CASE STUDY

PHILIPPINES 2023-2024 / TYPHOON ODETTE

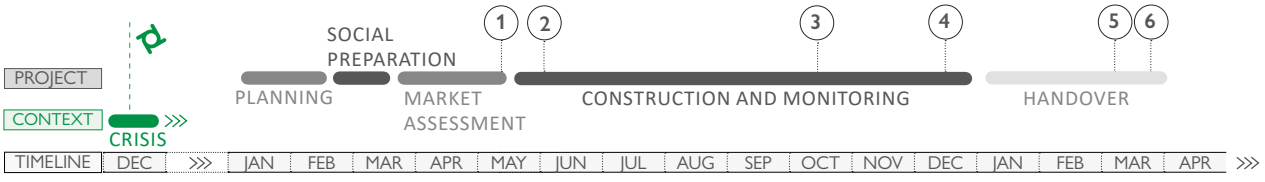
CONTEXT / SETTLEMENT SHELTER TYPE SUPPORT METHODS

CRISIS	Typhoon Rai (Odette), Dec 2021
PEOPLE AFFECTED	11 million people affected*
PEOPLE DISPLACED	93,655 people displaced*
TOTAL HOMES DAMAGED	2,108,858 houses (with 404,653 destroyed)*
PROJECT LOCATION	Municipality of Alegria, Cebu
PEOPLE SUPPORTED BY THE PROJECT	355 individuals / 71 households
PROJECT OUTPUTS	71 permanent houses built with wind-resistant features, electrical installations and solar panel kit. Site level interventions: concrete retaining walls, water system.
SHELTER SIZE	24.3 m² / household
SHELTER DENSITY	4.86 m² / person
DIRECT COST	USD 6,810 per house
PROJECT COST	USD 10,875 per household

** DROMIC DWSD Disaster Response Operations Management, Information, and Communication.*

PROJECT SUMMARY

The project supported the permanent relocation of 71 vulnerable households following Typhoon Odette. Implemented in support of government recovery efforts, it provided permanent housing for families whose homes had been completely destroyed and were located in coastal and landslide-prone areas designated as no-build zones after the disaster. The relocation site was developed on public land donated by the Local Government and prioritized households with limited capacity to recover independently, including female-headed households, older persons, and persons with disabilities. The intervention aimed to restore safe and dignified living conditions while reducing future exposure to natural hazards and displacement.



Dec 2021: Typhoon Rai (Odette).

1. **May 2023:** Signing of MoA between Alegria local government and the project organization.
2. **May 2023:** Beneficiary-led construction of concrete shelters begins.
3. **Oct 2023:** Provision of livelihood assistance to each beneficiary.
4. **Sep-Dec 2023:** Implementation of DRR activities in the community.
5. **Mar 2024:** Installation of solar panel, retaining walls, protective railings and water lines.
6. **Mar 2024:** Handover of shelter assistance to the beneficiaries.

The project supported the safe resettlement of 71 families after a typhoon.

Permanent houses and site infrastructure were built on a slopey site using locally procured resources and labour.

BACKGROUND

Super Typhoon Rai (Odette) struck the Philippines on 16 December 2021, causing widespread damage across the central and southern Philippines. By February 2022, nearly three million families had been affected, more than 400 people had died, and over 2.1 million houses had been damaged, including more than 400,000 that were completely destroyed..

SITUATION BEFORE THE TYPHOON

Before the typhoon, many affected households already lived in vulnerable conditions, informal or low-quality housing, often in hazard-prone coastal environments with limited access to services. These pre-existing vulnerabilities magnified the impact of the storm and reduced the capacity of the worst-affected families to recover without targeted external support.

SITUATION AFTER THE TYPHOON

Typhoon Rai severely damaged or destroyed homes and livelihoods, forcing thousands to seek shelter in evacuation centers, with host families, or in improvised structures. For many families from no-build zones and highly exposed coastal areas, including in Alegria, Cebu, safe return and reconstruction on original plots were not feasible, reinforcing the need for a relocation-based approach for those with the least capacity to recover independently.

NATIONAL SHELTER RESPONSE

The wider response combined emergency shelter assistance, safer building awareness, technical guidance and targeted recovery support. The implementing partners distributed essential household items to 5,000 households and emergency shelter assistance to 10,138 families. More than 10,000 recipients and builders received Build Back Safer orientation and technical guidance. In Alegria, recovery programming then focused on Full Shelter Assistance for 71 households in a permanent relocation site, complemented by livelihoods, WASH and community-based recovery activities. This component of the assistance is covered in this case study.

The project targeted households who could not safely return and rebuild on their original plots of land, as they were located on no-build zones.

PROJECT IMPLEMENTATION

Implementation was structured around municipal land donation, cash-based construction, technical design, community validation and continuous technical oversight. The implementing team worked with local authorities to validate the relocation site, prepare individual plots and agree administrative arrangements. Targeting criteria were developed through planning workshops and community engagement and validation. The project then moved from social preparation and technical planning to procurement, site development and housing construction, with daily monitoring by technical staff and volunteers until handover.

The construction approach combined cash-based implementation with strong technical oversight. Rather than requiring vulnerable households to physically build their own houses, the project used cash to enable local procurement, payment of skilled labour and adjustments to site-specific needs. Beneficiaries contributed mainly through validation, decision-making and community coordination, while trained workers carried out the construction under daily technical supervision. This allowed the project to use local capacity and adapt to market and terrain constraints, while maintaining fixed safety standards, quality checks and final inspections before handover.

PHASE 1: TECHNICAL SITE DEVELOPMENT AND HAZARD MITIGATION

The plot of land provided by the local government was considered suitable for relocation, with low landslide susceptibility, but required substantial terracing and site infrastructure before construction could begin. The steep and uneven terrain made site development a major technical component, including terracing, drainage, access works and retaining structures. During excavation, hidden boulders and variable ground conditions required additional equipment and adjustments to the construction sequence.

PHASE 2: VULNERABILITY MAPPING AND SPATIAL ZONING

Households were selected based on verified total housing loss, the need for relocation and socio-economic vulnerability. Priority was given to families from no-build zones, active landslide areas or coastal wave-shock areas who had limited capacity to rebuild independently. This included child- and female-headed households, older people and persons with disabilities. Plot allocation also considered accessibility, with older persons and persons with disabilities prioritized for flatter, lower-tier plots closer to roads and services.

The housing component was part of a broader settlement approach.

Due to the terrain, unforseen presence of large boulders and varying soil conditions, site works required heavy equipment and longer than expected.

PHASE 3: COMMUNITY CONSULTATIONS AND ARCHITECTURAL CUSTOMIZATION

Community engagement took multiple forms: planning workshops, neighborhood consultations, beneficiary validation, and structured feedback channels. The Barangay Recovery Committee (BaReCom) represented the community, supporting prioritization, transparency, and coordination of on-site activities. While structural safety standards, such as the reinforced concrete frame, foundation depth, and roof anchorage, remained fixed, households influenced non-structural preferences, including choices about sanitation placement outside the main house footprint.

PHASE 4: DECENTRALIZED PROCUREMENT AND MATERIAL LOGISTICS

Procurement and logistics were adapted to local conditions and sources. Technical staff, volunteers, and contractors supported delivery, stock handling, and quality control. As large boulders were found during site preparation, equipment requirements were revised and jackhammers procured to meet the terrain constraints. Settlement-level elements, including solar panels, retaining walls, protective railings, and water line connections, were included to ensure that permanent structures functioned as complete homes within a livable settlement.

PHASE 5: HOUSING CONSTRUCTION

Local skilled workers conducted housing construction under daily technical monitoring by engineers, technical staff, local authority representatives and volunteers. The structural system comprised single-storey reinforced concrete post-and-beam frames aligned with the National Building Code, with emphasized frame continuity, roof-to-wall connections, anchorage, and wind-resistant roof ties to reduce uplift risk. Quality assurance included daily workmanship checks, pre-pour inspections, reinforcement and roof-frame supervision, and punch-listing prior to handover to ensure defects were corrected. Off-grid solar kits were integrated at unit level to address the absence of municipal power.

COMMUNITY ENGAGEMENT AND COORDINATION

The community recovery committee and neighborhood-level sessions were used to validate targeting, review plot allocation, identify accessibility needs, and shape non-structural design preferences. Structured feedback mechanisms and public processes improved transparency and acceptance, while technical standards for structural safety remained fixed.

Strong coordination between the implementing team, local authorities and community structures underpinned implementation. The community recovery committee served as the central community coordination mechanism, ensuring participation and accountability. Technical support contributed to consistent quality assurance and documentation throughout.

MAIN CHALLENGES

The main challenge was the underestimation of front-end site development requirements on steep, terraced land with hidden boulders and variable soils. This affected equipment needs, procurement, logistics and sequencing, and extended the displacement period for some households. Labour availability, material deliveries and delayed water-supply arrangements added further pressure to the construction timeline.

PROTECTION, GENDER AND INCLUSION

Women and men had equal access to information, resources and decision-making spaces, and women were represented in leadership roles. Accessibility considerations also informed plot allocation, as mentioned above.

LINKS WITH RECOVERY

the shelter component was complemented by household-level Livelihood Assistance, providing small capital for re-establishing or repairing income-generating activities; settlement-level WASH works, solar energy, retaining walls, protective railings, and targeted DRR activities were included to strengthen recovery beyond housing structures.

EXIT/HANDOVER

Following structural completion and quality verification, responsibilities were transitioned to local authorities through an agreement that defined administrative, maintenance, and operational roles for the settlement. The municipality was in charge of overseeing water-supply follow-up and potential improvements, such as recreational areas, greening, access roads, and wastewater solutions, which are critical for long-term sustainability of a permanent settlement.

OUTCOMES AND WIDER IMPACTS

Direct outcomes included:

- Improved safety and protection: households reported feeling more secure against hazards thanks to stronger construction and relocation to a safer site.
- Restoration of adequate housing: families moved from damaged or destroyed shelters into permanent homes with upgraded materials and basic services, including solar power.
- Enhanced dignity and well-being: beneficiaries described the assistance as restoring dignity, pride, and a sense of normalcy.
- Support to recovery and livelihoods: coupling shelter with livelihood inputs facilitated greater household stability and income recovery prospects.

Construction was overseen by project technical staff, local authorities and volunteers.

While structural features were fixed, households had a degree of customization on other things, such as the location of the bathrooms.

Solar panels were also installed to ensure energy supply in areas with limited electricity infrastructure.

STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

√ **Community engagement and accountability mechanisms** supported transparent selection, public validation and participation. The community recovery committee, neighborhood consultations and feedback channels helped maintain acceptance and kept decisions visible to households and local stakeholders.

√ **The project treated shelter as part of a wider recovery package.** Permanent housing was combined with livelihoods, WASH, off-grid solar energy, retaining walls, protective railings and DRR activities, helping the relocation site function as a livable settlement rather than a set of stand-alone houses.

√ **Perceived quality of the houses was high.** Beneficiaries consistently described the shelters as safe and durable compared with their pre-disaster homes, and features like solar power and site infrastructure were linked to improved daily living and greater satisfaction.

√ **Coordination with local authorities underpinned sustainability.** Land donation, site validation, formal agreements, and clear post-handover responsibilities for service follow-up and settlement management embedded municipal ownership from the outset, strengthening prospects for long-term maintenance and improvement.

√ **Practical inclusion measures were incorporated.** Older persons and persons with disabilities were prioritized for lower-tier plots with easier access to roads and services, while gender equality and women's representation were integrated into decision-making and leadership roles during implementation.

WEAKNESSES

× **Front-end site development requirements were underestimated.** Initial assessments did not fully capture hidden boulders, terracing requirements, drainage needs, water-supply constraints or realistic heavy-equipment costs, leading to budget, equipment and sequencing adjustments during implementation.

× **Construction duration extended beyond the original plan** due to compounded challenges (labour availability, material deliveries, delayed water-supply arrangements), which prolonged the displacement period for some targeted households.

× **The focus on permanent, high-quality relocation support limited household coverage** compared with overall needs, reflecting a deliberate trade-off between depth and breadth.

FURTHER READING ON SHELTER PROJECTS

On resettlement following disasters:
SP 11-12 / A.27 PHILIPPINES / TS WASHI; SP 13-14 / A.02 COLOMBIA / FLOODS; SP 8TH ED. / A.14 PHILIPPINES / HAIYAN; SP 9TH ED. / A.7 MOZAMBIQUE / COMPLEX CRISIS.

On temporary assistance in No Build Zones:
SP 13-14 / A.25 PHILIPPINES / TYPHOON HAIYAN

Site preparations were underestimated and required several adjustments.

LESSONS LEARNED

- **Integrated assistance is critical.** When permanent shelter is paired with livelihood inputs, WASH, energy, DRR, and community engagement, households report stronger recovery trajectories than with shelter-only approaches.
- **Perceived quality matters for recovery.** Beneficiaries associated durable construction, safer locations, and features like solar power with safety, satisfaction and dignity, key drivers of psychosocial recovery and sustained use.
- **Community trust and visible accountability are non-negotiable.** Targeting transparency, public validation, clear grievance routes, and consistent engagement mechanisms help maintain acceptance, especially when resources allow support for only a limited number of households.
- **Secure permanent housing can support wider recovery when it is linked to services, livelihood inputs and community engagement.** In this case, settlement-level works and livelihood support helped households move beyond physical shelter assistance towards safer living conditions and more stable recovery pathways.

RECOMMENDATIONS MOVING FORWARD

- **Prioritize earlier and deeper technical site due diligence** before finalizing budgets, timelines and staffing, particularly where terraced or sloping land is proposed. Minimum checks should include topography, geotechnical conditions, drainage strategy, access, service availability, slope stability and realistic site-development costing.