

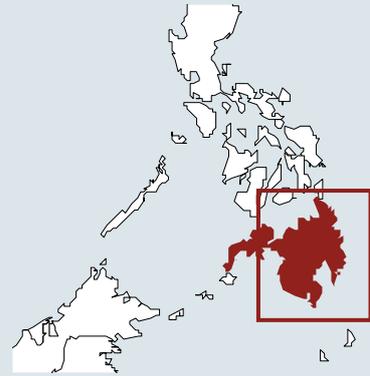
## A.25 Philippines – 2011 – Cyclone

### Overview:

#### Summary

In late 2011, over 39,000 houses were damaged and over 400,000 people were displaced by winds, floods and landslides following tropical storm Washi (also known as Sendong). Collective centres were established and non-food items were distributed in the first phase of the response.

After the emergency phase of response, transitional sites were established and programming shifted to include reconstruction on newly identified relocation sites (see A.27), transitional shelter programming in existing urban areas (see A.26), and repair and rehabilitation of damaged houses. After one year, 7,800 people remained in 38 different evacuation centres.



#### Background

The Philippines is a middle-income country, with a well-educated population and engaged local and national authorities. The Philippines regularly faces natural disasters and the country has had previous experience of coordination with the cluster system. This helped to manage the response efficiently.

Many low income families had settled in particularly vulnerable locations on river banks and other marginal land. In large parts of Mindanao there had not been any major disasters in recent memory.

In rural areas, families commonly lived in *amakan* type shelters (with woven bamboo walls) with frames made from bamboo and other varieties of wood.

For urban areas, people living at or below poverty line, lived in a mixture of raggedly constructed shanties and semi-concrete houses.

#### After the cyclone

Tropical storm Washi, (also known as Sendong), hit the Mindanao region of the Philippines from the 16<sup>th</sup> to the 18<sup>th</sup> of December 2011. The storm brought strong winds and heavy rain that led to flash floods, landslides and protracted flooding. 624,600 people were affected, 430,000 people were displaced and 39,000 houses were damaged or destroyed. The primary impacts were in Cagayan de Oro City and Iligan City.

In the immediate aftermath of the storm, people found shelter in evacuation centres, with host families, in rented accommodation, in makeshift shelters at the site of destroyed houses or in damaged houses.

The government immediately mounted a major emergency rescue, evacuation and response operation. Coordination was rapidly

established in northern Mindanao by the Office of Civil Defence. It worked closely with international organisations, and established co-ordination groups for shelter, camp management coordination and for non-food items.

Approximately three quarters of those people affected by the storm lived at or below the poverty line with limited means for self-recovery. Of the partially damaged houses, nearly half had no structural damage but needed to be cleaned before families could move back in.

Two months after the storm, moderate to heavy rains fell over parts of Mindanao and Visayas islands, triggering some flooding and landslides. Although no flooding was reported in the areas affected by the tropical storm, the rain worsened the conditions in temporary shelters.



Before the cyclone, many families were living in locations that were vulnerable to storms and flooding, but that had access to livelihoods. The government declared that some of these were “no build” zones, and new sites had to be identified. Photo: Wan Sophonpanich



Heavy rain caused over 400,000 people to be displaced. Most people made temporary repairs to their houses or moved in with host families.  
Photos: Anna Pont

### Evacuation centres

A total of 119 evacuation centres were established, housing 100,000 people (20,000 families). Initial response mainly focussed on meeting the needs of people in these often crowded evacuation centres. Camp management committees were established in many of the sites.

By the end of 2012 many evacuation centres had closed, leaving 7,800 people (1,700 families) in 38 evacuation centres.

### Tented camps

Some tented camps were established to decongest some of the most overcrowded evacuation centres, and to provide shelter for people living in evacuation centres which needed to be returned to their previous use (such as schools).

### Transitional sites and Relocation sites

Where temporarily available land could be found, transitional sites were established as a more durable solution to camps (See A.26).

When land for construction could be negotiated on a long term basis, relocation sites were established (See A.27). After four months, seven relocation projects were underway, with a planned capacity of nearly 6,000 houses for households whose land was unsafe.

By the end of 2012, nine permanent relocation sites had been established by the local government working with NGOs. 3,147 shelters were complete, 2,943 of which were handed over. 359 more permanent shelters were being built.

### Host families

Despite the early focus of relief activities on collective centres and the comparative ease of delivering large scale assistance to these centralised sites, the majority of the affected population found accommodation with host families. After 2 months, 260,000 people were living with host families. The main support that these families received was through emergency distribution.

### Recovery

An interagency shelter assessment based on secondary data sources was conducted within the first month of the storm, but took some time to be finally published. It provided numbers of damaged and destroyed houses that were used as planning figures.

Following these results, the shelter organisations collectively agreed to prioritise support to the most vulnerable 65 per cent of people whose houses had been lost or damaged:

- families/occupants of the 13,850 structurally damaged houses who were at or below the poverty line
- families from all the 11,427 totally destroyed houses.

The government established a reconstruction policy that included:

- the establishment of no build zones
- permanent housing
- material supplies
- site upgrading for informal settler families
- housing loans for families in formal settlement sites.

In practice, the only no-build zones that were officially declared were in Isla de Oro and Cala-cala. These highly damaged settlements were directly in the path of the river. No official declaration was made regarding other high risk and medium risk areas.

### Land

One of the major constraints in the provision of temporary and permanent shelter was the lack of available land. Identifying land and preparing transitional and permanent relocation sites took many months.



Camps were established for people living in closing or overcrowded evacuation centres. Some of the camps were very dense.  
Photo: Anna Pont



Some transitional sites were established as more durable solutions than camps.  
Photo: Anna Pont

## A.26 Philippines – 2012 – Cyclone

### Case Study:

#### Country:

The Philippines

#### Project location:

Mindanao

#### Disaster:

Tropical Storm Washi (Sendong)

#### Disaster date:

December 16<sup>th</sup> 2011

#### Number of houses damaged / destroyed:

39,000

#### Number of people displaced:

30 per cent of the 600,000 population of Cagayan de Oro City

#### Project outputs:

30 transitional settlement sites with services  
1,823 t-shelters

#### Occupancy rate on handover:

92 per cent

#### Shelter size:

18m<sup>2</sup> for family of five

#### Materials cost per shelter:

US\$ 410 for relocation sites  
US\$ 550 for on-site construction.



#### Project timeline



#### Project description

The organisation implemented an urban transitional settlement programme building 1,823 transitional shelters. Many complex issues arose, including land and property rights, zoning issues, high-risk settlements and providing shelter solutions to those without land rights. This programme demonstrated the importance of and challenges to acquiring land for transitional settlements.

#### Strengths and weaknesses

- ✓ The transitional shelter (t-shelter) design cost US\$ 410, including labour. This was cheaper than emergency tents (US\$ 800-1,000, including airfreight).
- ✓ The t-shelter design and was inspired by the local vernacular architecture. Shelters could be maintained and materials could be re-used.
- ✓ The integration of WASH and shelter was emphasised from the beginning of the program.
- ✓ The agency put a great deal of effort into persuading land owners to release their land.
- ✓ The agency successfully negotiated the free installation and use of water and electricity for two months for 7 relocation sites.
- ✗ There were questions around how disaster-resistant the t-shelter design was.
- ✗ The organisation would have benefitted from hiring a liaison officer to better understand the political system and accelerate the project.
- ✗ There were difficulties in verifying beneficiaries for

on-site shelter support. Additional targeting criteria and stricter decision-making timeframes would have improved beneficiary selection.

- ✗ The project was unable to support some of the most vulnerable affected populations, notably people in 'high-risk zones' (due to official objections) and people with ambiguous land tenure.
- ✗ An alternative shelter design for people with disabilities should have been developed.
- An ill-defined 'no-build zone' policy created challenges. A number of landowners remained in 'limbo' because their homes were within no-build zones, and new land was not allocated.
- Different stakeholders, such as the church and local government, had different approaches to beneficiary selection and prioritisation.
- Some affected households refused to move into a transitional settlement because they thought this would impact on their right to promised permanent housing.

## Before the cyclone

(See overview A.25 for background.)

Until 2011, there had been no major floods in the area since the 1950s. The population of Cagayan de Oro had spread along risk areas, such as river banks and delta areas. In Macasandig, one of the most affected areas, there was a mix of commercial and residential buildings. Residents ranged from poor in shanty areas to middle-class in apartment buildings.

Despite the well-developed local administration, the complexities of addressing housing, land and property issues in an urban transitional response presented real challenges in supporting the most vulnerable.

## After the cyclone

The flash floods caused by Tropical Storm Washi destroyed a large portion of the city centre of Cagayan de Oro. Macasandig and Isla de Oro were the worst affected urban *barangays* (the smallest administrative boundary, equivalent to a village).

Poor families residing in makeshift shelters by the river banks suffered the most. Many middle-class households who rented or owned apartments were also affected.

As the emergency response unfolded, the government launched their permanent housing programme. The agency proposed a two-tier transitional shelter programme to plug the gap between emergency shelter and permanent housing.

## Land Acquisition

The following criteria were used to verify the suitability of land:

- clarity of land ownership
- land is donated rent-free for up to 2 years
- land owner clearly understands the purpose and the nature of transitional settlements
- land is well drained and is not at



Emergency shelters such as schools and gymnasiums quickly became overcrowded in the aftermath of the storm.  
Photo: CRS/S.Hirano

risk of flooding or landslide

- access to roads
- access to water (either groundwater or pipe connection) and electricity
- costs of travelling into the city from the site were not prohibitively expensive for beneficiaries
- the proximity of public facilities such as schools, health centers and markets.

Different types of agreement were required with different landowners. In most sites, there was a guarantee that land would be returned to owner. Overall 30 sites were established.

The types of agreement are summarised in the table below.

owner	type of agreement	endorsed by
City	Verbal agreement for temporary use. Other conditions included requests for certain shelter recipients or, in one case, early closure of the site in order for the land to be used for permanent shelter.	Mayor
Private	Written MoA between the Archdiocese of Cagayan de Oro and the landowner with terms and conditions.	Landowner
Church	Verbal agreement after request of Archbishop.	Archbishop

## Selection of beneficiaries Relocation

There were only two organisations who responded with transitional shelter projects in the Philippines. As a result, there was considerable pressure from government officials, church leaders, camp managers and other NGOs to prioritise certain evacuation centres or specific beneficiaries.

The government prioritised closing evacuation centers and tent cities before assisting community-based IDPs as the evacuation centres were costly and water and sanitation services were over-stretched. Meanwhile, organisations working on education issues advocated for emptying schools to address protection concerns associated with having displaced people living on school grounds.

Families who wanted to return to their places of origin were given lowest priority on the permanent housing waiting list.

The organisation faced the challenges of determining whether informal settlers had really lost their homes in the storm. There were some cases of 'opportunists' trying to use the system to receive a shelter although their home remained intact.



Transitional shelters could be relocated.  
Photo: Charisse Mae Borja / CRS



Transitional shelters could be placed on available plots of land.  
Photo: Seki Hirano / CRS

The organisation aimed to retain community social structures as far as possible when relocating beneficiaries in the most affected areas. This was not always possible due to variations in site location, timing of response, and the number of shelters available on each site.

#### On site Construction

Affected households whose houses had been totally destroyed, and who lived in low to medium risk zones, were offered flood-resistant transitional shelters sited in their original neighbourhood. Water and Sanitation facilities were organised within community groups and elevated septic tanks were constructed.

Informal settlers were often without official land or house tenure papers. This meant it was difficult to confirm whether they had lost their home during Washi or if they had lived elsewhere.

To identify households for on-site rebuilding, the organisation conducted a community mapping process. This involved visiting former housing locations, verifying the damage to houses, verifying the lack of shelter, interviewing neighbours and verifying lists of names with ward leaders and community leaders. This ward specific approach was taken helped to retain the community structure.

It was challenging to identify those most in need. As time passed, a number of people had begun rebuilding, making it difficult to verify the original level of damage.

#### Implementation

To address the range of needs the agency offered two transitional shelter options: construction on either the original site or in one of 15 relocation sites.

#### Transitional shelter design

Transitional shelters erected on relocation sites needed to be moveable and make minimal impact on the land.

The agency worked with a local architect and local engineers to design an adaptation of the traditional *Amakan* (bamboo or palm leaf weave) house.

*Amakan* houses have been built for centuries and are well adapted to the tropical climate of the Philippines. They can also easily be repaired or rebuilt. The design used locally available *amakan* (palm was used) for the walls and coco lumber, which is durable and inexpensive, for the structural frames.

The design was based on the following design criteria:

- Culturally appropriate: Provides privacy, uses local materials and provides protection from rain and heat
- Relocatable: Can be carried by 20 persons or easily dismantled
- Speed of construction: Can be built in 2-3 days
- Economical
- Flexible: Design can be adjusted for relocated families or those returning to original sites
- Upgradeable: Can be upgraded to a permanent home.

#### DRR components

Drainage, sewage channels and other essential infrastructure were provided where necessary. This was to ensure the protection of both the people living on the land and the land itself.

On-site transitional shelters were constructed using a reinforced concrete foundation enabling the shelter to be securely anchored, preventing it from being upturned by flood or strong winds.

The design featured a raised floor to provide flood protection, facilitate ventilation and to keep out vermin.

#### Logistics

Drying timber and limited road access were the biggest logistical issues, affecting delivery time and costs. One truck could carry enough timber for 28 transitional shelters, meaning that over 75 truckloads of timber were required for the whole project.

#### Materials list

Materials	Quantity
Portland cement(40kg)	5 bags
Mixed gravel	1 bags
10mmx6.0m re-bar	12m
8mmx6.0m re-bar	3m
Coco Lumber 4"x4"x12'	64 ft.
Coco Lumber 2"x3"x12'	128 ft.
Coco Lumber 2"x4"x8'	128 ft.
Coco Lumber 2"x2"x8'	75 ft.
Coco Lumber 2"x4"x8'	32 ft.
2" umbrella nails	1kg
Bamboo slats	3 bundle
Nails	9kg
Plywood 3/4"x4"x8"	6 sheets
Plywood 3/16"x4"x8'	6 sheets
Amakan 4'x8'	13 sheets
Sealant	1 pint

## A.27 Philippines – 2012 – Cyclone

**Case Study:** **Keywords:** Resettlement, Household NFIs, Construction materials, Core housing construction, Housing repair and retrofitting, Site planning, Infrastructure, Training.

### Country:

The Philippines

### Project location:

Mindanao

### Disaster:

Tropical Storm Washi (Sendong)

### Disaster date:

16<sup>th</sup> December 2011

### Number of houses damaged / destroyed:

39,000

### Project outputs:

5,000 emergency shelter kits  
6,000 permanent core houses  
(90 per cent complete)

### Occupancy rate on handover:

70 per cent occupancy

### Shelter size:

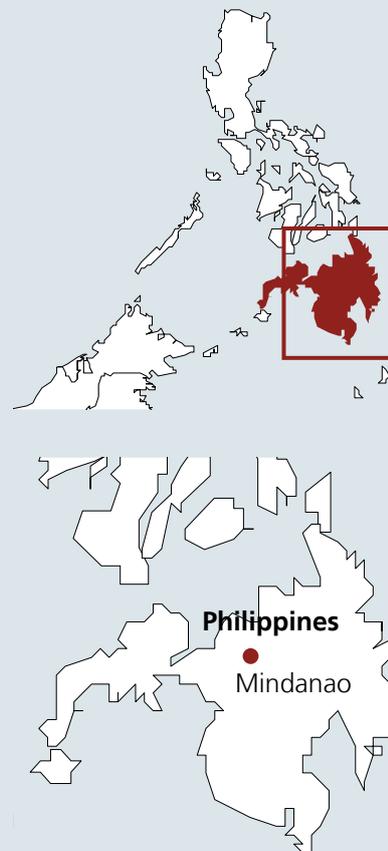
21m<sup>2</sup> - permanent core house

### Materials cost per shelter:

US\$ 50: emergency shelter kit  
US\$ 2,750: permanent core house

### Project cost per shelter:

US\$ 3,100



### Project timeline



### Project description

The organisation distributed 5,000 shelter repair kits and built 6,000 housing units for displaced families. It built the houses with services on new relocation sites using contractors, volunteers and working with partners. It deployed three construction mobilisation units for the repair and restoration of houses and communities damaged by the storm.

### Strengths and weaknesses

- ✓ Good relations were established with local authorities. As a result, land for relocation sites and resources for site development were readily available from the authorities.
- ✓ Quick development of family selection criteria and process. As a result, displaced families could be offered a clear path to recovery in a relatively short time.
- ✓ Good management of construction activities in multiple sites with a variety of contractors contributing to a steady delivery of permanent shelter.
- ✓ The project has allowed the development of block-making, welding and carpentry skills among the affected populations.
- ✗ Due to limited availability of local construction materials and high prices, advance scouting became necessary to order from suppliers. This created some backlog in implementation.
- ✗ Price hikes of 30 per cent and more created a

- negative impact in the project and the local economy.
- ✗ Relocation introduced the need to develop new networks and community relations among the relocated population. These activities had very little funding support from the project.
- ✗ Delays among other organisations providing infrastructure and services to the sites meant that only 70 per cent of the houses were occupied by the end of 2012.
- Strong coordination with other organisations through national coordination and local interagency group meetings was needed to avoid duplication of material distributions. Several organisations provided similar products, such as repair kits.
- At the end of 2012, Typhoon Bopha (Pablo) hit Mindanao. Previously, Mindanao was seldom hit by cyclones and typhoons, as a result preparedness was lower than elsewhere.



The organisation rapidly completed 70 per cent of a planned 6,000 houses within 11 months of the storm on safer permanent relocation sites.

Photo: Mikel Flamm

### Before the cyclone

See Section A.25 for background.

Families were settled along the river banks of the Cagayan de Oro river and other minor streams in northern Mindanao. The locations are extremely hazardous and in high-risk for flash floods. While being high risk areas, these locations were well located economically, being near the cities' commercial districts where most families found support for their livelihoods.

### After the cyclone

Rain from the severe tropical storm Washi (Sendong) created flash floods. Most houses located by the river banks were completely destroyed. Homes in safer locations were damaged by high winds.

The government issued a decree to prevent re-settlement and reconstruction of houses in some high risk areas. As a result, families were displaced into camps set up by the local authorities and international humanitarian organisations.

The Government of the Philippines made an early decision after the disaster to relocate affected families who had been living in the river banks of the Cagayan de Oro river. Their homes were completely washed away by the floods.

Local government entities provided land for temporary camps in the outskirts of cities, to accommodate the displaced until permanent shelter could be secured.

### Implementation

The organisation distributed 5,000 emergency shelter kits containing construction materials (timber, corrugated galvanised sheets, nails, etc.) and basic tools to support emergency repairs on damaged homes.

Staff made an initial damage assessment in affected neighbourhoods and issued vouchers. The distribution was made out of a centrally located warehouse.

In coordination with local and national authorities, the organisation conducted assessments and planned to construct 6,000 permanent shelters in 10 relocation sites in Cagayan de Oro City and Iligan.

Government agencies provided land from pre-existing land banks and facilitated planning resources and heavy machinery for site development. The organisation was put in charge of overall programme coordination and the construction of the permanent shelters.

### Selection of beneficiaries

The Philippines' national Department of Social Welfare and Development, conducted a thorough survey and census of affected families. It used this to determine eligibility for assistance and shelter support. Families prevented from resettling in high risk areas were placed in tented camps and selected for relocation to the nearest site where permanent shelter was being built.



New relocation sites were planned in locations with lower cyclone risk.

Photo: Mikel Flamm



Non-food items and housing repair kits were distributed to 5,000 households.  
Photo: Leonilo Escalada



Construction was implemented using contractors, volunteers and by working with partner organisations.  
Photo: Mikel Flamm

## Implementation

The organisation used 22 small construction groups as external contractors. These worked in combination with its own staff, volunteers and implementing partner organisations.

Family participation in project activities was limited to unskilled tasks and attendance to skills development training (carpentry, welding, and concrete block-making).

## Coordination

From the beginning of the response, it became clear that there would be a division of labour between humanitarian organisations responding to the disaster.

While some organisations invested efforts in tents and transitional shelter in camp settings, this organisation was keen to embark on a permanent shelter construction programme to allow for the next stage in the recovery. Coordination was key in helping to clearly define these roles, and to provide a pathway to permanent shelter for affected families.

## DRR components

The different relocation sites were located in low-risk areas, with reduced natural threats. These relocation sites were safer than families' original plots by the river.

The permanent core houses were structurally designed by engineers, incorporating strapping and reinforcements and were approved by the relevant authorities. The sites were provided with drainage infrastructure and roads, and walkways were built to manage erosion.

Before families moved into their new homes, as part of the induction to the new settlements, they received an initial training induction on disaster preparedness. This was coordinated with the local emergency management agency.

## Technical solutions

The core house was built from concrete blocks, with a reinforced masonry design. There were steel reinforcement bars, both vertically and horizontally. The roof structure was made of metal trusses and purlins, with a cover of zinc/aluminium sheeting. Doors and windows used metal frames, and the floor was covered with ceramic tiles.

Each shelter unit had a multiple purpose room, an attached sanitary unit (toilet and bath area) and a small kitchen area. The height of the buildings allowed a mezzanine level to be built by occupants to create a raised sleeping area. This could potentially increase the living space from 21m<sup>2</sup> to 36m<sup>2</sup>.

**"At the beginning, we were doubtful we could be in a permanent house so soon after Washi. We are happy that we could move out of the tent into a permanent house."**

A new housholder at the Calaan site, Cagayan de Oro City

## Logistics

On account of its scale, the project presented many logistical hurdles related to the supply of construction materials.

The organisation purchased cement, reinforcement bar and other materials in bulk to minimize the price rises following the disaster. These materials were then distributed to contractors as required by the progress of construction.

The project benefitted from skilled and experienced managerial staff coming from the organisation's central office in Manila, as well as newly hired staff.