Typhoon Odette: Needs Assessment in Bohol

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Outline:

Typhoon Odette (Rai) Landfall Areas

Damaged to Housing

Needs Assessment: **Loboc**

- Partially Damaged Houses
- Fully Damaged Houses
- Status of Rebuilding
- Local Hazard - Hazard Hunter
- Microfinance Institutions
- Livelihood
- LGU

Needs Assessment: **Inabanga**

- Partially Damaged Houses
- Fully Damaged Houses
- Status of Rebuilding
- Local Hazard - Hazard Hunter
- Microfinance Institutions
- Livelihood
- LGU

Existing Housing Typologies

Construction Materials

Recommendations

- Option 1
- Option 2
- Option 3
LANDFALLS of Typhoon Odette

December 16, 2021

1. 1:30 PM - Siargao Island, Surigao del Norte
2. 3:10 PM - Cagdianao, Dinagat Islands
3. 4:50 PM - Liloan, Southern Leyte
4. 5:40 PM - Padre Burgos, Southern Leyte
5. 6:30 PM - Island town of President Carlos P. Garcia, Bohol
6. 7:30 PM - Bien Unido, Bohol Mainland
7. 10:00 - Carcar, Cebu

December 17, 2021

8. 2:00 AM - La Libertad, Negros Oriental
9. 4:00 PM - Roxas, Palawan
In terms of damaged houses, both partially and totally damaged, ODETTE has the highest number of damaged houses.

Source: Final Report for Typhoon Odette, Office of Civil Defense, NDRRMC
A total of 2,031,824 damaged houses are reported in MIMAROPA, Region 6, Region 7, Region 8, Region 9, Region 10, Region 11, Region 12, CARAGA, BARM.  

<table>
<thead>
<tr>
<th>REGION</th>
<th>PARTIALLY</th>
<th>TOTALLY</th>
<th>TOTAL</th>
<th>AMOUNT (PHP)</th>
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<tbody>
<tr>
<td>GRAND TOTAL</td>
<td>1,585,252</td>
<td>446,572</td>
<td>2,031,824</td>
<td>62,675,818</td>
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<tr>
<td>MIMAROPA</td>
<td>74,319</td>
<td>15,465</td>
<td>89,784</td>
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<td>Region 6</td>
<td>362,743</td>
<td>61,878</td>
<td>424,621</td>
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<td>Region 7</td>
<td>900,558</td>
<td>245,659</td>
<td>1,146,217</td>
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<td>Region 8</td>
<td>135,489</td>
<td>52,221</td>
<td>187,710</td>
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<tr>
<td>Region 9</td>
<td>103</td>
<td>136</td>
<td>239</td>
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<td>Region 10</td>
<td>6,389</td>
<td>857</td>
<td>7,246</td>
<td>62,225,818</td>
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<td>Region 11</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
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<tr>
<td>Region 12</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
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<tr>
<td>CARAGA</td>
<td>105,591</td>
<td>70,340</td>
<td>175,931</td>
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<td>BARM</td>
<td>60</td>
<td>13</td>
<td>73</td>
<td>450,000</td>
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</table>
Initial Needs Assessment: Loboc, Bohol

Technical and Non-Technical Assessment
Barangay Ugpong & Barangay Valladolid
Partially Damaged Houses:

**Brgy. Ugpong:** 33 Houses  
(Estimated Cost: PhP 2.64 Million)

**Brgy. Valladolid:** 82 Houses  
(Estimated Cost: PhP 6.56 Million)
Fully Damaged Houses:

**Brgy. Ugpong:** 19 Houses
(Estimated Cost: PhP 3.8 Million)

**Brgy. Valladolid:** 25 Houses
(Estimated Cost: PhP 5 Million)
Status of Rebuilding

OBSERVATIONS:

• Both communities, Ugpong and Valladolid, had already started rebuilding through assistance from LGUs and private sector.

• Totally damaged households are still residing at temporary shelters.

• Assistance provided were for transitional shelter such as:
  o CGI Sheets
  o Coco Lumbers
  o Tarpaulins
Local Hazard – Hazard Hunter

Ugpong:

• Seismic Hazard
  • Nearest Active Fault - East Bohol Fault (4.7 KM)
  • Ground Rupture - Safe
  • Ground Shaking - Prone; Intensity VIII
  • Earthquake Induced Landslide - Highly Susceptible

• Hydro Meteorological
  • Flood - High Susceptibility; 1 to 2 Meters Flood Height and/or more than 3 days flooding
  • Storm Surge - Safe
  • Severe Wind - 88.1 - 117 KPH (20 year return period)
Local Hazard – Hazard Hunter

Valladolid:

- Seismic Hazard
  - Nearest Active Fault - East Bohol Fault (4.6 KM)
  - Ground Rupture - Safe
  - Ground Shaking - Prone; Intensity VIII
  - Earthquake Induced Landslide - Highly Susceptible

- Hydro Meteorological
  - Flood - High Susceptibility; 1 to 2 Meters Flood Height and/or more than 3 days flooding
  - Storm Surge - Safe
  - Severe Wind - 88.1 - 117 KPH (20 year return period)
Microfinance:

Ugpong:
• Observations:
  o Only 1 out of 8 households visited was a member of an MFI - ASA Philippines.
  o Microfinance Institutions Present within the community:
    - ASA Philippines
    - RAFI
    - Life Bank
    - CARD
    - Dunganon
    - TSKI
    - Carmen
  o Homeowners interviewed were not comfortable getting a loan to rebuild their houses because Typhoon Odette has affected and destroyed their sources of income.

Valladolid:
• Observations:
  o No one from the visited houses were a member of any MFI present in the community.
  o Microfinance Institutions Present within the community:
    - ASA Philippines
    - RAFI
    - Life Bank
    - CARD
    - Dunganon
    - TSKI
    - Carmen
Livelihood:

Ugpong:
• Observations:
  • Livelihood present in the community:
    • Nipa Weaving
    • Tourism (Souvenirs, Loboc River Cruise etc.)
    • Construction (Demand started after Typhoon Odette)
  • Fishing
  • Agriculture

Valladolid:
• Observations:
  • Financial condition of the community is starting to recover.
  • Livelihood present in the community:
    • Agriculture (Copra)
    • Construction (Demand picked-up after Typhoon Odette)
Local Government Unit - Loboc, Bohol:

Observations:
• Total Number of Partially Damaged: 2,850 (Estimated Cost: PhP 228 Million)
• Total Number of Fully Damaged: 424 (Estimated Cost: PhP 84.8 Million)
• Last Typhoon: 2013 – Typhoon Yolanda
• Provided Shelter Assistance: For totally damaged – 10 CGI Sheets
• Building Permit: Required for reconstruction
• Community’s Concept of Safe Room: None
• Wind Speed: No recorded wind speed
• Local Builders:
  o Labor Rate:
    o Labor – PhP 400
    o Skilled - PhP 600
  o Local Builders’ Knowledge to build wind resistant houses: Needs improvement
  o Builders’ Concept of Safe Room – None
  o Training and Capacity Building – Indentified gap in disaster resilient construction practices
Local Government Unit - Loboc:

Observations:

• Community: No IEC Materials focused on before and during typhoons
• Land
  o Ugpong – Some parts of the Barangay are under “No Build Zone”
  o Valladolid – Tagged as “No Build Zone” and needs relocation
• Relocation Plans:
  o Ugpong
    □ Relocation plans are in partnership with an NGO – Loboc International
  o Valladolid
    □ Identified 31 homeowners who signified interest to relocate
    □ In partnership with NHA and a private donor for land
Initial Needs Assessment: Inabanga, Bohol

Technical and Non-Technical Assessment
Sitio Bacayan, Barangay Badiang
Partially Damaged Houses:

Sitio Bacayan, Barangay Badiang:
3 Houses
Fully Damaged Houses:

Sitio Bacayan, Barangay Badiang:
49 Houses
Status of Rebuilding

OBSERVATIONS:

• Majority of the affected households are still living with relatives.

• Some households built makeshift houses using salvaged materials for their temporary shelter because no shelter assistance has been provided yet.
Local Hazard – Hazard Hunter

Sitio Bacayan, Barangay Badiang:

• Seismic Hazard
  • Nearest Active Fault - North Bohol Fault (3.4 KM)
  • Ground Rupture - Safe
  • Ground Shaking - Prone; Intensity VIII
  • Earthquake Induced Landslide - Safe
  • Liquefaction - Highly Susceptible
  • Tsunami - Safe

• Hydro Meteorological
  • Rain Induced Landslide - Low Susceptibility; No identified landslide
  • Storm Surge - Safe
  • Severe Wind - 117.1 - 220 KPH (20 year return period)
Microfinance:

Barangay Badiang:
• Observations:
  o 11 out of 52 households in the Barangay are members of ASA Philippines.
  o Microfinance Institutions Present within the community:
    - ASA Philippines
    - RAFI
    - Life Bank
    - CARD
    - TSKI
  o Availing of loans from MFIs are not seen as an option since they do not have savings and are mostly relying on donations.
Livelihood:

Sitio Bacayan, Barangay Badiang:

• Observations:
  • Livelihood present in the community:
    • Fishing
    • Construction
    • Sawali Weaving
    • Agriculture
Local Government Unit - Inabanga, Bohol:

Observations:
• Total Number of Partially Damaged: 3,708
• Total Number of Fully Damaged: 7,781
• Last Typhoon: 2013 – Typhoon Yolanda
• Provided limited shelter assistance: y damaged – 10 CGI Sheets
• Building Permit: Required for reconstruction
• Community’s Concept of Safe Room: None
• Wind Speed: No recorded wind speed
• Local Builders:
  o Labor Rate:
    o Labor – PhP 400
    o Skilled - PhP 600
  o Local Builders’ Knowledge to build wind resistant houses: Needs improvement
  o Builders’ Concept of Safe Room – None
  o Training and Capacity Building – Identified gap in disaster resilient construction practices
Local Government Unit - Inabanga, Bohol:

Observations:
• Community: No IEC Materials focused on before and during typhoons
• Land
  o Sitio Bacayan, Barangay Badiang – under Build Zone but classified as Agriculture
• Relocation Plans:
  • No relocation plans
Existing House Typologies

Types of houses and materials used
Existing House Typologies:

Brgy. Ugpong, Valladolid (Loboc) and Badiang (Inabanga)
- Timber
- Concrete
- Mixed

- > 95% of Totally damaged houses are Timber and Light materials
- Majority of the homeowners prefers to rebuild their houses using concrete/masonry if funding is available
House built after 2013 Bohol Earthquake

Houses built after the 2013 Bohol earthquake made out of Mixed Masonry and Timber wall were fully damaged by Typhoon Odette.
Construction Materials

- Concrete Hollow Blocks (CHB) 6” - Php 25-31/piece
- Sand - Php 1175-1795/m³
- Gravel - Php 1550-1795/m³
- Cement - Php 227-265/bag
- 12mm RSB - Php 317-322/piece
- 10mm RSB - Php 220-240/piece
- 2x4x12’ Good Lumber - Php 608/piece
- 2X6X12’ Good Lumber - Php 1200/piece
- Marine Plywood - Php 790-798/piece
Recommendation
Recommendation

Option 1 - On-site rebuilding of fully damaged house in Brgy. Badiang, Inabanga

Option 2 - Relocation of residents affected in Barangay Valladolid and Ugpong

Option 3 - Partner with Loboc International for the relocation of affected residents to identified lots owned by residents and/or relatives
Proposed House Design
1 Story Concrete House
(Light Roof)

**Project Description:** Proposed design of One Story Concrete Core House, with the following features:

- Indoor kitchen
- Wooden doors and windows
- Plastered walls inside and outside
- Smooth concrete finish flooring
- With basic electricals and devices
- With basic plumbing and accessories

**House Floor Area:** 16 sq.m
## Cost Summary per unit

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<thead>
<tr>
<th></th>
<th>Light Roof</th>
<th>Slab Roof</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials Cost</strong></td>
<td>Php 280,000</td>
<td>Php 270,000</td>
</tr>
<tr>
<td><strong>Labor (30% of Materials Cost)</strong></td>
<td>Php 84,000</td>
<td>Php 81,000</td>
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<tr>
<td><strong>Hauling (5% of Materials Cost)</strong></td>
<td>Php 14,000</td>
<td>Php 13,500</td>
</tr>
<tr>
<td><strong>Contingency (5% of Materials Cost + Labor + Hauling)</strong></td>
<td>Php 18,900</td>
<td>Php 18,225</td>
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<tr>
<td><strong>Total</strong></td>
<td>Php 396,900 (USD 7,938)*</td>
<td>Php 382,725 (USD 7,655)*</td>
</tr>
<tr>
<td><strong>Cost/sqm</strong></td>
<td>Php 24,806.25</td>
<td>Php 23,920.31</td>
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</table>

Optional:

- Horizontal Expansion provision = Php 11,000
- Vertical Expansion provision = Php 14,000

* USD 1 = Php 50
Thank you!