker of boats
<b>Livestock ownership</b> <b>Paghahayupan</b> (chicken, pig, rooster, cattle)	Pigs – 70 Poultry Buy and Sell Fish	Pigs (1-6) Goat (sharing) Cow	Cow (sharing ownership) Chicken
<b>Electricity connection</b>	With electricity TV, radion, DVD, electric fan	Wisth electricity TV, radio, DVD	Without electricity Transistor radio
<b>Mobile phone ownership</b>	1 – 5 per family	1 – 2 per family	1 per family
<b>Latrine ownership</b> (Individual, Shared, Communal)	Individual (flush)	50% individual, 50% without (No CR)	No latrine
<b>Water source for drinking</b>	Drinking: Buying → 10 km from source : Female fetch	Drinking: buying → 10 km source	Drinking: buying → 10 km from source (25 PHP/20 L)



**EMMA Northern Cebu, Haiyan Response**

(pipe network Level 1,2,3, gallon water, well, rain water harvesting)	water (20%) from Medelin		
<b>Water source for washing</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting)  Pinagkukunan ng tubig panghugas/[anglaba?	Washing: Well	Washing: Well	Washing: Well
<b>Education Level attained by Children</b>  Antas ng Edukasyon ng mga Anak	High school, college grad	High school, under grad	Elementary grad
<b>% of households in each wealth group</b> (proportional piling) Porsyento ng kabahayan ng bawat grupo ng	<b>10%</b>	<b>24%</b>	<b>66%</b>
<b>Monthly Income</b> Buwanang Kita	30,000 – 50,000 PHP/month	6,000 – 10,000 PHP/month	500 – 1,000 PHP/month



## Annex 2.2: Wealth Breakdown –Barangay Kangkaibe, Bantayan, Inland Zone

<b>No of Participants</b>	Male: 3	Female: 5	<b>Date</b>	14 <sup>th</sup> of December	<b>Facilitator</b>	Ding
<b>Total Households</b>	570		<b>Total No. Of Families</b>	660	<b>Total Population</b>	2,379 : (Male =1080; Female=1,299)

<b>PARTICULARS</b>	<b>Nakakaangat (Better Off)</b>	<b>Katamtaman (Middle Income)</b>	<b>Mahirap (Low Income)</b>
<b>Family Size</b> Bilang ng Miyembro ng Pamilya	2-4	5-8	>8; there are also poor family w/o children
<b>Main Source of Income</b> Pangunahing Ikinabubuhay	Owner of the Farm Business in Poultry and Big Retail Stores	Farmers who have shared in the lots, Drivers Owned small scale businesses	Farmer seasonal, carpenter, ones who works in the poultry and livestock businesses One who take laundry and domestic helper
<b>Housing Materials</b> Uri ng Materyales gawa ang mga bahay	Concrete (Big House) Tiles With garage	Concrete (small)	Light materials (nipa, bamboo)
<b>Land Ownership</b> Pagmamay-ari ng Lupang kinatitirikan ng bahay:	Own house & Lot – 20%	Renting – 50%	30% they have no lot nor renting one
<b>Vehicle Ownership (car, motorcycle, bicycle)</b> Sasakyang Pagmamay-ari:	Car	Motorcycle Tricycle Pedicab	None
<b>Boat ownership</b> Estado ng Pagmamay ari ng bangka	N/A	N/A	N/A
<b>Livestock ownership</b> <b>Paghahayupan</b> (chicken, pig, rooster, cattle)	Poultry Piggery	Cow – 2 Pig – 3	Pig raising (care taker)
<b>Electricity connection</b> Elektrisidad	AC, washing machine, TV, DVD	DVD and TV	Old TV, Cassette, Radio Transistor
<b>Mobile phone ownership</b>	3 per family	1 per family	1 per family
<b>Latrine ownership</b> (Individual, Shared, Communal)	2 – 4 latrine per HH Flush type	1 latrine per HH concrete	No CR or have a small cr the walls are made of wood and nipa hut
<b>Water source for drinking</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting)	L3 Buying drinking water	L3	Buying water sometimes going to another barangay to get water from the wells.



**EMMA Northern Cebu, Haiyan Response**

<b>Water source for washing</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting) Pinagkukunan ng tubig panghugas/[anglaba?]	L3	L3	Well (attabay)
<b>Education Level attained by Children</b> Antas ng Edukasyon ng mga Anak	College grad High School	High school Vocational College – 30%	Elementary Level
<b>% of households in each wealth group</b> (proportional piling) Porsyento ng kabahayan ng bawat grupo ng	<b>10%</b>	<b>40%</b>	<b>50%</b>
<b>Monthly Income</b> Buwanang Kita	10,000 to 20000 PHP/ month	5000 to 10000 PHP/ month	1000 to 5000 PHP/ month



## Annex 2.3: Wealth Breakdown –Barangay Tugas, Bantayan, Inland Zone

<b>No of Participants</b>	<b>Male:</b>	<b>Female:</b>	<b>Date</b>	19 <sup>th</sup> Dec 2013	<b>Facilitator</b>	<b>Ding</b>
<b>Total Households</b>	383		<b>Total No. Of Families</b>	462	<b>Total Population</b>	1,887

<b>PARTICULARS</b>	<b>Nakakaangat (Better Off)</b>	<b>Katamtaman (Middle Income)</b>	<b>Mahirap (Low income)</b>
<b>Family Size</b> Bilang ng Miyembro ng Pamilya	1-2 family member	1-3 family member	3-5 family member
<b>Main Source of Income</b> Pangunahing Ikinabubuhay	Pig Faming Poultry	Teacher Poultry	Farmers, Fisherman, Laborers, Carpenter, Habal- Habal Driver Stone Crushers, Charcoal maker
<b>Economic Activity</b> Kabuhayan	Babae: 30% Lalaki: 70%		
<b>Housing Materials</b> Uri ng Materyales gawa ang mga bahay	Full Concrete  (Tiles, Colored Roof, Glass, Corrugated sheet)	Semi-concrete  (Steel Traces, Cocolumber, Corrugated Sheet, Sawali, plywood)	Wood  (Bamboo, Nipa, Sawali, Cocolumber)
<b>Land Ownership</b> Pagmamay-ari ng Lupang kinatitirikan ng bahay:	Own house & Lot	Own House & Lot	Care taker, Renting, Live with relatives (70%)
<b>Vehicle Ownership (car, motorcycle, bicycle)</b> Sasakyang Pagmamay-ari:	Car Truck	Multicab (jeep) Tricycle Motorcycle	Bicycle Motorcycle trisikad
<b>Boat ownership</b> Estado ng Pagmamay ari ng bangka	Large ship		Pamboat / Baroto
<b>Livestock ownership</b> <b>Paghahayupan</b> (chicken, pig, rooster, cattle)	Pig farming (piggery 200-500 heads)  Poultry	Pig Farming (10-20)  Poultry (100)	Pig (1-2) Goat Cow Rooster for cock fighting
<b>Electricity connection</b>	With electricity (TV, Refrigerator, washing machine, aircon, etc)	With electricity (TV, Refrigerator, Washing Machine, DVD Player,	With electricity (TV, DVD player, Radio, Ceiling fan)



Elektrisidad		Computer)	Without electricity 15%
<b>Mobile phone ownership</b>	3-5 mobile phones	2-4 mobile phones	1-2 mobile phones
<b>Latrine ownership</b> (Individual, Shared, Communal)	Individual House hold	Individual & shared latrine	No latrine Common Latrine
<b>Water source for drinking</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting)  Pinagkukunan ng inuming tubig?	Pipe water system	Open dug well Pipe water (common Tap)	Open dug well Buying container filler Water
<b>Water source for washing</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting)  Pinagkukunan ng tubig panghugas/[anglaba?	Pipe water system	Open dug well Pipe water (common tap)	Open dug well
			Fetching water from the well 5-10 meters distance
<b>Education Level attained by Children</b>  Antas ng Edukasyon ng mga Anak	College Grad Professional	High school-college level Professional	Elementary - high school grad Professional (5%)
<b>% of households in each wealth group</b> (proportional piling) Porsyento ng kabahayan ng bawat grupo ng	<b>4%</b>	<b>32%</b>	<b>64%</b>
<b>Monthly Income</b> Buwanang Kita	>5,000 PHP/month	3,000 -5,000 PHP/month	1,500 – 3,000 PHP/month



**Annex 2.4: Wealth Breakdown –Barangay Maalat, Madrideojos, Coastal Zone**

<b>No of Participants</b>	Male: 2	Female: 11	<b>Date</b>	18 <sup>th</sup> Dec 2013	<b>Facilitator</b>	<b>Ding</b>
<b>Total Households</b>	468		<b>Total No. Of Families</b>	548	<b>Total Population</b>	2,439 (Male 40% Female 60%) <b>Livelihood:</b> 80% - Fisherman & 20% - Farmer, teacher, habal2 driver, labourers, etc <b>Sanitaiton Coverage:</b> 90% without latrines

<b>PARTICULARS</b>	<b>Nakakaangat (Better Off)</b>	<b>Katamtaman (Middle Income)</b>	<b>Mahirap (Low Income)</b>
<b>Family Size</b> Bilang ng Miyembro ng Pamilya	1 – 3 members	3 – 4 members	3 - 4 members
<b>Main Source of Income</b> Pangunahing Ikinabubuhay	Fishing (boat owner) Teachers – female professionals	Fishing (boat owner) Teachers – female professionals OFW	Fishing (no boat/renting); poultry boy, labourers, trisikad driver, habal2 drivers, stone crushers, farmers (raising pigs)
<b>Housing Materials</b> Uri ng Materyales gawa ang mga bahay	Full concrete (Malaking babay); - metalics - woods	Concrete & wood - woods - Palm leave as roof (nipa)	- Wood (coco lumber, kawayan) - Palm leave as roof (nipa)
<b>Land Ownership</b> Pagmamay-ari ng Lupang kinatitirikan ng bahay:	Owned	Owned	Rent (Nag-uupa)
<b>Vehicle Ownership (car, motorcycle, bicycle)</b> Sasakyang Pagmamay-ari:	Car, motorcycle, tricycle	Multicab, motorcycle, tricycle	Motorcycle (debt), tricycle (renting), bicycle, trisikad
<b>Boat ownership</b> Estado ng Pagmamay ari ng bangka	5 – 10 boats	1 – 2 boats	Renting (magdala sa pamboat)
<b>Livestock ownership</b> <b>Paghahayupan</b> (chicken, pig, rooster, cattle)	2-poultres >10 pigs 1- 3 cows (Baka)	5-10 pigs 1-2 cows Goat	Caretaker of livestock Own native chicken 1-2 pigs 1 cow
<b>Electricity connection</b> Elektrisidad	Connected TV, Refrigerator, electric fan	Connected TV, Refrigerator, electric fan	10% does not connected, if connected it has shared connections. TV, radio, electric fan
<b>Mobile phone ownership</b>	1-3 cellphones	1-2 cellphones	1 cellphone/family
<b>Latrine ownership</b> (Individual, Shared, Communal)	Household/individual latrines	Shared latrines – 3 families each latrine	No latrine





## EMMA Northern Cebu, Haiyan Response

<b>Water source for drinking</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting) Pinagkukunan ng inuming tubig?	Drinking: Pipe system	Drinking: pipe water system	Open dug well Buying per container Pipe water system Level 2 (shared by 3-4 families)
<b>Water source for washing</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting) Pinagkukunan ng tubig panghugas/[anglaba?	Pipe water	Pipe water	Open dug ell Pipe water source
<b>Education Level attained by Children</b> Antas ng Edukasyon ng mga Anak	Professionals College graduates	College graduates High schools	Elementary graduate High school graduate College level (municipal scholarship)
<b>% of households in each wealth group</b> (proportional piling) Porsyento ng kabahayan ng bawat grupo ng	>50,000 PHP/month	+/- 20,000 PHP/month	1,000 – 3,000 PHP/month
<b>Monthly Income</b> Buwanang Kita	<b>6%</b>	<b>16%</b>	<b>79%</b>



**Annex 2.5: Wealth Breakdown –Barangay Maricaban, Santa Fe, Coastal Zone**

<b>No of Participants</b>	Male: 7	Female: 6	<b>Date</b>	20 <sup>th</sup> Dec 2013	<b>Facilitator</b>	Arnel
<b>Total Households</b>	636		<b>Total No. Of Families</b>	776	<b>Total Population</b>	<b>3,140</b> : (Male = 1,492; Female=1,498) <b>Livelihood:</b> Farmers & Fisherman (80%) <b>Sanitation Coverage:</b> 20% without latrines <b>Electricity coverage:</b> 95% coverage <b>Drinking Water</b> : L3 = 69% and ODW 31%

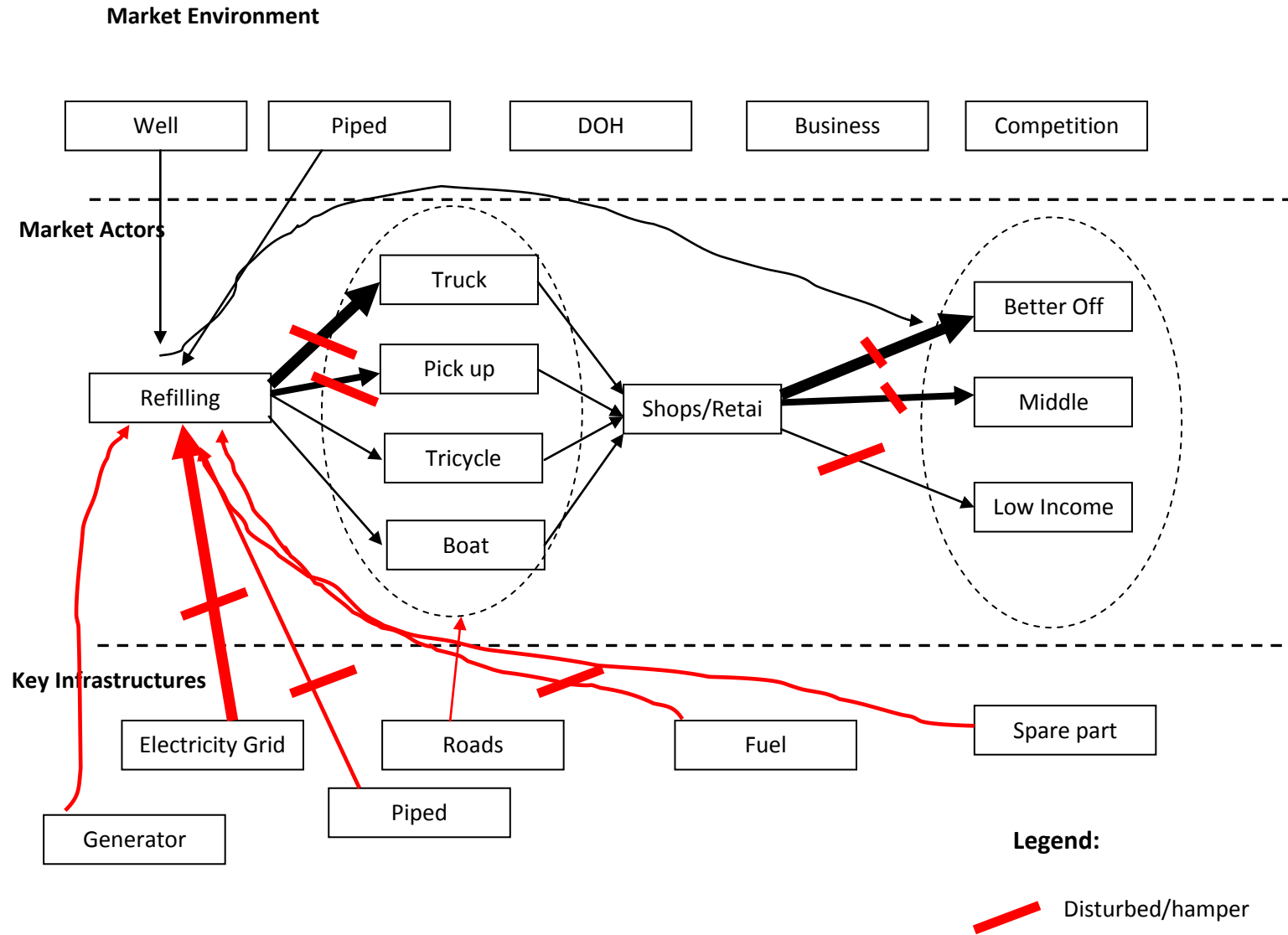
<b>PARTICULARS</b>	<b>Nakakaangat (Better Off)</b>	<b>Katamtaman (Middle Income)</b>	<b>Mahirap (Low Income)</b>
<b>Family Size</b> Bilang ng Miyembro ng Pamilya	3-4	7-8	>7; there are also poor family w/o children
<b>Main Source of Income</b> Pangunahing Ikinabubuhay	OFW, Business (buy and sell; fish co -home) Female: Professional	Farming, Fishing, Sound system rental Small scale business	Fisherman seasonal, carpenter, farmers Laundry (labada)
<b>Housing Materials</b> Uri ng Materyales gawa ang mga bahay	Concrete (Big House) Tiles With garage	Concrete (small)	Light materials (nipa, bamboo)
<b>Land Ownership</b> Pagmamay-ari ng Lupang kinatitirikan ng bahay:	Own house & Lot – 30%	Renting – 40%??	30% ??
<b>Vehicle Ownership (car, motorcycle, bicycle)</b> Sasakyang Pagmamay-ari:	Car	Motorcycle Tricycle	Pedicab
<b>Boat ownership</b> Estado ng Pagmamay ari ng bangka	Own big boat – Fuso Motorised pump (pamboat) 1-2	Pamboat -1	Sail boat Desagwan
<b>Livestock ownership</b> <b>Paghahayupan</b> (chicken, pig, rooster, cattle)	Poultry Piggery	Cow – 2 Pig – 3	Cow Goat Pig raising (care taker)
<b>Electricity connection</b>	AC, washing machine, TV	TV, DVD, Component	TV, Cassette, Radio Transistor



Elektrisidad			
<b>Mobile phone ownership</b>	3 per family	1 per family	1 per family
<b>Latrine ownership</b> (Individual, Shared, Communal)	2 – 4 latrine per HH Flush type	1 latrine per HH concrete	Light materials – concrete bowl Communal – OD (along the shoreline; inland)
<b>Water source for drinking</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting) Pinagkukunan ng inuming tubig?	L3 Buying drinking water	L3	Well (atabay) Buying : Pregnant and Children
<b>Water source for washing</b> (pipe network Level 1,2,3, gallon water, well, rain water harvesting) Pinagkukunan ng tubig panghugas/[anglaba?	L3	L3	Well (atabay)
<b>Education Level attained by Children</b> Antas ng Edukasyon ng mga Anak	College grad High School	High school Vocational College – 30%	High school Vocational
<b>% of households in each wealth group</b> (proportional piling) Porsyento ng kabahayan ng bawat grupo ng	<b>18%</b>	<b>22%</b>	<b>58%</b>
<b>Monthly Income</b> Buwanang Kita	?	?	?



Annex 3: Market Mapping of Bottled Water





**Annex 4: Summary Survey to Refilling Station**

Description	Refilling Station			Total or Average	%
	Bantayan	Madridejos	Santa Fe		
<b>Number of Refilling Station</b>	6	2	2	10	
<b>Brand</b>	PIPPRO	Saint Michael	Aqua Blanca		
	Aqua Campo	Water Market	Living Water		
	Hydros				
	Aquifer				
	Aqua Vista Blanca				
	100%				
<b>Gender</b>					
Respondent Gender - Female	2	1	1	4	
Respondent Gender - Male	4	1	1	6	
<b>Respondent Age</b>	18 - 68 years old				
<b>Profile</b>					
Owner	4			4	
Person in Charge	1		2	3	
Other Staff	1	2		3	
<b>Water Source</b>					
Deep Well	3	1	2	6	
Piped Network	2	1		3	
Piped Network and Deep well (backup)	1			1	
<b>Seasonal impact to water source</b>	Those that connected to piped network, no electricity (no flow)				
<b>Well Depth (meter)</b>	12 -60 m	12 m	30 - 60 m		
<b>Range Production (gallon/day) - Normal</b>	175 - 250	100 and 200	200 and 325	100 - 325	
Average (gallon day)	205	150	262.5	205.83	
<b>No of production ceased</b>	1	0	0	1 out of 11	9%
<b>Range Production (gallon/day) - Post Dis.</b>	0 - 350	? - 300	200 - 275		
Average (gallon day)	185.4	150	237.5	190.97	-7%
<b>Range Price (PHP/gallon) before Disaster</b>	15 - 25	20 - 25	20	15 - 25	
Average Cost	20	22.5	20	20.83	
<b>Range Price (PHP/gallon) before Disaster</b>	20 - 35	30	25 - 30	20 - 35	
Average Cost	27.5	30	27.5	28.33	
Average Increased (%)	37.50%	33.33%	37.50%	36.11%	
<b>Profit Claim</b>	4 out of 6	1 out of 2	2 out of 2	7 out of 11	64%
<b>Reason Yes</b>	Price increase	High demand	High demand		
<b>Reason No</b>	Reduce production, stop production	because of fuel price increase			



## Annex 5: Summary Survey to Intermediary

Decription	Intermediary			Summary or Average or %	Remarks
	Bantayan	Madrdejos	Santa Fe		
<b>No of respondent</b>	8	4	3	15	
<b>Respondent Sex</b>	All Male	All Male	All Male	100%	
<b>Mode of Delivery</b>					
Truck	0	2	1	233	average delivery/day; vehicle is owned by refilling station
Pick Up	2	1	1	138	average delivery/day; vehicle is owned by refilling station
Tricycle	1	1	1	40	average delivery/day
Boat	1	0	0	16	average delivery/day
<b>Cost</b>					
Average Before Disaster	19.2	21.25	17.5	19.3	
Average After Disaster	26.6	27.5	22.5	25.53333333	
	39%	29%	29%	32%	
<b>Stop Delivery</b>	0	0	3 out of 3		No delivery customer go directly to refilling station
			100%		



## Annex 6: Summary Survey to Distributor/Shops

Description	Distribution/Shop			Summary
	Bantayan	Madridejos	Santa Fe	
<b>No of respondent</b>	8	6	5	19
<b>Zone</b>				
Coastal	1	4		5
Inland	7	2	5	14
<b>Brand Sold</b>	Hydros	Water Market	Hydros	
	St. Michael	St. Michael	Living Water	
	Aqua Vista	Islas Aquas	Aqua Blanca	
	Aqua Campo	Water Market	Aqua Soft	
	Nature's Spring		Aqua Pure	
	100%			
	Living Water			
<b>Range Selling (gallon/day)</b>	1.4 - 15	1.5 - 7	1 - 10	
Average Selling (gallon/day)	7.2	4	3.5	4.9
<b>Delivery to the shop mode</b>	pickup and trucks	pick up and trucks	Pick up and trucks	
<b>Range of Delivery (gallon/day)</b>	4 - 15	1-15	3 - 15	
Average Deliver (gallon/day)	7	5	7	6.3
<b>Cost</b>				
Average Before Disaster	25	28	22.5	25.2
Average After Disaster	35	35	27.5	32.5
	40%	25%	22%	29%
<b>Disruption of delivery</b>	7 out of 8	4 out of 6	5 out of 5	
	88%	67%	100%	
<b>Stop Selling Bottled Water</b>	1	1	3	50%

**Annex 7.1: Summary Interview to Lowest Income Group**

Barangay Name	Municipality	Zone	No of Population	No of Family	No of HH	No. of Respondent
Tugas	Madridejos	In land	1,887	462	383	33
Maalat	Madridejos	Coastal	2,439	548	468	41
Kangkaibe	Bantayan	Inland	2,379	660	570	28
Hilantagaan	Santa Fe	Island	3,463	932	880	61
Maricaban	Santa Fe	Coastal	3,140	776	636	41
<b>Total</b>						<b>204</b>

General		
Number of Women Headed HH Respondent	27	13.2%
Min HH Male Age	20	
Average HH Male Age	43	
Max HH Male Age	83	
Min HH Female Age	19	
Average HH Female Age	43	
Max HH Female Age	80	
Min Number of HH Member	1	
Average Number of HH Member	4	
Max Number of HH Member	11	

Barangay	Zone	Income						% income changes
		Before Disaster			After Disaster			
		Man	Women	Total	Man	Women	Total	
Hilantagaan	Island	102.68	26.17	128.85	45.83	14.91	60.74	-53%
Tugas	Inland	122.37	25.59	147.96	103.52	8.55	112.07	-24%
Maalat	Coastal	95.22	22.77	117.99	97.02	15.94	112.96	-4%
Kangkaibe	Inland	165.15	103.81	268.96	142.30	79.64	221.94	-17%
Maricaban	Coastal	143.85	23.68	167.53	106.50	9.46	115.95	-31%

**Gender Highlight**

Women income compare to man before disaster	24%
Women income compare to man after disaster	21%





**Annex 7.2: Summary Interview to Lowest Income Group – Coastal Zone**

<b>Economic Description Coastal Zone (Maricaban and Maalat)</b>		
Total Respondent	82	
Average Female Income (PHP/day) before and after disaster	23.20	12.96
% income reduction of female - post disaster	44%	
% Housewife/no income	60%	
% Petty business e.g vegetable, fish, etc	11%	
% others e.g. stone crushers, selling firewood, helper, accessory maker, etc	12%	
% Poultry labor	4%	
Average Male Income (PHP/day) before and after disaster	118.29	101.52
% income reduction of male - post disaster	14%	
% Fisherman	39%	
% constructions related work e.g. carpenter, mason	15%	
% Labor poultry related	11%	
% Farming related	10%	
% driver - transportation related	5%	



Water Situation Assessment in Coastal Barangay							
Drinking Water Source	Total	%	Average Cons. (cont/mo)	Average Monthly Expenses	Domestic Use	Post Disaster (Access to Drinking Water)	Remarks
Buying Water - Bottled Water	10	12%	12.29	294.86	70% of resp. stated that they use open dug well for domestic use (washing and bathing); the remaining use pipe water system.	4 resp stated they still buy water (40%); though the price has increased 40%-60%; and 60% of respondent are coping by using open dug well likely due to difficulties to access bottled water in the market.	Brand used: St. Michael, El Rose, Aqua Blanca, Aqua Soft. Some motivation to buy the bottled water is accessibility, taste and price is considered cheap.
Buying Water - from Neighbour (piped network)	37	45%	93.87	116.16	8% of resp use piped network (buy); 92% the remaining use open dug well	41% still buy the piped network with same price, the rest (59%) cope by accessing ODW, request from diff Bgy, other pipe network mainly due to limited supply from the pipe network (during the assessment the pipe network has not been fully in operation/intermittent supply)	
Pipe Network System	17	21%		153.08	60% use piped water too; 6 resp not conclusive; 1 resp stated to use ODW for domestic use.	12% claim to buy mineral/bottled water, 30% stated they use ODW; 23% still use pipe network; the remaining are not conclusive (non responding)	Connected to MACWAS and BIWA; average membership 1.69 year,
Open Dug Well	15	18%	0	0	100% use ODW for domestic use.	The same 100% respondent in this category still accessing ODW after disaster.	Average distance is 100 m, quite proportionally between man&women to fetch water
Others	3	4%	0	0	The same	The same	There were instances were people fetch water from neighbour for free (piping scheme)

**Analysis:**

57% from poor communities in these coastal barangays accessing drinking water through buying water either bottled water (12%) or from their neighbour. (45%) . Monthly income in the coastal barangay before disaster was around 142 PHP/day (4,260 PHP/month) ; has reduced to 114 PHP/day (3,420 PHP/month) --> 20% reduction.

Average expenses for bottled water in the this category will spend around (7%) during normal time; or 9% in post disaster.

Average expenses for piped water in this category will spend around (1.8%) during normal time; or (2.3% ) in post disaster

Average expenses for piped water in this category will spend around (3.6%) during normal time; or (4.5% ) in post disaster



## Annex 7.3: Summary Interview to Lowest Income Group – Island Zone

<b>Economic Description Island Zone (Hilantagaan)</b>		
Total Respondent	61	
Average Female Income (PHP/day) before and after disaster	26.17	14.91
% income reduction of female - post disaster	43%	
% Housewife/no income	56%	
% Farming related e.g. labor	21%	
% others e.g. labor, laundry, jobless	11%	
% Petty business e.g vegetable, vendor, ministore	8%	
Average Male Income (PHP/day) before and after disaster	102.68	45.83
% income reduction of male - post disaster	55%	
% Fisherman	74%	
% Farming related	5%	
% driver - transportation related e.g. habal2 driver	3%	



Water Situation Assessment in Island Barangay							
Drinking Water Source	Total	%	Average Cons. (cont/mo)	Average Monthly Expenses	Domestic Use	Post Disaster (Access to Drinking Water)	Remarks
Buying Water - from private well motorised pump	27	44%	104.44	1349.02	81% of resp access ODW for domestic use, the remaining is not conclusive (empty response)	The price has increased 3 - 5 PHP/container (33%); people still buy despite the increase.	People accessing water from Okoy St. Fe, a motorised pump from a well. Container size is the same 20 L, the people fetch water even before disaster. 1 case resp buy bottled water (likely for baby/pregnant mother). Price differences depends on delivery mode (personal fetch, at the port or house delivery) price vary from 5 - 15 PHP
Open Dug Well	34	56%			100% use ODW	Not so much affected by typhoon, except those whom accessing rainwater harvesting	The average distance 1.6 km - many elderly fetching water, in 1 case respondent pay 5 PHP for water to be delivered.

Analysis:  
 44% poor group in this island barangay accessing drinking water through buying water from other island.  
 Monthly income in this island barangay of the poor group barangay before disaster was around 129 PHP/day (3,866 PHP/month) ; has reduced to 60.74 PHP/day (1,822 PHP/month) --> 52% reduction.  
 Average expenses for water in the this category will spend around (35%) during normal time; or 74% in post disaster



## Annex 7.4: Summary Interview to Lowest Income Group – Inland Zone

**Economic Description Inland Zone (Tugas and Kangkaibe)**

Total Respondent	61	
Average Female Income (PHP/day) before and after disaster	61.49	41.18
% income reduction of female - post disaster	33%	
% Housewife/no income	61%	
% Labor e.g caretaker, backyard livestock, helper, housekeeper, etc	18%	
% Petty business e.g vegetable, vendor, ministore	10%	
Average Male Income (PHP/day) before and after disaster	142.01	121.32
% income reduction of male - post disaster	15%	
% Construction related e.g. carpenter, masons, painter, welder, etc	28%	
% Casual worker e.g. non skill labor, caretaker	18%	
% Farming related e.g. farming labor, watcher	15%	
% Fishery related e.g. fisherman, fish vendor, boat owner	10%	
% driver - transportation related e.g. habal2 driver	8%	
% Poultry labor	2%	



## Water Situation Assessment in Inland Barangay

Drinking Water Source	Total	%	Average Cons. (cont/mo)	Average Monthly Expenses	Domestic Use	Post Disaster (Access to Drinking Water)	Remarks
Buying Water - Bottled Water	11	18%	16.74	422.14	100% of respondent from this group use ODW for domestic use	55% are still buying water despite the price increase (33% - >100%) those whom are not use open dug well. Willingness to pay might not be the only factor, in post disaster it is quite difficult to get bottled water	34% of poor group in this community have access to piped water either direct or shared, this might influence the willingness to purchase bottled water.
Buying Water - from Neighbour (piped network)	8	13%	86.76	113.87	100% of respondent from this group use shared piped network for domestic use.	In tis barangays (at least during the survey) the piped network has recovered, so people still accessing the piped network (purchase from neighbour). 1 respondent in this group claim to shift using ODW after disaster.	
Pipe Network System	13	21%		235.60	47% resp. for this group stated they use piped network, 15% use ODW, and 38% resp are not in conclusive (blank)	47% stated to buy bottled water despite the price increase, 23% access ODW, and 30% still continue to use piped network (by the time of the survey the pipe network has	
Open Dug Well	28	46%			100% use for domestic use	18% stated to buy bottled water despite the increase price; some communities said that after the typhoon in some wells, there has been odor change and bubbly. Also there are distribution of bottled water where people access it in early days after the typhoon.	The biggest proportion, the quality of water in inland area generally good in terms of taste (not salty), the reason why people don't mind to consume ODW.
Others	1	2%			No change	No change	This basically hand pump, it is quite rare to find people use hand pump to fetch water from their wells.

## Analysis:

18% poor communities in these inland barangays accessing drinking water through buying water either bottled water (18%) or from their neighbour. (13%) .

Monthly income in the inland barangay before disaster was around 203.5 PHP/day (6,105 PHP/month) ; has reduced to 162.5 HP/day (4,875PHP/month) --> 20% reuduction.

Average expenses for bottled water in the this category will spend around (7%) during normal time; or 9% in post disaster.

Average expenses for piped water (shared) in this category will spend around (1.8.%) during normal time; or (2.3% ) in post disaster

Average expenses for piped water in this category will spend around (4%) during normal time; or (5% ) in post disaster.