

# LESSONS LEARNED

WASH Cluster  
Philippines 2012



## Tropical Storm Sendong (WASHI)



WASH Cluster  
Water Sanitation Hygiene

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# Tropical Storm Sendong (WASHI)



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This report is also available electronically on CD. Annexures/appendices are only available through the electronic version.

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# Foreword

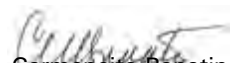
This document is the outcome of a technical review by the Water, Sanitation and Hygiene Cluster (WASH Cluster) to draw out lessons learned from Tropical Storm Sendong (international name Washi) emergency response in the Philippines from December 2011 to June 2012. More than 200,000 individuals were displaced and approximately PhP1.34 billion (about US\$32.6 million)<sup>1</sup> in damages were estimated in Cagayan de Oro (CDO) and Iligan cities alone, as a result of the devastation brought about by Sendong which touched ground on midnight of 16 December 2012.

Over a very short period of time, a huge humanitarian effort by the Philippine Government, United Nations agencies (UN agencies), private sector and both International and Local non-government organisations (NGOs) resulted in provisions of WASH infrastructure and services to the internally displaced persons (IDPs). Throughout the duration of the emergency response, there were no outbreaks of diarrhoea, one of the best indicators of a successful WASH emergency programme. The WASH Cluster either achieved or came close to achieving minimum international standards set out in the SPHERE handbook.

This document, which covers 23 technical areas, focuses on aspects of coordination, water, sanitation and hygiene promotion. For each of these technical areas the following subsections are presented: the need/gap, an outline of the interventions taken, lessons learned, and the preparedness actions required. Readers are welcome to read from beginning to end, or simply read the sections that interest them.

This document is intended for WASH practitioners in emergency preparedness and response. It is rich with practical examples of how the WASH Cluster overcame a host of challenges, successful interventions, as well as preparedness actions that should be considered. While this document is exclusive to the WASH Sendong response—a predominantly urban-based emergency, with its own challenges and advantages—it is hoped that WASH practitioners globally may find some valuable lessons from within these pages.

We wish to express our appreciation to the tremendous dedication of all those involved in the WASH Cluster response to the emergency across Government, UN agencies, NGOs and Private Sector. Furthermore, we wish to thank all of the WASH specialists who devoted time to write and review the technical sections amidst their busy schedules.



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<sup>1</sup> OCHA Philippines Summary Report 12 January 2012

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# Acronyms

ACF	Action Contre la Faim
ADRA	Adventist Development and Relief Agency
AECID	Spanish Agency for International Development Cooperation
AFP	Armed Forces of the Philippines
ASDSW	A Single Drop of Safe Water
AUSAID	Australian Aid
BHW	Barangay (Village) Health Worker
BMFI	Balay Mindanaw Foundation, Inc.
BNS	Barangay Nutrition Scholar
BoQ	Bill of Quantities
CCA	Climate change adaptation
CCCM	camp coordination/camp management
CDO	Cagayan De Oro City
CFSI	Community and Family Services International
CFW	Cash For Work
CHD	Centre for Health Development (Regional level)
CHO	City Health Office
COWD	CDO Water District
CRS	The Catholic Relief Service
CSR	Corporate Social Responsibility
DENR	Department of Environment and Natural Resources
DoH	Department of Health
DOLE	Department of Labor and Employment
DOST	Department of Science and Technology
DRR	Disaster risk reduction
DSWD	Department of Social Welfare and Development
DTM	Data Tracking Matrix
EC	evacuation centre



ECHO	The Humanitarian Aid and Civil Protection Department of the European Commission
EcoWEB	Ecosystems Work for Essential Benefits
EM	Effective Microorganism
FPs	focal points
HP	hygiene promotion
HRC	Humanitarian Response Consortium
ICWS	Iligan City Waterworks Service
IEC	information, education and communication
IM	information management
IOM	International Organization for Migration
LGU	local government unit (includes Provincial/City/Municipal and Barangay levels)
LWR	Lutheran World Relief
MIRA	multi-initial rapid assessment
MHPSS	Mental Health and Psychosocial Support
NDRRMC	National Disaster Risk Reduction Management Council
OCD	Office of Civil Defence
OCHA	Office Coordination of Humanitarian Affairs
P-Codes	place codes
PCA	Project Cooperation Agreement
PHAST	Participatory Hygiene and Sanitation Transformation
PML	Portable Microbiological Laboratory
PRC	Philippine Red Cross
PWD	person with disability
RDRRMC	Regional Disaster Risk Reduction Monitoring Council
RECA SEAP	Regional Emergency Cluster Advisor - South East Asia Pacific
SI	sanitary inspector
SWL	standing water level
SWM	solid waste management
ToR	Terms of Reference
TS	transitional Site
TWG	technical working group
UDDT	Urine Diversion Dehydration Toilet or Ecosan
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
WAND Foundation	Women in Action for the Needy and Destitute Foundation
WASH	Water, Sanitation and Hygiene
WCC	WASH Cluster Coordinator
WTU	water treatment unit
XU-SuSan	Xavier University Sustainable Sanitation



# Introduction

On the evening of 16 December 2011, heavy rains brought about by tropical storm Sendong (WASHI) hit Northern Mindanao of the Philippines, leaving around 1,257 people dead and 173 missing, damaging 451,721 houses (14,705 of them totally damaged and another 37,016 partially damaged)<sup>2</sup>, and destroying thousands of livelihoods. Warnings of the storm that had been issued at Signal No. 2 since 15 December were largely ignored since most of the affected areas had not yet encountered a typhoon, let alone one of this scale. The Tropical Storm was accompanied by 350 mm of rainfall, equivalent to a month's rainfall, in 24 hours.

Sendong, considered the world's deadliest storm for 2011, resulted in flash floods and landslides across the Philippine Archipelago hitting land in 13 provinces and affecting 1.1 million people—leaving CDO and Iligan cities with the worst devastation they had ever seen. The effects of the storm were also compounded by logging in the Hinterland areas with deadly logs dislodged by the storm, causing both death and destruction downstream.

With more than 430,000 individuals reported to have fled their homes; public schools, covered courts, churches, and parks became makeshift evacuation centres (ECs) and Transition Sites (TSs) to accommodate the displaced population<sup>3</sup>. As of 30 May 2012, an estimated 18,740 people are still residing in the internally displaced persons (IDP) camp sites, as government and the humanitarian agencies continue to work on moving the affected population to Transitional Sites before the upcoming 2012 monsoon season.

Since day one of the emergency the WASH Cluster, led by DoH, has been providing emergency water, sanitation and hygiene interventions to the most affected persons. Initial need for potable water supply was met with bottled water supply and Water Treatment Units, followed by hygiene and water kits. The response evolved to Portalets/ Ecosans and then construction of long term semi-permanent facilities as the displacement evolved.

Figure 1 Map of Tropical Storm Sendong Path



<sup>2</sup> OCHA Philippines Summary Report 12 January 2012

<sup>3</sup> Ibid.



## Coordination and Information Management

## WASH CLUSTER COORDINATION

### Need/Gap

With a disaster of this magnitude and the multitude of Government and Non-Government WASH actors, strong coordination was required. This was to provide a common platform, facilitate the effective and efficient use of limited resources, and provide accountability and predictability for the WASH response as well as to coordinate with the other clusters that were guiding the IDP movements (i.e. shelter cluster).

### Interventions and Outcome

- The WASH Cluster has been active at the National Level under the lead of the Department of Health-Health Emergency Management Staff (DoH-HEMS) and co-lead of UNICEF since 2007. The Philippines' Department of Health (DoH) is the executive department of the Philippine Government responsible for ensuring that all Filipinos have access to basic public health services. The HEMS occupies a special role in the Department of Health, that of managing emergencies and disasters in the health sector. It actively represents the department to the National Disaster Risk Reduction and Management Council (NDRRMC), the national coordinating agency for disaster management.
- The Philippine Government accepted the offer of assistance from the international humanitarian community on 19 December (refer to [Annex 1](#)) and requested the Resident Coordinator/Humanitarian Coordinator to coordinate the international response on behalf of NDRRMC.
- At the onset of the emergency, DoH Region X office took on the leadership of the WASH Cluster as per Republic Act 10121 (refer to [Annex 2](#)). Republic Act 10121 is an act strengthening the Philippine disaster risk reduction and management system. It provides

for the national disaster risk reduction and management framework.

- Experienced emergency DoH Staff from Albay, Bicol were deployed to CDO/Iligan from 22 December 2011 to 6 January 2012 to assist the Regional Office and respective City Health Offices (CHOs) in the response. Other CHDs also sent their personnel for shorter periods to assist in the response. The Centre for Health Development (CHD) is the DoH Regional Field Office covering a number of provinces and cities. The CHD is responsible for the field operations of the DoH in the region.
- The CHD on 19 December 2011 established the sub-operation centre (OPCEN) in Iligan City housed in the Gregorio T. Lluch Memorial Hospital. The OPCEN handled all four clusters of DoH – Health, Nutrition, WASH and Mental Health and Psychosocial Support Services (MHPSS).
- The first WASH Cluster meeting was held at 7:00 p.m. on 20 December 2011 at the Mallberry Suites Hotel in CDO, three days after the storm hit. The Iligan response was covered in the weekly CDO meetings until 19 January 2012, when the first Iligan WASH Cluster meeting was held. Meetings were chaired by DoH and co-chaired by UNICEF. Eventually DoH transferred the chairmanship to CHO at the end of February in Iligan and end of March in CDO. After two months of weekly meetings in both cities, they were changed to fortnightly meetings. The City Health Office (CHO) is part of the LGU, and as the implementers of the health programmes of the Department of Health, the CHO plans and programmes are patterned after those of the Department of Health's.
- The separate Iligan WASH Cluster Meetings resulted from a recognised need by the DoH WASH Cluster Coordinator (WCC) to have presence in Iligan City. This was because the WASH needs were critical and Iligan was not receiving the level of coordination it needed as the two cities are two hours drive apart, with most agencies concentrating their resources in CDO. On 10 January 2012 the DoH WCC

sought an audience with the city government and arranged for a WASH Cluster meeting.

- Meeting agendas were similar each week (refer to [Annex 3](#) for a sample agenda). Minutes were issued within 48 hours in the first few months and within a week in the latter stages of the emergency.
- WCCs attended other cluster meetings, particularly CCCM and Health, to keep track of IDP movements and health conditions, whenever possible.
- DoH WCC met with Barangay (Village) Captains of CDO on 13 January to give situationers on the ground regarding WASH as well as needed assistance.
- The WASH Cluster DoH/CHO was supported by:
  - Two Cluster Coordinators (one for the duration of the response, the other for 3 months); UNICEF/RedR
  - One Information Manager (for 3 months); Action Contre la Faim (ACF)/UNICEF
  - One Water Quality Specialist for the first month; UNICEF
  - One Hygiene Promotion Specialist Technical Working Group (TWG); OXFAM International
- WASH Cluster TWG on Hygiene Promotion, Water Trucking and Sanitation were established. UNICEF/Humanitarian Response Consortium (HRC) chaired the Sanitation TWG while HRC- OXFAM chaired the Hygiene Promotion TWG until the CHO took over leadership on March 18, 2012. Iligan City Waterworks Service (ICWS) chaired the Water Trucking TWG in Iligan only.
- Separate WASH Cluster Strategies with a clear set of targets for Water and for Sanitation were issued by DoH after a WASH cluster consultation on 20 January 2012 (refer to [Annex 4](#) and [Annex 5](#) for copies of the Strategies). The Hygiene Promotion Strategy was discussed within the HP TWG but not issued as widely. WASH Cluster Strategy focused on ECs and TSs based on needs identified, and expanded to affected barangays as resources permitted.
- In terms of Cluster staff, there were two sub national WASH Clusters operating, one in Iligan and the other in CDO. A UNICEF Cluster Co-Lead was deployed from Manila to CDO on 18 December, one day after the storm hit, to be part of the initial assessment and assist the Regional DoH Cluster Lead. A UNICEF Cluster Co-Lead for Iligan commenced on 22 January. Iligan WASH Cluster was under the leadership of the CDO WASH Cluster. An Information Manager worked 80 percent of the time with the Cluster from the start of the Emergency through to the end of March 2012.
- WASH Focal Points Agencies were assigned to monitor and facilitate individual evacuation centres. This proved important as it provided a central WASH contact point per camp and encouraged a holistic approach. Focal Points were established for all EC's in Iligan and larger camps in CDO. Barangay focal points were not given as much priority by agencies in both CDO and Iligan.
- The WASH Cluster recorded 34 partners reporting their 3Ws. The agencies are as follows: ACF, Adventist Development and Relief Agency (ADRA), Armed Forces of the Philippines (AFP), A Single Drop of Safe Water (ASDSW), Local Government Units (LGUs), Balay Mindanaw Foundation Inc. (BMFI), Community and Family Services International (CFSI), City Health Office (CHO), The Catholic Relief Service (CRS), DoH, Department of Social Welfare and Development (DSWD), Ecosystems Work for Essential Benefits (EcoWEB), Fit for School, Global Medic, Handicap International, HOLCIM, HRC-Oxfam, International Organization for Migration (IOM), Lutheran World Relief (LWR), Latter Day Saints (LDS), Manila Water, Maynilad, MSF, Pasali/Cordaid, PLAN, Philippine Red Cross (PRC), Save the Children, Swiss Development Aid (SDA), United Nations High Commissioner for Refugees (UNHCR), UNICEF, United Nations Population Fund (UNFPA), Women in Action for the Needy and Destitute

Foundation (WAND Foundation), World Vision, Xavier University Sustainable Sanitation (XU-SuSan)

- A one-day WASH Cluster lessons learned workshop was held on 30 March 2012, with good representation from government, IDPs, CCCM Cluster and WASH Cluster agencies. The DoH/UNICEF National Cluster Coordinators and the Regional Emergency Cluster Advisor - South East Asia Pacific (RECA SEAP) based in Bangkok was also in attendance. This document is based on the results of this workshop plus other feedback during and after the response.
- The Humanitarian Response Consortium (HRC) piloted the use of a Letter of Intent in their camps, particularly on private land and schools. This letter detailed the scope of services to be supplied along with the background of the organisation. This is now part of procedure for the HRC. This reduces conflict and holds the HRC accountable while also clarifying the actual scope of work. At the end of the intervention an exit letter was provided to camp management indicating the work that was done, listing a directory of HRC in case of issues, and detailing the costs involved.

## Lessons Learned

- CHOs and Regional DoH articulated the value of having experienced emergency DoH counterparts assist them to understand the emergency response mechanism and technical aspects of emergency WASH through the initial weeks of the emergency (refer to [Annex 6](#) for a list of CHO and DOH staff significantly involved in this response.)
- Proactive participation in the Cluster, especially by the CHOs, enabled direct feedback to the city and provided the NGOs a way to respond to the prioritised needs of the cities. Close working relations between the Region and CHOs from day one facilitated smooth coordination.
- The transfer of cluster coordination from DoH to the city government resulted in increased

ownership from the LGU. In future emergencies, transfer as early as possible is encouraged. The regional DoH would still play its mandate of providing technical assistance and standard setting.

- If an emergency of this magnitude strikes across a large geographic area, with multiple LGUs, separate coordination hubs should be established in each location. Initial oversight of the need for a WASH Cluster meeting in Iligan impeded the early involvement of the Iligan LGU in cluster discussions as they responded independently from the Cluster, unaware of the assistance the Cluster could and had started to provide.
- The WASH Cluster needs to better promote the cluster approach and how it can better assist the local government to maximise human, financial and technical resources. LGU's are generally looking for help but in some cases they are paralysed by the size of the task. The Cluster needs a concise, to the point, presentation for LGU's and LCE's, to present what the cluster approach is – the mechanisms involved and investment needed. The presentation should be conducted by Philippine staff or representatives from member agencies as this helps the discussion focus on coordination.
- DoH endorsed WASH Cluster Strategy and Standards issued early on in the emergency are integral to a coherent WASH response and for inter-cluster advocacy. They should be issued within two weeks of the emergency onset. (refer to [Annex 4](#) and [Annex 5](#) for copies of the Strategies).
- WASH Focal Points Agencies were integral to the strength of the response. They provided a central WASH contact point per IDP site for all WASH-related concerns. This action encouraged WASH agencies to take a holistic approach to WASH, minimise duplication, and assist in controlling the quality of the WASH response. A Terms of Reference (ToR) for the WASH Focal Point Agency needs to be prepared to clarify the role and range of interventions expected of them, and how other agencies relate to WASH FPs.

- Being part of a Cluster enabled smaller organisations to participate more by tapping into larger organisations.
- Having a designated WASH Cluster Information Management (IM) greatly assisted in reporting, gap analysis and programming.

## Preparedness Actions

- DoH WASH Cholera Strategy should be shared and reviewed/localised by WASH Cluster where appropriate.
- A guide for WASH Cluster Coordinators of key activities that should be undertaken at various stages of the emergency response should be prepared (i.e., 24 hours, 48 hours, one week, two weeks, etc). A 30-day timeline used in Bangladesh is available in the annexes section of the WASH Cluster Coordinator Handbook to help prepare this.
- Improved clothing visibility for CHO and DoH staff, to clearly identify that they represent WASH, would help improve coordination on the ground. Agencies involved in WASH could be clearly identified as such (i.e., vests marked “WASH” + “Agency”).
- Preparation of the Terms of Reference (ToR) for the WASH Focal Point Agency.

## ASSESSMENTS

### Need/Gap

- Following Tropical Storm Sendong, assessments were needed to quantify and qualify the WASH Response requirements and to prioritise needs.

### Interventions and Outcome

- An initial joint assessment mission was organised by the NDRRMC and the United Nations Office for the Coordination of

Humanitarian Aid (OCHA) on 19 December 2011. The WASH Cluster was represented by three WASH agencies. Data were collected using the inter-cluster rapid assessment form prepared prior to the emergency. Data were consolidated on the evening of 19 December and circulated widely on 20 December. The assessment occurred within 72 hours of the storm, with high agency and government involvement (one donor, three government agencies, six NGO’s and eight UN agencies) and triggered the call for international assistance. PLAN, Save the Children, UNICEF and ACF all provided technical WASH specialists; however, no one represented WASH exclusively. The qualitative information collected highlighted priority WASH interventions and facilitated the preparation of the flash appeal. The assessment focused predominately on EC’s, with limited reach to affected barangays/hinterland areas.

- Detailed WASH assessments: A number of WASH organisations conducted their own detailed assessments using their own format forms parallel to the joint assessment mission.
- The first WASH Cluster Meeting, was held at 7:00 p.m. on Tuesday 20 December at the Malberry Suites Hotel, CDO. Briefings were provided by DoH, DSWD and active cluster members. WASH focal points were assigned to ECs – based on population size, geographical area, and agencies reported capacity/target areas – in order to minimise duplication in assessments and response.
- Population Figures: Official population figures and numbers on the ground often differed, as did DSWD, CSWD and DoH figures. This was partly due to the rapidly changing situation on the ground. The WASH Cluster adopted the DSWD population figures in line with NDRRMC protocol.
- An OCHA-coordinated, Multi-Cluster Initial Rapid Assessment (MIRA) mission was conducted between 16 and 18 of January, to help identify updated needs and inform the revised Flash appeal. The assessment focused on affected barangays. The rapid assessment form was reviewed and updated by each



cluster for this assessment. OCHA, however, elected to utilise a Multi-Cluster Initial Response Assessment (MIRA) form (refer to [Annex 7](#)) that differed from the Cluster agreed form (refer to [Annex 9](#)) without consultation. The second phase joint multi cluster rapid needs assessment report produced by OCHA is included in [Annex 8](#).

- The WASH Cluster fielded two WASH members in both CDO and Iligan for four-day missions. Despite the extensive resources invested in this activity, the result did not provide any meaningful information to inform WASH interventions in the communities. The MIRA form did not allow us to distinguish between damage resulting from the storm and pre-existing conditions.
- A joint UNICEF/DoH study on the WASH situation in affected barangays that was undertaken in CDO (3rd week of January) and Iligan (over three weeks in February) provided a good overview of the situation and needs. Results were shared during WASH Cluster meetings.
- CHD provided ongoing assessment teams composed of nurses covering all of the four DoH clusters to all ECs from 21 December 2011 to end of February 2012. Feedback was given during inter-cluster and WASH cluster meetings.

## Lessons Learned

- Assessment forms used: The strength of the Initial Assessment came from the “story telling” rather than the “numbers” collected.
- MIRA process and form need improvement. The condensed time frames for the MIRA and Flash appeal did not enable the two to adequately feed into each other.
- Geographical Scope of Assessment: Assessments were largely limited to easily accessible areas. Teams of assessors equipped with communication equipment and inter-cluster assessment skills should be deployed to the

hard-to-reach areas as early as possible. Phone calls can provide initial information.

- Coordination of Technical WASH assessments: Detailed technical WASH assessment reports are better coordinated and shared with the WASH Cluster and other key clusters/ government to help with response planning and coordination.
- Early allocation of WASH focal points to IDP sites resulted in less duplication in the technical assessments by individual agencies.
- Media coverage is a good indicator of likelihood of funding for WASH. In the event of extensive media coverage of the emergency, the WASH Cluster is better off assessing bigger areas in less detail to speed up the process and move into action sooner.
- The WASH Cluster needs to improve links with the Health Cluster to better understand diseases and outbreaks. Although the Cluster Lead was in close dialogue with Health Cluster, this information could have been better shared within the WASH Cluster.
- There needs to be a prioritisation of WASH interventions at the Cluster level. There is a tendency for agencies to pick areas and service those areas, and then respond to additional calls for action. However some of those calls may not be as important as others. The WASH Cluster should act as the clearing house for the additional calls for assistance. This was somewhat done in this response, but needs institutionalisation and buy in from major players in the WASH Response.

## Preparedness Actions

- Review assessment forms now, especially the MIRA at National WASH Cluster/Core Group level, while the cluster members are still clear on the questions that need to be answered, and before the next emergency occurs.
- Different assessment forms should be prepared to collect appropriate data for:

- Rapid assessment and detailed technical assessment;
- The different stages of an emergency;
- ECs and barangay levels; and
- Types of emergency (conflict or disaster)
- Develop procedures for the coordination of assessments;
- Work on provision of the “assessment team” for remote area assessment through the inter-cluster arrangement.

## FUNDING/APPEALS

### Need/Gap

- Tropical Storm Sendong caused massive damage and displaced hundreds of thousands of IDPs. Significant funds were required to appropriately respond and address the basic needs of the flood victims.

### Interventions and Outcome

- The Government of the Philippines called for international assistance on the evening of 20 December.
- Based on the joint assessment, the Humanitarian Country Team prioritised food, shelter and WASH for the Central Emergency Response Fund (CERF). Necessary documents were prepared by the UNICEF country office within 24 hours of the approval of CERF funds, resulting in a commitment of one million USD for WASH from CERF.
- While drafting the CERF, UNICEF was amending Project Cooperation Agreement (PCAs) with partners. On 25 December, three PCA amendments with ACF/ASDSW/Oxfam totaling US\$750k were signed. Fifty to eighty percent of these funds were released on 26 December and 27 December through UNICEF via an Emergency Programme Fund, an internal loan

mechanism, whilst CERF funds were being processed.

- Initial Flash Appeal: An UN OCHA-led Flash Appeal was launched on 22 December to reach donors before the Christmas period (refer to [Annex 10](#)). UNICEF WCC phoned each of the major WASH partners to gauge preference for submitting documents as part of a single UNICEF project sheet, with all actors listed as Implementing Partners or as separate project sheets. Due to short time frames, all agencies opted for the former. The Initial Flash Appeal was prepared predominately by the UNICEF Manila office based on priority interventions outlined by various agencies. The total WASH funding Appeal was based on US\$30/IDP for 150,000 persons, of which 52,000 were in IDP camps. WASH requested US\$4.5M of a total Flash Appeal of US\$28.4M.
- Donors seemed more inclined to fund WASH activities compared to other clusters. In response to the Initial Flash Appeal, UNICEF received funding from the Governments of Spain and Japan.
- Revised Flash Appeal: A revised Flash Appeal was launched on 3 February, within six weeks of the initial launch as per UN OCHA policy. A decision was made to undertake a second assessment (see “Assessments” on page 16) to form a more informed basis for this appeal. The Cluster met in CDO on 23 January to agree on the revised WASH strategy before the revision of flash appeal was submitted. WASH submission included five project sheets totaling US\$5.64M of the total Flash Appeal of US\$39M.
- United Nations Population Fund (UNFPA) provided a tip sheet (refer to [Annex 27](#)) to the WASH cluster to assist in ensuring that project designs reflected the needs of women, boys and girls.
- In response to the revised flash appeal the New Zealand Government funded NZ\$500k for Emergency and Early recovery including Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA).

- Other sources: Some local donors approached WASH agencies working in the field and committed to work with WASH partners (e.g. urologists giving materials for toilets and the LDS/HRC water trucking partnership). Funds for WASH were also received through civil society/ small and medium enterprises. (See “Private sector and other goodwill” page 23). A WASH costing tool was developed out of this response to help cost the response for IDPs living inside evacuation centres. This tool will assist the government to identify the major line items in a WASH response (refer to [Annex 12](#)).

## Lessons Learned

- It is essential to quickly mobilise for funding while there is international media coverage. The bulk of the funding was received in the first few weeks due to media coverage. Quick dissemination of information to communications teams in agency HQ, National Committees, media and donor governments resulted in an international audience before offices closed for Christmas.
- Having prepared documentation for WASH Appeals, costing tools and other pre-emergency data assisted in the quick preparation of the appeals and proposals.
- Mobilisation of funds, largely through UNICEF, relies significantly on the capacity and competence of the management staff. Consistency in UNICEF at the national level in Manila is useful “as trust is important” and contributed to the success of WASH efforts for this emergency. WASH agencies expressed confidence in UNICEF WASH leadership to manage the fundraising and appeals.
- Lessons learned from previous emergencies were taken into consideration (i.e., early inclusion of sludge processing and establishment of site activities).
- UNICEF PCAs should have clauses that allow funds to be used in emergencies should the need arise. This is recommended at up to 15 percent of a PCA. The amount is an estimate that will allow UNICEF and partners immediate implementation capacity while undertaking the administration required to amend PCAs.
- Where a new PCA is set up with an agency, an initial transfer of around US\$75k should be adequate to initiate project setup.
- Agencies/government reported a lack of understanding on the appeals process. The WASH Cluster reflected on their limited vision on what could be achieved within the funding restrictions. Where relevant, we need to think BIGGER! The cluster should consider what assistance can be provided to help address long term solutions rather than exhaust resources on short term solutions (i.e., in Iligan, the Cluster initially left the reestablishment of water systems to the LGU, focusing efforts on water trucking services). Three months into the emergency the water system was still not operational. The Cluster then supported the LGU with the provision of a generator and some electrical equipment and helped establish temporary supply whilst permanent power was being established.
- Flash appeals: WASH agencies viewed the submission of one project sheet under UNICEF, with all agencies listed as partners, for the initial flash appeal as an appropriate approach, due to the tight time frames. WASH Cluster should advocate improved time frames between assessments and the revised flash appeal to allow time for project design and costing to be adequately reflected.
- Financial issues were largely dealt with at the national level; some WASH Cluster members felt that improved feedback from the field would have been beneficial.
- WASH was better funded than the majority of other clusters. The WASH Cluster should explore how to help leverage funds for other clusters such as MHPSS and Child Protection by providing an integrated response.
- Additional avenues for funding: We need to better capitalise on the willingness of civil society/small and medium businesses to assist in the operations. We also need to build capacity and tap into the Corporate Social

Responsibility arm of large companies. (See “Private sector and other goodwill” on page 23). Engaging these groups in the WASH Cluster will also help reduce duplication of efforts.

## Preparedness Actions

- Preparation of a clear briefing/note explaining the funding appeals process and the funding limitations.
- The full cost of WASH in this emergency should be documented to provide a good base line figure of the resources needed should another emergency arise, noting that this was an urban-based response.

## INFORMATION MANAGEMENT

### Need/Gap

- From the onset of the response it was critical that the WASH Sector understood the needs of IDPs to understand and properly fill the gaps.

### Interventions and Outcome

- Immediately after Tropical Storm Sendong, the LGUs had limited staff and resources, particularly Information Management (IM) personnel to manage the data collected. The National Information Manager based in Manila was deployed to CDO on 20 December 2011 and was based full time in CDO for one month, whilst a local Visayan speaking replacement IM was recruited through ACF.
- A WASH Matrix was developed by adapting the National WASH tool to the local context. The matrix was altered throughout the emergency to respond to changing information availability and needs. Data was compiled and analysed on a weekly basis and shared with WASH Cluster partners both in hardcopy in meetings, and electronically. Assessment/intervention

information was submitted in many different ways – through the matrix, phone calls, text messages, personal meetings, and cluster meetings. As the IM systems became more established, information was submitted to the IM on a regular basis so the matrix could be updated and presented at the weekly cluster meetings for discussion.

- Population figures differed between the various government sources. WASH Cluster adopted the DSWD figure in line with NDRRMC and UN OCHA.
- WASH negotiated for the inclusion of place codes (P-codes) in data in the first two weeks of emergency. P-codes are similar to zip codes and postal codes and are part of a data management system that provides unique reference codes. Any information that is linked to one location with a P-code can be linked and analysed with any other. P-codes resolve the basic issue of what we all call a place. Using place-names as identifiers can easily lead to confusion over spelling, different languages or scripts as well as duplication.
- Mapping services were available through UN OCHA/Map Action. Map Action was deployed between 29 December and 27 January. The WASH cluster did not fully utilise the mapping facilities available.
- Partners were requested to send reports on a regular basis. However, the Cluster IM followed up with phone calls and emails.
- The UN OCHA 3W was completed manually by the IM, based on information provided to the WASH Cluster 3W.
- A contact list was established from the existing national WASH Cluster list and attendance lists from WASH Cluster meetings. The contact list was maintained and updated on the IM’s, washclusterim@gmail.com account. High staff turnover amongst WASH Agencies created a challenge in maintaining up-to-date lists.
- The WASH Cluster web page, <http://ph.one.un.org/response/clusters/water/> was maintained after the early stage of the emergency and

provided access to key documents (e.g. meeting minutes, situation reports, hazard maps, strategy documents and contact lists). It is not clear how frequently it was used and by whom, although donors and cluster members did request the address.

- Cluster members reported difficulty in finding the time to provide data feedback particularly in the initial days of the emergency. However, they valued the snapshot of the situation that this data provided.

## Lessons Learned

- The availability of IM hardware, software and human resources for emergencies should be considered in any response plan.
- Flexibility in data collection is integral. The use of phone calls/text messages to ask for verbal reports was an invaluable method in the early days.
- Despite mapping services being available, WASH needs to utilise the UN OCHA mapping service to create specialised WASH maps.
- Accurate WASH data are integral to the process of minimising duplication and filling gaps. However, frustrations were reported with initial delays in posting of data due to the need to verify data. During the initial stages, “ball park” figures were sufficient; we need to balance timeliness of data with accuracy.
- There is a need for increased capacity/human resources within individual agencies to be able to increase the usefulness of Cluster data.
- Need for an improved understanding of the difference between Sphere standards and indicators across the whole humanitarian community. For example, the standard for excreta disposal is “People have adequate numbers of toilets, sufficiently close to their dwellings, to allow them rapid, safe and acceptable access at all times of the day and night.” The indicator is 1 toilet to 20 persons. The issuance of DoH-endorsed emergency specific WASH Cluster Standards greatly

assisted in clarifying design targets/indicators (it is noted that 1:40 for TSs and 1:50 for ECs were the ratios used for Tropical Storm Sendong). The standards were based on the field situation and available resources.

- Despite collecting required data, the IM tools developed did not facilitate easy reporting by WASH agencies and required heavy follow-up and data verification by the WASH Cluster IM.
- WASH Cluster should explore making a shift towards the use of a database rather than spread sheet to ensure data entry is easy and reports can be tailored to different information needs. Data entry should remain in excel form to ensure all Cluster members can easily provide the data for input.

## Preparedness Actions

- WASH cluster training on Sphere standards for government and other interested agencies.
- Revisit and adapt IM tools developed and used during Sendong
- Strengthen cluster capacity on WASH information management amongst humanitarian and government partners
- WASH Cluster should improve links with the Health Cluster and include diarrhoea data in regular reporting, due to its importance as an indicator of WASH Cluster’s performance.
- A summary table of achievements against key cluster indicators and numbers of interventions to date should be provided to DoH-HEMS National level on a regular basis. The full matrix being issued was difficult to use in extracting the relevant information.

## CCCM/WASH COORDINATION

### Need/Gap

- With the displacement of 52,000 people, the need for coordination at the Camp level was

clear, and this was carried out by IOM. The WASH Cluster worked with the CCCM Cluster in both CDO and Iligan to ensure new sites had WASH facilities and existing sites had appropriate WASH coverage.

## Interventions and Outcomes

- The WASH Cluster worked with the CCCM Cluster in different approaches for both CDO and Iligan. In Iligan, the UNICEF WCC was a member of the CCCM TWG which assessed the needs of each EC/TS on a weekly basis, and visited the sites. This approach worked well, but was possible due to the smaller number of sites. In CDO, the UNICEF WCC was required to attend weekly CCCM meetings, and briefing of Camp Managers.
- Attendance of WASH in CCCM meetings, and vice versa, was fairly inconsistent early on in the emergency due to lack of time and length of meetings. However, consistency improved after about two months.
- CCCM Camp Managers and UNICEF WCC met to prioritise the Evacuation Centres and Transitional Sites on 19 March to help systematise the relocation movements.
- Regular communication between camp managers and WASH focal points/WASH Cluster Coordination team helped resolve issues as they arose.
- WASH Focal Point: CCCM Camp Managers reported that the lines of reporting could be improved. Clearer ToR for the WASH Focal Point and circulation of contact lists, with mobile numbers, would assist in minimising confusion.
- Drainage: The main site drainage was the responsibility of the CCCM Cluster, and the drainage from WASH facilities to these main drains was the responsibility of WASH. This arrangement works and should be adopted for future emergencies. It is noted that the CCCM also utilised both cash for work programme and “weekly clean up drives” for main drainage cleaning.
- Site Planning: Specific resources should be brought in to undertake site planning. Discussions have indicated that CCCM is the appropriate cluster to house the site planners, but strong advocacy from WASH and Shelter Clusters is required. Site Planners should work in the City Engineers Office and provide the extra resources and advocacy as required. WASH organisations typically have a stronger engineering capacity than CCCM organisations, so in the absence of designated site planners, the WASH Cluster should look at ways to leverage these skills.
- Update Camp Data: During an urban emergency, camp data should be posted on the internet for access on a regular basis; p-codes should be included in all populations listed to allow quick reference by other clusters.

## Lessons Learned

- Camp Committees/WASH Committees: In general, it was felt that the Camp Committees and the WASH Committees complemented each other well. WASH Committee leaders were generally part of the Camp governance committee. Clear ToRs of the WASH Committee will assist in helping define the role of the group. It is important that the WASH sector understands where WASH ends and CCCM starts.
- Data Tracking Matrix (DTM): The DTM Questionnaire should be re-evaluated and updated outside the emergency to take into account issues raised during this emergency (i.e., the form requires toilets to be gender segregated, despite segregation by family being the request of IDPs). The possibility to make the DTM adaptive to reflect the stages in an emergency should also be considered.
- WASH Cluster agencies generally coordinated well with camp managers, and this should be maintained and included in the ToR for the Focal

Point Role. It is very important that the WASH and CCCM clusters work closely together to establish policies and guide camp managers in the monitoring and implementation of the policy. CCCM can help with the policing.

- Coordination: Attendance of CCCM at WASH meetings and vice versa is essential. Strong commitment should be made from each cluster to ensure that this occurs.
- Information Sharing: Presentation by the UNICEF WCC at a number of weekly Camp Managers Meetings provided an excellent avenue to present and clarify WASH Policies, provide WASH updates, as well as seek details on WASH concerns from Camp Managers.
- Camp Managers are in a good position to provide information on the ground situation as they are present in the camps on a daily basis.
- WASH Referral System: System worked fairly well – all Camp Managers were provided with contact details for WASH FP and WCC, and urgent WASH issues were phoned through. Issues that were less urgent were reported in weekly WASH/CCCM meetings by IOM and circulated by email. Potential to utilise the CCCM Android PDA surveying method to send concerns straight to WASH FP could be considered further. Contact details for WASH FP's should be updated regularly and provided to Camp Managers on a regular basis.
- Camp Prioritisation: A more comprehensive and transparent exercise in camp prioritisation should be undertaken within one month of any emergency, considering ranking by all sectors. This can be completed by Camp Managers assigned by all clusters. Priority Listing should be reviewed regularly in initial stages, and then on a monthly basis. This could be a points-based system which quickly and systematically highlights the key needs at each camp.
- Advocacy: WASH and CCCM should advocate for Transitional Relocation sites from the onset of an emergency, as securing land for long term use is time consuming. The time frames for shelter construction should be recorded and

shared in future emergencies to help make initial estimates as realistic as possible.

## Preparedness Actions

- Review the DTM Questionnaire in regards to WASH in preparation for the next emergency.

## EXIT STRATEGY

### Need/Gap

- Republic Act 10121 mandates that the DoH Regional Office assists the LGU through the first phase of an emergency before handing over ownership to the LGU at an appropriate time.

### Interventions and Outcome

- By mid February 2012 the IDP population in camps had dropped from a peak of 52,000 IDPs to 21,800. At this time, the bulk of the systems and design standards were already in place, and the facilities in most existing ECs had been completed. Transitional accommodation was still ongoing, as land release was slow. Thus, at the end of February 2012, the DoH commenced the handover of the WASH Cluster to the City Health Office.
- In CDO, Cluster meetings were moved from DoH to CHO on 14 March, and CHO chaired their first meeting on 28 April. In Iligan, the meetings continued to be held at ICWS; chairmanship was transferred from DoH to CHO on 23 February.
- CHO/DoH/UNICEF Cluster Coordinators prepared a detailed Exit Strategy Matrix. This matrix outlined all activities to be completed to facilitate exit of the international community and handover to the LGU. The matrix was presented and amended by WASH Cluster on 7 and 8 March in CDO and Iligan respectively

and continued to be updated as tasks were completed.

- The Exit Strategy included the issuance of a WASH Cluster handover letter to the Mayor of each City. The letter summarised the total WASH cluster response to date and the ongoing commitments, and outlined the clear roles and responsibilities in moving forward. This was still to be completed as of 30 April due to difficulties in getting agency financial data.

## Lessons Learned

- Mentoring/Engagement of CHO Sanitation Inspectors by DoH very early in the emergency facilitated smooth transition of leadership from DoH to CHO in both cities.
- Timely Transition of Cluster coordination from DoH to the LGU is crucial to ensure sustainability of the Cluster. It helped strengthen:
  - the City's ownership of the programmes
  - LGU leadership whilst the international community is still active to provide support.
- Preparation of a Detailed Exit Strategy is an important tool, utilising the collective knowledge and insights of WASH Cluster partners. It provides clear guidance about key future dates, deadlines and feasibility of withdrawals, as well as assigning responsibility to key actors. The Exit Strategy Matrix prepared (refer to [Annex 13](#)), can be used as a template for future emergencies; however it needs to be adapted to ensure the issues that are captured are pertinent to each emergency.
- Preparation of a collective handover letter from the WASH Cluster to the Mayor is a valuable exercise in summarising the total cluster response and outlining clear roles and responsibilities in moving forward.

## PRIVATE SECTOR AND OTHER GOODWILL

### Need/Gap

- An overwhelming response was received from private individuals, the church, and the private sector following Tropical Storm Sendong, particularly in the first few weeks after the emergency. The WASH Cluster now recognises the need to harness this goodwill to help maximise resources and potential donations, and prevent duplication.

### Interventions and Outcome

- Some of the bigger private sector donations to the WASH Cluster included:
  - Shell: PhP1M of bottled water, 10 portalets with servicing in both CDO and Iligan, 2 x 10 cubicle toilet containers.
  - Norman Vegies in coordination with Rotary West of CDO: 80 Spray Cans and gallons of Effective Microorganisms (EM) to both increase the biodegradation of solid waste and decrease the foul odour in affected communities.
  - Holcim: 20 toilet blocks, and cement bags.
  - The Philippine College of Surgeons: electric pump and three units of shallow wells
  - Philippine Urologists: PhP300-400k worth of materials
  - Unifruitti: WASH facility construction in Tibasak



- Latter Day Saints Charities: 250k worth of materials, 200k for water tanks
- A focus group discussion was held in Iligan with Shell and Councilor Frederick Siao on 20 April to review how the response played out and how to explore opportunities for quicker integration between the Clusters and Private Sector in the event of a another emergency. This meeting highlighted the difficulty the private sector experienced in connecting with the WASH Cluster. As a result, their WASH related donations came from needs identified by others rather than the needs identified by the WASH Cluster.
- There were some cases of close collaboration where the WASH focal points were approached directly in the field requesting for suggestions on which materials to donate or purchase to meet a clear WASH need.

## Lessons Learned

- The Private Sector in the Philippines is large and well resourced. It is a potentially good source of emergency funding anywhere in the country and should be maximised. Private sector awareness of the Cluster and Coordination system is weak and needs to be reinforced.
- Civil societies and organisations also pose a large potential for untapped resources. Capacity building of local civil societies is essential. They could be frontline responders and close collaborators with LGUs. They could also work on preparedness through development programmes in the community.
- Private sector firms and some NGOs distributed WASH-related items to families that were not on the same standard as that promoted by the WASH Cluster. Standards for WASH Cluster donations should be given to private sector in future emergencies and information system broadened to account for private sector.

## Preparedness Actions

- The WASH Cluster should conduct a mapping of private firms that provide support during emergencies.
- The WASH Cluster should advocate for NDRRMC to take the lead in explaining the Cluster System to the Philippines' top firms so it can be integrated into their Corporate Social Responsibility (CSR) plans.
- WASH Cluster should prepare a "wish list" of items/services that would be welcome and priority donations to the WASH Cluster during an emergency. This list should be shared with large Philippines-wide and global firms and the local bureau of commerce in the event of an emergency, to help guide the response. (refer to [Annex 15](#), for a sample letter to a chamber of commerce). The WASH Cluster should coordinate with umbrella organisations such as Corporate Network for Disaster Response & Philippine Business for Social Progress to present the Cluster System and mode of communications to be better prepared for the next emergency.
- The WASH Cluster should establish Memorandum of Agreements (MOAs) at the National level with some of the major Philippine industries that have a direct link to WASH such as cement factories, soap suppliers, water bottling facilities and fuel suppliers.
- Discuss with possible suppliers the potential for either bipartite (Company/DoH) or tripartite (Company/DoH/WASH Cluster Agency) agreements, stipulating that in the event of an emergency the Company dispatches to the WASH Cluster Agency the goods/services for management and distribution by WASH agencies. A trigger arrangement would need to be clearly outlined, as a corporate response is likely to be dependent on emergency type/size/ location. Consideration could be given both to "donations" and "cost price" arrangements. An

example would be the provision of concrete from a local cement factory to a WASH Cluster Agency for latrine construction rather than asking the factory's CSR to construct the latrines. This process will expedite the response and capitalise on the expertise of all.

## LESSONS LEARNED

### Need/Gap

- Capturing the lessons learned in any emergency is essential to help document the preparatory actions required to ensure that the next response improves on past experiences.

### Interventions and Outcome

- UN OCHA organised an "Action Review" for all the UN agencies on 22-23 March 2012. WASH was represented by 17 individuals from a number of agencies, and discussions focused around topics listed in the coordination section of this response: Intra-Cluster Coordination, Assessments, Funding/Appeals, Information Management. (refer to [Annex 30](#) for the UN OCHA Action Review Report.)
- On 29 March 2012, the HP Technical Working Group undertook a joint Focus Group Discussion exercise in a number of camps. (refer to [Annex 16](#) for Focus Group Survey Form and guide questions.) Three agencies were represented and four focus group studies were undertaken including children-only sessions. One transitional shelter, one tent city, two school ECs (one with no WASH FP, the other with a WASH FP). All sessions were conducted in the local language. Interviewers then met after the sessions to compile information, the information gathered were fed into both the Lessons Learned Day and this report.
- The WASH Cluster ran a one-day UNICEF-funded Lessons Learned exercise in CDO on

30 March. More than 60 people attended representing 16 organisations, including government (DoH, CHO), International and Local NGO's, Red Cross, IDPs and CCCM Cluster. Participants came from Iligan, Manila, CDO and Bangkok with the National DoH office also represented. (refer to [Annex 14](#) for a copy of the programme.)

- This document was largely drafted by various WASH Cluster Coordination team members and sent as individual files to key Cluster experts/participants for the various topics. Most topics were reviewed/updated by three to four people before being combined into a total draft document for review by the entire Cluster Mailing List. The document was sent to the Cluster on 21 May and members were given one week to review.
- The WASH Lessons Learned Document and IM tools were presented to the National Level, with a slide presentation on 29 May.
- WASH Cluster members provided a good level of feedback on the draft lessons learned document. Changes were incorporated and the document was sent to an editor for final review before issue.

### Lessons Learned

- Joint Focus Group Discussions were an excellent chance to step back and get feedback on the wider WASH response. In future emergencies this approach should be intensified and undertaken at more regular intervals, say at one month, three months, etc.
- Documenting key dates throughout the emergency would make preparation of this document easier and more precise.
- UN OCHA Action Review:
  - A small comprehensive group (less than 20) of key representatives is a good way to stimulate good conversation and brainstorm potential solutions.
  - Plenary sessions where each group presented the feedback from smaller

- groups was time consuming and should be avoided if possible.
- The review was a good chance to look at cross cutting issues, although this was not fully harnessed.
  - WASH Lessons Learned Session:
    - Facilitators that speak the local language greatly enabled the participation of local staff and colleagues.
  - Use of Metacards/VIPP Cards helps bring out the voice of the more timid.
    - Although the group was split into three, with 20 or more persons per group, the group size was still able to maximise discussion.
    - Direct feedback from the CCCM/ Camp Managers during this session would have been greatly appreciated. It could have been more efficient to sit separately with this group to be able to tap directly into their view of the WASH response.
  - Having key individuals give personal feedback on the response and their learnings on the various topics is effective and gives opportunities for breaks during the day.
  - Document Preparation
    - Method used for document preparation worked well.
    - However, agencies should be given at least two weeks to provide their feedback.
  - Data should be recorded at key dates throughout the emergency to allow various tables to be filled out with ease.



# Water

## BOTTLED WATER

### Need/Gap

- In the initial days following Tropical Storm Sendong, with loss of the City Water Systems and the small lag in establishing emergency water treatment units, the majority of the affected population relied on bottled water.

### Interventions and Outcomes

- The Nature's Spring Company (NS), which has a factory in CDO, was among the large players in providing water (both treated and untreated) to meet life saving needs to victims of Tropical Storm Sendong. NS reported that like most suppliers, Sendong and the immediate and extremely high demand for bottled water caught them by surprise.
- NS reported that stockpiles that would normally last for one month were exhausted in a matter of days. Plant productivity was increased by extending operational hours by 50 percent. There was a typical lag time of three days on purchases.
- People flocked to the factory to buy water. Two kinds of water were given out from the factory: 1) treated water in sealed containers at discounted prices and 2) untreated water for free to be used for bathing and laundry.

Figure 2 Philippine Air Force unload bottled water from Manila in the initial stage of the emergency



- Many water refilling stations not affected by Typhoon Sendong gave free potable water for the community as well.
- Many national/international government agencies, private corporations, international and local aid groups purchased water in bulk for distribution to the affected population. NS advised that purchase intended for donation were given priority.
- Supplies in the local supermarkets were exhausted in days compared to the usual monthly consumption; and deliveries to the local retailers were delayed.
- Bottled water became scarce in most parts of CDO. This was also accompanied, where it was available, by an increase in local retail prices especially in the first week.
- NS, along with other large bottling firms around the country, donated significant amounts of bottled water products to both the government and private sectors for distribution.
- Whilst the regular retail price of NS water was marked down from the regular retail price of PhP80 to PhP50, as part of NS' Corporate Social Responsibility (CSR) programme, many retailers took the scarcity of water as an opportunity for income generation and sold it at a higher cost. President Aquino, through the Department of Trade and Industry (DTI), issued a price freeze on commodities to pre-emergency prices to safeguard the consumers. Mayor Emano of CDO also issued a price freeze.
- Logistics were ramped up to meet the demands of delivering the bottled water. A schedule of deliveries was carried out, with some large orders delivered in a number of tranches.
- Bottled water was also purchased from other factories in the Philippines, such as Manila, Cebu and Davao.
- The CHO evaluated the water quality being distributed as well as the operations in various bottling agencies.
- Normal operations slowly resumed after two weeks, and continued to normalise at about

the time when water systems in the city were reestablished.

## Lessons Learned

- Bottled water was a life-saving intervention during the first week of the emergency.
- Diarrhoea outbreak was absent for the duration of the response, which is partly attributed to the fact that the IDPs had access to treated water. In some cases, this was bottled water.
- A contributing factor to the scarcity of bottled/drinking water in the local market in the first weeks may have been the prioritisation of large purchases for donation.
- The massive amount of money provided by donors for the purchase of bottled water could have been greatly minimised if all parties knew that the trucked water (see page 31) was indeed safe for drinking. It is also important to note that prior to the emergency, most of the affected families were already using the water provided by CDO Water District (COWD).
- Protection from price inflation of commodities including water is essential.
- Bottled water distribution should only be implemented as a first phase emergency measure. After the first week, efforts should focus on long/medium term and/or more cost effective measures such as water trucking and setting a water treatment facility.

Figure 3 Potable water sales outside NS Factory in CDO/ Jed Lasmarias



Figure 4 Water Treatment Unit brought in from Manila



## WATER TREATMENT UNITS (WTU)

### Need/Gap

- Major damage to water infrastructure in both CDO and Iligan left hundreds of thousands of persons without safe drinking water. The establishment of mobile water treatment units was essential in meeting this need.

### Interventions and Outcome

- A large number of WTUs deployed from Manila and other areas of the country in the initial days of the emergency were brought in via the Air Force on C130 planes. Agencies like Manila Water were tapped by the Office of the Vice President the day after Typhoon Sendong struck to respond immediately to the pressing need for clean and potable drinking water in the area. Over the coming days additional WTUs arrived by boat.
- In CDO, coordination of the water treatment plants was largely done through COWD. They were in the best position to advise on the availability of water source. The major units were established on the three large bridges

(Puntod, Carmen and Macasandig) and sourced water directly from the CDO River. The units provided drinking water to people from all areas who were capable of bringing containers to the bridges, as well as filling water tankers for distribution to IDP sites. The smaller units were established in large evacuation sites. They were provided with raw water through trucking for treatment or from fire hydrants where available. The total capacity of the WTUs across Iligan and CDO varied throughout the emergency. Table 1 outlines the information available on WTUs used throughout the response.

- In Iligan, coordination of the WTUs was done through ICWS and DoH. The units were also placed on the main highway bridge and throughout the affected barangays. A small WTU was also situated at the isolated and hard-to-access Barangay of Mandulog.
- Most WTUs were deployed with full service (operation and maintenance) crews.

- WTPs tried to maximise output capacity by filling spare jerry cans, water trucks and other large volume water storage containers during non-peak times.
- Most water treatment units (ie. Manila Water, PRC, Team Albay) had their own Water Quality Assurance systems, which were then counterchecked by the CHO.
- Water from the WTUs listed in Table 1 were provided free of charge. However, the approximate real cost of the water supplied varied between units, time of operation, and other variables. Manila Water advised that the average cost (operation costs) per liter was around PhP0.25/L excluding plant capital and mobilisation cost. The Plant is worth PhP12M.
- Phase out of the different WTUs was based on need and progress on the re-establishment of COWD and ICWS water systems

Table 1 WTUs installed during response

Agency	Type	Capacity	Where From?	Date Operational
Manila Water	Reverse Osmosis & Chlorination	3 -4m <sup>3</sup> /hour for ground water and 1 -1.5m <sup>3</sup> /hour	Manila	18 Dec to 11 Jan
Maynilad Water Service (MWSS)	Filtration & Chlorination		Manila	
Aquavida	Reverse Osmosis & UV		Manila	
Team Albay (Province)	Filtration & Chlorination		Albay	
Army	Filtration & Ozone		Manila	
Iloilo City	Filtration & Chlorination		Iloilo	
PRC	Filtration & Chlorination			
UNICEF	Filtration & Chlorination	5m <sup>3</sup> /hour, Diesel operated pump	Manila	15 Feb to present
ADRA/Global Medic	Filtration & Chlorination		Manila	17 Jan to 2 March
DENR/EMB/HOLCIM	Filtration & Chlorination			
KEDRN		1000 gallons/day		

## Lessons Learned

- Portable WTUs are essential and life saving during an emergency. LGUs should include its purchase and operation in contingency plans for the municipality/city.
- Data should be collected on the WTU type, capacity, origin, setup location and dates of operation as WTUs are established. This information was not well documented throughout this response.
- In an urban setting, where the city water system is damaged, the placement of WTUs within the affected community is of paramount importance. The WTU placed at Mandulog was also extremely valuable as road access was unreliable and this meant water trucks could focus on more accessible areas.
- Water Treatment types that are best applied in emergencies like these would be a combination of Filtration & Chlorination and Reverse Osmosis & UV types as there is a prevalence of moderately to slightly saline groundwater around the Philippines. Due to the easier and simpler operation of the Filtration and Chlorination type, it is recommended that more of this type is used (say to approximately 75 percent Filtration and Chlorination type).
- Operation of WTU: In the initial weeks all WTPs should be deployed with full service personnel. Later on locals can be trained and the operation handed over. The request of CHO for Barangay Officials to identify personnel to be trained and operate the Iloilo system was effective. No payment was made to these personnel.
- User Preference: Some IDPs reported dislike in consuming the treated river water due to concerns of contamination as a result of dead bodies/debris washed up in the river. This was also a problem in Mandulog where the stream was commonly used for defecation.
- Equity in Service: Greater Support was provided to CDO compared to Iligan despite equal needs. Some of the reasons quoted were logistics (airport and seaport in CDO), and more media coverage. WASH Cluster could have played a

stronger advocacy role in increasing assistance to Iligan.

Figure 5 WTU from MWSS/Photo by Jed Lasmarias



## WATER TRUCKING

### Need/Gap

- Major water infrastructure damage resulted in huge water shortages of up to 80 percent across the two cities. To respond to the immediate need, water trucking operations were initiated in both CDO and Iligan.

Figure 6 PRC Bladder with Oil Drum and Plywood Bladder Stand/Photo by Kate Davis





## Interventions and Outcome

- Water trucking to evacuation camps and affected barangays commenced on the second day of the emergency.
- In the initial weeks of the emergency, 31 fire trucks in CDO were made available from the city and surrounding provinces. Water was sourced from fire hydrants still in operation throughout the City systems. In Iligan, fewer fire trucks were made available, three were registered with ICWS, but there were a few additional fire trucks servicing the areas unregistered with ICWS.
- DoH organised a meeting between CDO Water District (COWD) and the Fire Brigade to improve trucking arrangements. Thirteen fire trucks were designated solely for the provision of water to evacuation centres and funeral homes.
- Within two weeks, the WASH Cluster prepared a Water Strategy endorsed by DoH which included a specification of free chlorine residual of between 0.2mg/L and 0.5mg/L. In the event of a diarrhoeal outbreak this was to be increased to 1mg/l.
- Pool testers were distributed by DoH/INGO's in early February.
- Initially, water trucks delivered directly to household water vessels due to the lack of centralised storage. As part of efforts to improve the efficiency of the system, bladders totaling a volume of 528m<sup>3</sup> were erected. (major sources were UNICEF 32No/195m<sup>3</sup>, PRC 22No/172m<sup>3</sup>, ACF 11/81m<sup>3</sup> and SDA 12No/80m<sup>3</sup>) Although some centralised storage was set up in the affected communities, full demand could not be met due to insufficient bladders/tanks. A number of different types of tanks were used (see Table 2) and a number of different tank stand arrangements were used (see Table 3).
- Swiss Development Aid (SDA) undertook water truck chlorination training, focusing efforts on the fire trucks which had previously transported non-potable water.

Table 2 Costs of different water storage options

Storage Type	Cost (Php)	Php/L
Bladder – 5m <sup>3</sup>	64000	12.8
Bladder – 10m <sup>3</sup>	98000	9.8
Plastic Tank – 600L	7300	0.73
Plastic Tank–1500L	15400	1.54
Plastic Tank –2000L	19800	1.98
Stainless Steel Best Tank - 1000L	14300	1.43
Stainless Steel Best Tank -2000L	28000	2.8

- In Iligan, the ICWS utilised Chlorine Dioxide, despite being two to five times more expensive than Chlorine, as it destroys phenols which cause odour and taste problems. In CDO, some non stainless steel water trucks were used to transport water for bathing and laundry due to the corrosive nature of chlorine in these water trucks.
- In Iligan, the delays in the re-establishment of the town water supply meant the demand for trucking to both IDP sites and affected communities was significantly higher. Four months after the typhoon, households still had no access to water. Shortage of water trucks, high rental cost and shortage of funding contributed to the difficulty in provision. Debris on roads made access for larger capacity trucks difficult and limited access to the smaller 4-6m<sup>3</sup> vehicles
- Many private companies, organisations and institutions also provided water through trucking, free of charge. However, their efforts were not properly documented as they did not coordinate with the WASH Cluster or DoH/CHO. In mid-January the majority of the private trucks servicing affected population were withdrawn as business was recommencing and alternative water sources were available. Discussions with barangay officials also revealed that these private initiatives were not fully coordinated through the barangay; donors simply choose a site and provided water, collected from COWD water points, using private vehicles.

Table 3 Types of water bladder platforms

Type	Approximate Cost (Php)	Remarks
Timber	8250 for 5m3 incl. labors (3 labor x 3 days)	This platform cannot be completely reused after, and is subject to rot
Oil Drum and Plywood	18kPhp for 5 m3 bladder platform 20-30K for a 10m3	12 drums, 1200 Php per drum. Very Portable and stable. Drums can be used once bladder not needed. Sourcing drums difficult in Iligan
Sandbag and Earth Mound	For a 5m3 – 500 sacks (5Php each) and CFW	Cheap and stable. CFW programmes can be utilised for sack filling. Harder to decommission
Existing structures	Free	Concrete Platform preferable, need to be wary of drainage.

Figure 7 Safe Drinking Water from a water truck



- Despite the provisions of safe drinking water through trucking and piped services, many IDPs preferred bottled mineral water for drinking, utilising the trucked water for bathing/laundry.
- The Iligan Hygiene Promotion Technical Working Group (under the WASH Cluster) worked to help promote the safety of the supply with:
  - Clear signage such as “POTABLE DRINKING WATER” placed on water trucks and bladders, including the CHO and WASH Cluster logos. Banners included images of CHO officers drinking from the bladders to help earn the trust of the IDPs.
  - Information campaigns and strengthened hygiene promotion
- Regular water testing throughout the camps was performed to ensure safety of supply (see ‘Water Quality’ page 38). Water in centralised storage was generally found safe, however, the

frequency of contamination at the household level was high.

- In early March, ICWS undertook bladder cleaning in response to increasing water quality results in bladders showing positive to faecal coliforms. A cleaning schedule was issued to camps, and bladders were shock chlorinated for 24 hours. Camp managers and IDPs ensured that bladders were not used in this timeframe.
- Monitoring tools were developed to keep track of the deliveries, such as the Delivery Monitoring Spread Sheet and Chlorine Residual Monitoring Sheet. The plan was for these to be completed by all water truck drivers and submitted on a regular basis. However, this did not occur.
- Sample rental costs for this emergency in Iligan are shown in Table 4. Cost/L depends on number of trips that can be achieved per day, however, experience showed an average of five trips per day which equates to PhPO.15/L.

Table 4 Water trucking costs

TRUCK WATER CAPACITY (m3)	TRUCK RENTAL (Includes fuel & maintenance) (PhP)
22	13,600.00
17	12,000.00
14	10,400.00
10	7,200.00

- Lutheran World Relief (LWR)/ Kasilak contracted Nature's Spring (NS) to provide 15L of water/person/day for 60 days to 670 families in affected communities. NS transported bottled water to the designated refilling station approximately 100-200m away from houses on a daily basis. Project participants presented their access cards, which were countersigned by the beneficiary and LWR/Kasilak, to receive their water supply. The bottled water (5 gallons) was then transferred to the jerry cans. NS gave a large discount as part of their CSR. Cost inclusive of transport was about PhP6.00/L. Project ran between February-March. NS could not commit in the first 48 hours as they were also hit by the disaster and had no electricity.

### Lessons Learned

- Despite the provisions of safe drinking water through town supplies or trucked water, many IDPs remained dependent on the supplies of bottled mineral water. Although the WASH cluster does not encourage the distribution of bottled water as a cluster activity due to high cost per liter (see Table 5), it aids in the provision of safe supply.

Table 5 Bottled water vs trucked water

Source of Drinking water	Estimated cost (PhP/liter)
Bottle water	6
Water Trucking	0.15

Figure 8 Water trucking using polytanks on the back of a regular truck



- The centralised coordination of all the water trucking services facilitated through ICWS proved to be an efficient approach. It facilitated allowances for changing needs, road conditions and truck maintenance. A water trucking TWG is a useful mechanism for coordinating efforts.
- The City Government and the LGUs can provide the manpower resources needed to carry out the water quality monitoring, provided adequate training and testing equipment are made available.
- A point person, preferably a trained IDP, should be assigned at all bladders/distribution points to receive water and check chlorine residual.
- IDPs requested clearer information about the dates and time for water distribution. Regularising distribution schedules assist affected population to plan out their other work.
- T tanks could be more appropriate than bladders in some situations, such as in affected communities, due to their robust nature and their ability to be rapidly assembled on any grounds in harsh tropical environments. The T tanks can be dismantled and reused elsewhere.
- Alternative water source options, such as rain water harvesting and rain water catchment facilities should be explored further to contribute to the demands.

- Water trucking is an expensive exercise relative to conventional water supply such as piped water systems. An exit strategy for trucking should be produced as soon as possible, to facilitate the exit and the return to more sustainable systems.

Figure 9 Water Trucking/Photo courtesy of ACF



## WATER SYSTEMS

### Need/Gap

- Tropical Storm Sendong damaged the Macasandig pumping station, two production wells in Balulang and a trench pipe from Rio Verde bulk water supply. This cut off piped water supply to approximately 46 percent (139,000) on the east-side and 70 percent (178,000) on the west of CDO on 16 December. Prior to Tropical Storm Sendong the CDO Water District (COWD) was a chlorinated system.
- In Iligan, the storm wiped out the Hinaplanon pumping station including three major and one minor production wells. This cut off water supply to at least 27,000+ individuals in 10 out of 28 Barangays.
- All disaster-affected men, women and children, including persons with disabilities needed access to adequate safe drinking water.

## Interventions and Outcome

### CDO

- As of 22 December, the CDO Water District (COWD) had repaired a number of production wells. Point sources were operating for both tanker filling and jerry can filling water sources with taps stands. On 22 December the east side portion was brought back on line bypassing the booster pump. This section of the line was not chlorinated and water quality was not ensured.
- The SHA worked with COWD to undertake Water Quality Testing of the production wells and confirmed them as satisfactory with no positive fecal coliforms.
- Reestablishment of the main distribution system to the west side of the river required major construction work, and was completed by a private contractor engaged by Rio Verde, the bulk water supplier. This partially restored 90-95 percent of CDO's network, reducing the need for water trucking.
- Damage caused by individuals "cutting" pipe network to increase localised water supply during the periods of reduced supply, resulted in the need for COWD to check/fix connections to 15,000 Households. This may take up to six months and will require materials.
- The deployment of the Swiss Technical Team, complete with human and material resources in the initial weeks, provided technical assistance to COWD.
- In a number of sites, water pressure from the water system was limited during times of "Peak Flow" (9:00 a.m. to 5:00 p.m.), resulting in water shortage. To overcome this, bladders were connected to the system for filling overnight, providing a water supply during the day. This system worked well provided over pressure protection of the bladder was in place. Over pressure protection can be in the form of a built-in safety valve/vent pipe on the top of the bladder that is left open and allows air to release, or a vent pipe with 2-3m elevation above the bladder between the supply valve and the bladder.

## Iligan

- A damage assessment of the water system was completed by ICWS during the first two weeks of the emergency. The report found that installation of new pumps, motors and controls would take one month each and cost US\$375,000 in total. Despite continued advocacy on the issue, funding was slow to be committed.
- Three months into the emergency the water system was still not operational. In early February, HRC worked with ICWS to explore avenues to assist in the temporary reestablishment of the pumping system using a generator, whilst the permanent power supply contract was being procured and advanced. An agreement was reached for the provision of the generator and some electrical equipment.
- Engaged contractors by ICWS commenced well-cleaning of the pumping station within three weeks of the storm. Initially, cleaning was undertaken by bailing. However, despite reinstalling the pump and using the generator, flow rate was minimal. This raised serious concerns that the storm affected the aquifer in the area.

Figure 10. Iligan well production cleaning in Iligan/Photo by Kate Davis



- HRC worked closely with ICWS to review the alternatives before investment was made in acquiring permanent power to a site with no water. The storm had possibly resulted in siltation of recharging areas upstream of Mandulog River. Dredging was undertaken using an excavator and then a dragline with clamshell at a cost of PhP20,000/day. No significant improvement was achieved.
- A detailed assessment of the boreholes was undertaken and there were indications of silt and mud deposits inside the gravel packing and the screened casing. The standing water level (SWL) did not change from before Sendong, further indicating that the issue was clogging of the screen. Further, well development was recommended using airlifting. One hundred fifty cubic feet per minute (CFM) of compressed air was required and the LWUA supplied compressor was in another part of Mindanao and required extensive paper work for movement. Whilst waiting for this, it was decided to use two compressors of 75CFM each connected in parallel. The well was developed over a period of eight hours, cleaning from the uppermost screen to the lowest. Cleaning was successful and a sustainable flow rate was re-established.
- Since power was still not restored, only one borehole could be operated at a time. For several weeks the Tambo area was provided with 24-hour supply. Leakages needed repairs to maximise this supply. However, problems within the LGU resulted in lack of payment for the generator and the system was eventually shut down.
- WASH Cluster worked with the Food Cluster to utilise "Cash for Work" and "Food for Work" programmes to help supplement the ICWS workforce to hasten the restoration of the water service. This additional labour undertook the demolition and cleanup of destroyed pump house sites. It also assisted ICWS staff in locating and terminating connections of totally destroyed houses, and excavating for piping repairs and clean up drives around the spring source. The work group was managed by the

ICWS staff, and administrative matters and payments, etc. were handled by other agencies.

- The restoration of power to the site continues, and it is expected to be completed by July 2012. The Red Cross is funding two additional wells, production wells 4 & 5, to aid improved system supply.
- A sludger well drilling method was employed by ICWS to drill shallow tube wells in barangays Hinaplanon and Mandulog.

### Lessons Learned

- Comprehensive WASH contingency plans with a heavy focus on DRR should be prepared at the provincial level which includes activities down to the barangay level. This should include a mapping of the alternative sources of water. Infrastructure improvements should be made to allow the water supply systems to sustain disasters (e.g. flood proofing well heads, raised platforms for power supply, etc.).
- Likely damage resulting from flooding includes silt and mud entering boreholes through the two GI pipes used for gravel packing (35mm) and water level measurements (25mm). Hence, following a storm there is the need for a lengthy redevelopment process of boreholes, of ideally 48 hours of continual pumping with 150-300cfm compressors. Submersible pumps may not be damaged by the floods, and can be operated by use of a generator whilst permanent power is reestablished. Replacement of electrical controls is likely to be required.
- Humanitarian and LGU Cooperation: The WASH Cluster needs to better recognise how they can work in partnership with the local government to maximise human, financial and technical resources. The cluster should consider what assistance can be provided to help address long-term solutions rather than exhausting resources on short term solutions, particularly in terms of water supply. Although government funds are likely to ultimately be made available

for system repair, government process takes considerable time. Linking with the cash for work/food for work programmes is an effective combination. The WASH Cluster at the national level needs to be tapped in terms of advocating to national government to provide assistance that is beyond the WASH Cluster expertise, especially for large scale infrastructure repairs (e.g., the high production wells in Iligan).

- Water System experts from private industry and humanitarian sector should be utilised in the first few weeks to help advise on water system restoration.
- Sludger well drilling in appropriate areas can provide water in a short period and can be useful for this type of emergency. The water can be potable if used in combination with filtering and water purification chemicals. This method is accomplished by utilising a hand pump to pump mud fluid into the 50mm GI casing which in turn is lowered into the ground by impact of a weight until it reaches a suitable water bearing zone. Normally this type of drilling has low yield and is only good for a few households. The drilling and labour for a 40-foot shallow tube well costs PhP7,000, the hand pump costs an additional PhP1,700.
- WASH Cluster should seek clear guidance on who will be paying the water bills in evacuation centres/transition sites as early as possible. The WASH Cluster took a clear stance that they would not pay water bills. For this emergency, the City paid the bills. For most sites, COWD required written confirmation from the City that payments would be made prior to completing temporary connections to new sites.

### Preparedness Actions

- A database of water system experts should be prepared including WASH Cluster members such as Manila Water to supply expertise to help water districts with low capacities during an emergency.

Figure 11 Sludger drilling/Photo by Nyunt Lwin



## WATER QUALITY

### Need/Gap

- Water Quality Monitoring is essential to ensure that the quality of water provided is safe for drinking, requires treatment prior to drinking, or should be used for other purposes.

### Interventions and Outcome

#### CDO

- Prior to Tropical Storm Sendong, CHO Sanitary Inspectors (SIs) in CDO undertook regular water sampling from 100 COWD water sampling points sites throughout the city. COWD also conducted their own daily monitoring programmes.
- Immediately after the storm the CHO SIs were focused on other duties including search and rescue, establishing emergency health centres and disposal of the unclaimed dead.

- During the first week, the WCC contacted the CHO SIs and requested support from DoH for WASH response. CHO SIs were designated to test water quality in all evacuation sites, and monitor the sanitation situation and latrine construction by all agencies. During the first week the SI division (23 persons) undertook distribution of Hypersol to all camps for treatment of domestic water. They promoted the use of bottled water or boiled water for drinking.
- During the second week the SIs assisted in the health centres. Three SIs commenced Water Quality testing (TDS, pH and chlorine residual) on COWD systems, WTUs and trucked water on a daily basis utilising their own private water testing kits since testing equipment were not yet available.
- Results highlighted a lack of chlorine residual in the COWD system, but good residual chlorine in WTUs and water trucking for potable use. Results were provided to DoH and shared with the Cluster. WTUs that failed chlorine residual tests were fixed immediately.
- During the third week, water quality testing improved somewhat with the use of Department of Science and Technology (DOST) and DoH equipment, allowing the daily chlorine residual testing and twice weekly testing for total coliform and ecoli. During this week, most of the SIs were designated to give leptospirosis medicine greatly decreasing SI capacity for WASH.
- During the first four weeks the SIs were supported by a WASH Cluster Water Specialist through UNICEF, who was specifically tasked with helping coordinate the water side of the response and providing technical assistance.
- Individual water treatment units (i.e., Manila Water, PRC, Team Albay) had their own Water Quality Assurance systems, which were complemented by the CHO monitoring (see “Water Treatment Units” page 29).
- Regular testing of the Water Systems and continued advocacy with COWD helped improved chlorine residual in their entire system.

Reports were provided in weekly WASH Cluster meetings to inform decisions on water trucking and hygiene promotion for specific areas. As water lines became safe, water trucking was decommissioned in an area.

- Regular Water Quality announcements, on status and safety of water system, were issued by COWD and supported by DoH.
- Demonstrations of proper jerry can cleaning procedures using detergent/chlorine were undertaken by the CHO.
- Iligan: In Iligan, ICWS and CHO collected samples to monitor the water quality of evacuation sites from three sources every Monday – bladder, DoH tank and Household level, at a number of sites. Despite negative water quality results at the bladder/DoH tank, the majority of household tests turned out positive for ecoli. Testing takes place at ICWS.
- Training: Water quality training for 50 City/ Provincial Health Office Sanitary Inspectors/ DoH staff from Bukidnon, Misamis Oriental, CDO and Iligan was held in an eight-day (three days theory, five days practical) training session in CDO and Iligan by ASDSW. The course covered the whole suite of water quality testing for bacteriological, physical and chemical contaminants utilising the Jal-Tara Water Testing Kits and the Portable Microbiological Laboratory Kit. These kits were handed over to participants for ongoing use. During the five days practical session, teams undertook site sampling, involved the local community to

advise on problems encountered and possible solutions.

## Lessons Learned

- Water Quality (WQ) at the household level is difficult to achieve. Household water analysis results undertaken should be shared with the household/community on a regular basis. Jerry Can cleaning campaigns need to be held on a regular basis. Hyposol and aquatabs should still be promoted at the household level.
- WQ testing kits and materials (including pool testers) should be deployed on the first planes to allow proper and efficient testing regimens by CHO/DoH staff already experienced in WQ. CHO reported their preferred brand of pool testers was Hach. The Hayward pool testers supplied had a minimum chlorine reading of 0.6mg/L, which did not facilitate accurate readings. Concern was also reported with the Bayrol™ Pool Tester that had the lowest category of 0.1mg/L that represented no change in colour, so agencies were reporting a residual of 0.1 mg/L despite no chlorine being present.
- WQ Testing Training: There was positive feedback on the WQ training, particularly the provision of WQ test kits; however the lack of supply chain for the replacement reagents means the kits have limited use. The kit facilitates direct testing on site, which is preferable during an emergency. Suggestions were made that additional chemicals should be procured for use during the course, so that all participants got a full kit on course completion. It is noted however that there is an operating supply chain for the Portable Microbiological Laboratory (PML) and a supply chain for Jal-Tara is being prepared. Funding for supplies such as test kits by the LGU should be given priority in future emergencies.
- There were multiple tests that came back positive for both chlorine residual and total coliforms but negative for ecoli. Theoretically there should be negative results for Faecal

Figure 12 Water quality training for CHOs & PHOs/Photo by Jed Lasmarias





Coliforms if the residual chlorine is 0.2 - 0.5 mg/l, but there can be error on both chlorine residual test and sampling for bacteriological test. Repeat testing should be required for chlorine residual tests in this case making sure that the test vials are thoroughly flushed. Retake sample for bacteriological test to confirm the results. If the problem still exists there will be a need to increase the chlorine residual level through the entire distribution system. Consumers should be notified in advance of the adverse effect of the increase in chlorine level.

- Given the complaints of high chlorine dosing in areas close to the dosing pumps to achieve the residual chlorine level at the distance downstream pipe line, alternative chemicals (chlorine dioxide) could be used to lower the odour and taste of water supply caused by conventional chlorine compounds. Chlorine dioxide is far superior to regular/ordinary chlorine for destroying phenols, algae, sulfides, iron and manganese contaminants present in source waters. However, chlorine dioxide is reported to cost two to five times more than calcium hypochloride (regular chlorine) and also presents greater risk to health, aside from the possibility of explosion during mixing.
- It was advised to include a safe, water-handling component in hygiene promotion sessions to promote safe household level water storing and handling both in ECs and TSs. During distribution of water kits that include hyposol or aquatabs, basic promotion of "point of use" chlorination needs to be provided.
- The Water Quality Testing personnel of the DoH laboratory were also affected during Tropical Storm Sendong which put the laboratory out

of use. Additional personnel should have been trained at the onset – Manila Water or SHA both had personnel that could have assisted. Supply chain for reagents also needs to be ensured.

- Mobility of the SIs greatly impacted the response. The SIs, despite being ready to service, were not able to reach the sites which were situated in different areas around the city. Adequate provision for transportation should be prioritised. Utilising high level officials and politicians to announce the water quality should be considered to gain public trust in the use of the water provided to the camps.
- Obtaining the water quality test results from the water system prior to the typhoon could have helped to demonstrate that the system was actually as safe or safer than before Sendong, despite not achieving the WASH cluster standards for chlorine residuals in all areas.
- Provision of consistent/strong information dissemination to IDPs about drinking water quality is needed. Two measures to assist with this are the provision of Public Monitoring Boards showing water quality results, and the strengthening of WASH committees to understand water testing and results.

### Preparedness Actions

- Water testing equipment, including pool testers, should be in stock for immediate deployment on the first planes in future emergencies.



Photo by Jen Hardy for CRS

# Sanitation

## PORTALETS

### Need/Gap

- Mass influx of people to schools, churches and community buildings resulted in an urgent need for sanitation facilities. In the initial weeks, open defecation/“flying saucer” were practiced due to the lack or absence of toilet facilities and existing practices of the displaced. Due in part to the urban environment, many sites were overcrowded, lacked adequate space for latrines, and the concrete surfaces made latrine construction difficult as concrete floors needed breaking to construct sludge pits.

### Interventions and Outcome

- A contract was signed between UNICEF and Integrated Waste Management Inc. for the deployment of 200 portalets for at least one month and possibly two months on 23 December 2011. The contract stipulated the cost per toilet at PhP1,100/day inclusive of establishment costs, daily cleaning and desludging. The contract did not include provision for handwashing facilities. The contract was extended on a monthly basis at a cost of PhP900/day. The contractor stipulated a minimum of 25 portalets.
- The portalets arrived in CDO on 28 December 2011, and were distributed on 31 December 2011 in CDO and 5 January 2012 in Iligan.
- Portalets significantly assisted in filling the gap in the sanitation coverage, particularly in areas where site layouts made it difficult or impossible to construct semi-permanent latrines. Most portalets were assigned to IDP sites, however, in some places they serviced affected schools not hosting IDPs. Portalets were widely distributed and often moved between sites.
- A number of other organisations also donated smaller numbers of portalets for short-term use. However, many of these portalets did not include cleaning and desludging services. This

resulted in increased health risks and negative feedback for the WASH Cluster. These had to be closed and removed from sites.

- As semi-permanent latrines were constructed, portalets were shifted to alternative sites with greater need. Phase out of the portalets commenced in mid-February. The following table outlines the number of UNICEF portalets in place throughout the response.

Table 6 Portalets in place

Date	No.	Date	No.
Dec 31	47	March 15	80
Jan 15	200	March 31	78
Jan 31	200	April 15	25
Feb 15	200	April 30	0
Feb 28	93		

- There were reports coming from outside the WASH Cluster that portalets were removed too early. However, the WASH Cluster did not authorise the removal of the portalets where latrine ratios were insufficient unless the portalets were posing a safety concern or were not being utilised.
- All portalets were decommissioned by 30 April. The 17 portalets remaining on 29 April were replaced with 14 Ecosan latrines, including on-going management.
- There were frequent reports of dirty and infrequently emptied portalets. A daily monitoring sheet was implemented to ensure portalets were maintained and cleaned daily. The serial number of the portalets was used for tracking, but this became more of a box ticking exercise rather than a reflection of the situation on the ground.

### Lessons Learned

- Portalets are very portable and provide immediate relief but they are costly. Further negotiation with the portalet company should be explored to reduce ongoing costs.

- Clear guidelines and timelines should be established on recommending the use of portalets and later on replacing them with temporary or semi-permanent latrines. These replacements would depend on the timing and movements of affected population from EC to relocation site, or return areas.
- When portalets are introduced into camps before WASH committees are established, the maintenance and cleaning of the facilities are more difficult. Methods to link better with camp management should be explored.
- Improved site preparation is required to avoid the placement of portalets on uneven ground and in inaccessible areas. Again, strong coordination with camp management is helpful.
- Portalets should include handwashing facilities. Attempts to introduce handwashing through HP campaigns were largely unsuccessful in sites with no designated WASH Focal Points. Handwashing should also be included in the portalets contract.
- Focus Group Discussions with IDPs regarding portalets highlighted the following:
  - The IDPs expressed that they disliked the portalet style used as they could see the waste deposited. They expressed preference for the “flap” style portalet. Many users squat on top of the seat to prevent the “back splash”. It is noted, however, that use of the “flap” style portalet requires water to flush and would increase desludging requirements.
  - Small children did not like the portalets because they felt unsafe – the portalets were easily rocked and the locks were not good.
  - The portalets were not appropriate for people with disabilities.
- Use of portalet requires the presence or establishment of a Sludge Disposal Site. Thus, such facilities should be established as a matter of urgency (See “Sludge Disposal” page 54).
- It was found that the wide distribution and frequent movement of portalets required the intensive management of the contractor. Clear lines of communication need to be established with those who have local language skills and be given the responsibility to instruct the contractor. A local facilitator should be available to communicate daily with the contractor and provide necessary instructions as required. The same person can also provide independent monitoring of the contractor to ensure contract requirements are met.
- The presence of portalets and the construction of semi-permanent latrines need to be closely managed to ensure they do not slow down the process of building longer-term solutions. The cost of a portalet for a week can already pay for a new latrine. If WASH agencies cannot meet the demand, alternative methods of delivery need to be considered.

### Preparedness Actions

- Further research on Effective Microorganism (EM) solution and other locally available options that can resolve the foul odour emitted from the portalets should be undertaken. Partnering with DOST and other research agencies/institutions would facilitate developing these technologies for an emergency response (refer to [Annex 21](#) for an ASDSW Report on EM for Central Mindanao).
- A standby long term agreement (LTA) contract for the rapid deployment of portalets should be prepared. This contract should include:
  - That the portalet company is fully responsible for the operation and maintenance of their units;
  - A handwashing facility should be included;
  - Management and reporting functions;
  - Handwashing mechanisms with minimal water use and drainage requirements (i.e., tippytap should be looked at as an interim solution).

- A guidance note on the use of portalets should be drafted, particularly in terms of operation and maintenance.

Figure 13 Gender segregated portalets/Photo by Kate Davis



## SEMI-PERMANENT LATRINES

### Need/Gap

- Although Ecosan toilets and portalets helped meet initial sanitation needs, these were not sustainable or economical in the medium to longer term. The construction of semi-permanent latrines was required to meet the toilet ratios set by the WASH Cluster to assist in the prevention of open defecation.

### Interventions & Outcome

- HRC was the first WASH Cluster agency to commence semi-permanent latrine construction with the first toilets completed on 10 January in Calanaan 1 Tent City. However, Uni frutti and AFP completed permanent facilities in Tibasak in late December.
- Initially, agencies were hesitant to stray from the full “development” standard of fully water sealed septic latrines as required by the Code of Sanitation in the Philippines. Initial construction progress was extremely slow due to logistical and purchasing issues within agencies as they were setting up offices and systems; the availability of suppliers to deliver materials; and difficulties experienced in mobilising workers and coordinating with camp management. Recognising this, the WASH Cluster identified the need to strike a balance between design

standard and speed of construction to prevent open defecation and the corresponding risk of a diarrhoea outbreak. DoH/CHO gave the approval for the use of Water Seal Pit Latrines in lieu of full septic pit, subject to a site inspection by DoH/CHO to consider existing groundwater depth and usage, soil type and planned design life.

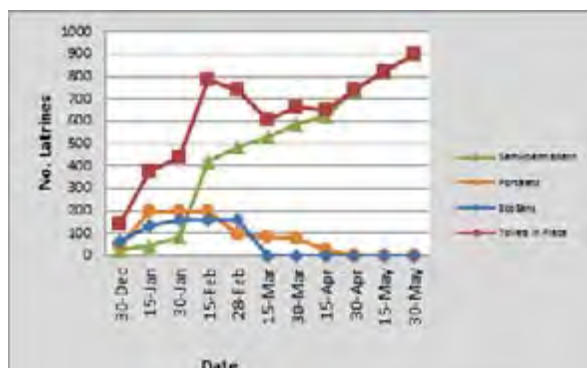
- The Sanitation Technical Working Group met to discuss approach, standard designs, and produce a Sanitation Strategy (refer to [Annex 5](#)). The draft Sanitation strategy was circulated on 4 January. WASH Cluster Strategy focused on ECs and TSs as the priority intervention areas for sanitation. The strategy outlined the agreed WASH Cluster latrine ratios users per toilet, shower, handwashing station and solid waste bins by site type.
- Ratios were set at 1:50 for evacuation centres and 1:40 for transitional sites (Initially this was at 1:20). Ratios were based on the observation that populations were mobile throughout the day, and utilising facilities outside the ECs and TSs. The Sanitation Strategy committed the CHO sanitary Inspectors to conduct regular monitoring on the practice of open defecation and queuing at peak times. In the event that either was found to be an issue the ratio was to be improved.
- The Sanitation Strategy obligated all agencies constructing latrines to be responsible for their operation for a three-month period.
- WASH Cluster decommissioning policies were not prepared by the Cluster.
- Despite efforts by WASH Cluster agencies to be involved in the site planning from the earliest opportunity, a number of sites proceeded without adequate planning or regard for the planning undertaken. This resulted in space, drainage and protection issues for WASH facilities.
- Most agencies elected for direct implementation of construction programmes, providing a site foreman and hiring a team of IDPs (skilled/unskilled). In sites where there was significant construction in a single camp the same crew

was used. In smaller camps, a rotating crew was used if the schedule would allow. DoH utilised DSWD CFW for toilet construction, but faced issues with quality control due to lack of supervision.

Table 7 Total number of semi-permanent latrines constructed throughout the response

Date	No. CDO	No. Iligan	Total
Dec 31	28	0	28
Jan 15	44	0	44
Jan 30	68	14	110
Feb 15	287	134	421
Feb 28	329	154	483
March 15	360	168	528
March 31	382	202	584
April 15	426	202	628
April 30	434	308	742
May 15	514	308	822
May 30	537	359	896

Figure 14 Toilet provision over time



- Semi-Permanent Latrines did not make a significant difference to the latrine situation during the first two months of the emergency, as shown in Figure 14, with Ecosans and Portalets bearing the initial load. It is noted that ecosans were gradually "pulled out" after 28 February but this was not well monitored, so it is not accurately reflected in this graph. This needs improvement in the future.

## Lessons Learned

- Production of a clear Sanitation Strategy within the first two weeks of the emergency is invaluable in providing a consistent response. It provides the WASH Cluster with clear grounds to raise concerns with members of the WASH Cluster who are not meeting agreed requirements.
- Considerable time was lost within agencies in the preparation of toilet designs, Bill of Quantities (BOQs) etc. The WASH Cluster should prepare standard designs and various sanitation options for immediate roll out in an emergency. They would aid in ensuring minimum standards are met, assist in budgeting, and capturing design lessons from previous emergencies. WASH agencies should be encouraged to institutionalise their own designs that meet cluster performance standards. The HRC/Oxfam manual was updated after this response to reflect changes made to scale up and meet the larger number of camps from previous displacements served.
- Design-related lessons learned include:
  - Semi-permanent latrines should have a minimum of 2m<sup>3</sup> of septic tank per

Figure 15 Latrines displaying hygiene promotion messages/ Photo by Kate Davis



toilet bowl in order to prevent frequent desludging. This is based on 0.15 cubic meters per month of use for a 12 month period per bowl (40 users per bowl). The small volume of some septic tanks, high water use, combined with insufficiently sized leachate pipes in the soakage pits for the type of soil resulted in more frequent desludging.

- Issues with “peeping toms”/voyeurs: initial use of hardiflex for latrine walls made it possible for IDPs to make peepholes. Use of a plain sheet solved this. There were also cases when “peeping toms” stood on the toilet bowl in one cubicle and looked over the wall which did not reach the roof (for ventilation purposes) into the next cubicle.
- Design of leachate pits: The leach field size depends on type of soil, and should be taken into account during the design.
- Floor drains, bathing spaces and run off water should be disposed in a separate soak pit rather than the septic tank.
- Water connections should not be installed inside the toilets as it will promote bathing inside.
- The need for physical separation of latrine blocks by gender vs. same block with signs need to be clearly specified in standards. Use of male/female; lalaki/babae signs were widespread.
- Improved attention to needs of PWDs should be promoted.
- Mode of Delivery: Use of IDP labour proved to be a good approach. It provided IDPs with income, created more ownership of facilities improving ease of maintenance and management, reduced chance of conflict with outsiders, increased capacities of IDPs, and seemed to result in a quicker response.

Table 8 Common and advisable septic tanks

Material Type	Particulars	Estimated Costs (Php)
Plastic with Filter	1.2m <sup>3</sup>	3500
Concrete Hollow Blocks	Lined septic tanks; 3m <sup>3</sup> for four seat	20000 (materials labour and piping, leach field)
Concrete rings/ Culverts	dia 1m, depth 3.0m – 2.35m <sup>3</sup> for single seat	5700
Reinforced Cement	> 2m <sup>3</sup>	

- Logistics: The increased demand for equipment / building materials overwhelmed local suppliers. Supplies were quickly exhausted and materials were available at different times. Some agencies stored materials on site, and employed a guard.
- A local congressman constructed a number of toilets using materials donated by the private sector, with labour costs funded by DOLE and supervised by his own office. Delays in labour payments though resulted in construction time frames exceeding two months in some sites. WASH agencies, through negotiation, facilitated completion of these facilities. Earlier negotiations should be considered in future responses.
- Local Contractors: Hiring local contractors to oversee the constructions should also be explored to speed up response.
- Despite WASH Cluster members committing to install disabled toilets at a ratio of 1:10 toilets, in many cases the toilets built were not actually accessible to persons with disability (PWD) – due to size, lack of support bars, etc. Standard designs should be discussed with a specialised PWD agency in preparation for future emergencies. The provision of adequately sized toilets for later modification to deal with the actual disabilities of PWDs within the site could be better approached. Discussion with the Protection Cluster assists in understanding the number and location of PWDs in camps to help target response.

- Septic Tanks: Various types of septic tanks were used for this emergency, although other technologies are available.
- WASH should play a strong advocacy role in ensuring WASH is well integrated into site planning and that site planning occurs. A one-page guidance note was produced in coordination with Shelter Cluster showing distances of toilets from water points and tents, and drainage solutions (refer to [Annex 18](#)). WASH Cluster members should be aware of standards for other clusters to help with overall advocacy.
- WASH needs to advocate transparent movement plans/realistic timeframes as they impact on the facilities' sizes and design requirements. Money and time were lost reconstructing septic tanks designed for short-term use. In other instances, facilities were constructed or rehabilitated one week before IDPs were moved to another camp.
- Strong advocacy with school principals to enable IDPs to use existing facilities is sometimes required. It may be necessary to explain that desludging will be undertaken and existing septic tanks will be fixed where

required. However, where schools will not permit the use of existing toilets, or the construction of new toilets, alternative arrangements need to be made in conjunction with CCCM and the LGU.

### Preparedness Actions

- Prepare Standard Designs, BoQs, etc. (See CD for a copy of the Publication: Excreta Disposal in emergencies book, Peter Harvey (an inter-agency publication), 2007), which includes work already on bills of quantities on various options for latrines, including septic tanks.
- Involve Handicap International or the local PWD organisation to ensure designs are PWD friendly or specific latrines are constructed for their use.

## ECOSAN LATRINES

### Need/Gap

- Immediately following Tropical Storm Sendong around 4,250 families moved into evacuation centres. The shortage of existing sanitation facilities was compounded by the closure of pre-existing water seal latrines due to water scarcity following the damage to the water system. A further compounding factor was that the majority of space for latrines was concrete due to the urban environment, which is difficult to break through and expensive to replace after the emergency response.

### Interventions and Outcome

- Xavier University in CDO through their Sustainable Sanitation (XU-SuSan) Centre is an advocate of dry sanitation technology called Urine Diversion Dehydration Toilet or Ecosan toilet.
- At the onset of the emergency, with large proportions of the city without water supply,

Figure 16 Latrines constructed with plywood/Photo by Kate Davis





XU-SuSan adapted their experience in the use of Ecosan in a non-emergency setting to an Ecosan design for the emergency setting. The first three Ecosan toilets were in place on 18 December in West City Central School.

- General orientation was provided to the IDPs, and a focused orientation was given to the volunteers or Ecosan toilet mobilisers.
- Ecosans were maintained by IDPs primarily through DSWD Food for Work or Cash for Work programmes, sponsorship from local foundations, companies, and schools. Payment varied from site to site, but WASH Cluster advocated for the DSWD agreed rate of PhP215/day. Later on in the emergency, funding for ongoing support ceased.
- Initially, management of the Ecosan toilets was sufficient, however, as time progressed, the provision of toilet paper and garbage bags was not sustained, and funding for cash for work and waste collection ceased. With poor on-going maintenance IDPs did not like using the facilities as they became unsanitary. Lack of maintenance caused a great deal of negative impressions of Ecosan within both the community and the WASH Cluster.
- During the first five days of the operation, the human excreta were deposited at the temporary landfill area. Later on, it was taken to agricultural farms for processing. The WAND foundation area is located in Libertad Misamis Oriental, while XU-SuSan Centre is located in Lumbia, CDO. The treatment process involves storage, vermi-composting and proper management. Two processing options were utilised: 1) the fecal material was pre-treated by storage for at least three weeks and then fed to the African Night Crawler worm which kills pathogens in the vermi composting process. After one to two months depending on the combination of the substrates used, vermicast can be sold at PhP200 per sack (50kg) and the African Night Crawler at PhP350-500/kg. The vermicast is normally used for the fruit bearing plants or trees 2.) The fecal material is stored for at least six months and then either added to

the vermi composting process or simply used as soil conditioner for trees.

- The emergency Ecosan unit costs PhP 8,050 in construction materials (refer to [Annex 17](#) for BoQ). This is higher than those used under normal conditions where one Ecosan toilet costs PhP5,000, but it is significantly cheaper than an average semi-permanent latrine at PhP12,000. An Ecosan toilet can be constructed by one carpenter and one assistant in one day. Monthly ongoing cost for consumables (tissue paper, ash, alcohol, plastic bags) is PhP250/ toilet; a toilet attendant costs PhP6,450 (PhP215 per day) but can maintain up to three toilets; and waste removal and processing cost PhP2,400 for fuel (for around 75 toilets). The costs will vary as well on the number of attendants, collection period, and the number of users in the area.
- At the end of April the remaining portalets were removed from the ECs and 14 pre-used Ecosan toilets were installed. The cost of the remobilisation and monthly expenses was at PhP2,000 per unit.

Table 9 XU-SuSan and WAND Foundation installed EcoSans

Date	No. CDO	No. Iligan	Cummulative Total
Dec 31	21	45	66
Jan 15	50	85	135
Jan 31	72	89	161
Feb 15	73	89	162
Feb 28	73	89	162

### Lessons Learned

- Ecosan latrines have great potential to provide quick, cost effective, mobile and technically appropriate solutions for emergencies with limited water supply and areas where construction of pit latrines or space is limited. Ecosan must be implemented as a complete programme from design to decommissioning including waste disposal and meeting Sphere standards.

- Based on experience in CDO the monthly cost of an Ecosan (capital + ongoing) is PhP11,850 compared with approximately PhP30,000 for a portalet.
- Ecosan Design: Design and construction of the Ecosan toilets need to be improved in areas of privacy, safety/protection, accessibility, dimensions and gender-specific issues. IDPs reported that when using the Ecosan, they did not feel secure, they feel cramped, the stair elevation was high, and the “see-through” wall material exacerbated a feeling of insecurity. Units were also not PWD friendly.
- Ongoing Maintenance: The Ecosan toilets require a comprehensive on-going maintenance plan for the material supply (tissue, ash and cleaning materials) and the continued collection and removal of waste. Clear standard operating procedures for removal and transportation should be prepared. Decommissioning guidelines should also be prepared.
- User Acceptance: Despite a general preference in the Philippines for anal cleansing using water, this response has shown that in emergencies Ecosan technology can be accepted, provided facilities are well maintained. Extensive and continued training on the use of Ecosan is required to ensure the waste is properly segregated. Development of improved Training and IEC Modules are required. IDPs expressed concern, through their tone and attitude, of Ecosan IEC materials. Further investigation into acceptance by Muslims is required.
- Sludge processing: system success relied heavily on the presence of the XU/WAND foundations in the region to undertake waste treatment; further exploration of the suitability for Ecosan use in other areas of the country is required. The possibility for treatment of Ecosan waste through lime stabilisation, simple composting and disposal into sewerage plants should be explored.

- Waste Disposal: Containment vessels for faeces and urine and their connection to the toilet bowl, need to be improved for easy removal and reduced contamination exposure, especially to children. Use of garbage bags for waste collection was considered unsatisfactory and the use of blue jerry cans for urine collection presented some confusion with water vessels.

## Preparedness Actions

- Further Research and development of both the Ecosan Unit and the back end support should be undertaken to help promote it as a viable emergency sanitation option in the Philippines.

Figure 17 Recycled WAND EcoSan/Photo by Kitty Tiukinhoy



Figure 18 EcoSans in Iligan/Photo by Kate Davis



## HANDWASHING FACILITIES

### Needs/Gaps

- The influx of IDPs into evacuation centres led to a corresponding need for facilities to ensure IDPs were able to practice good hygiene behaviour. Handwashing is shown to reduce diarrhoea by more than 40 percent (USAID GHD 2011).

### Interventions and Outcome

- The WASH Cluster aimed to provide handwashing facilities for all latrines. The WASH Cluster Sanitation Guidelines for this emergency specified that handwashing facilities should be provided for every 10 latrines, with a maximum distance of 10m from the facility.
- A total of 88 handwashing stations were constructed across the IDP sites. Handwashing coverage was poor for a number of reasons:
  - Majority of private-sector-built toilets did not include handwashing facilities
  - Portalets and Ecosans did not include handwashing facilities
  - Agencies had difficulty ensuring regular soap supply at handwashing stations

- Low water pressure and lack of piped water meant some handwashing stations were not functional
- EC materials on proper handwashing procedures were implemented (see “HP Messaging” page 57).

### Lessons Learned

- Provision of handwashing facilities is not a simple exercise as it requires ongoing support. More attention is needed to establishing handwashing stations in all camps. Agencies reported experiencing difficulty in ensuring that soap and water were consistently available for this activity. The WASH Cluster needs to explore solutions further.
- Provision of handwashing stations during times of low/no water supply is of particular concern. Provision of hand sanitizers when there is no water may need to be considered. However, handwashing with water and soap is still considered the best practice as sanitizers and antiseptic disinfectants do not necessarily remove mud and other stains.
- Tippy Taps or using buckets with tap should be considered as an alternative in areas with limited water or for a cheap implementation option. Handwashing stations could have been manned at a relatively low cost with cash for work/volunteers.

Figure 19 Children handwashing in group handwashing station/Photo by Jen Hardy for CRS



- Portalets should include handwashing facilities. Attempts to introduce handwashing through HP campaigns were largely unsuccessful in sites with no designated WASH Focal Point, and should be included in the Portalets contract.

### Preparedness Actions

- WASH Cluster should engage an "odd jobs" agency to fill the gaps in the smaller camps, or those where other donors have not provided the complete package. A mechanism for this should be considered further.

Table 10 Different handwashing stations with cost estimates

Design	Cost (Php)	Comment
ACF	Approx 3,000	Concrete and hollow blocks with one tap stand.
CRS: Concrete base block with 200L Plastic Tank with tap.	4,593	Changing design to drum and plywood to reduce cost
HRC basin, tap drain and concrete stand and piping	2500	Faucet connect to water distribution system
ADRA: Coco lumber as base stand and GI sink.	Approx. 4,000 per unit including labour cost.	Faucet connect to water distribution system

Figure 20 Group handwashing stations made out of GI sheets and coco lumber in TS/Photo by Jen Hardy for CRS



## BATHING AND LAUNDRY FACILITIES

### Need/Gap

- The influx of IDPs into evacuation centres led to a corresponding need for facilities to allow IDPs to shower in privacy and dignity, and do their laundry.

### Interventions and Outcome

- The WASH Cluster aimed to provide separate bathing spaces for males and females and laundry spaces. The targets as set out in the WASH Cluster Sanitation Strategy were one bathing space per 40 persons in transition sites and one bathing space per 80 persons in evacuation sites. In planned sites, space was allocated for these facilities. However, adequate provision was more difficult when camps were spontaneously established.
- Bathing spaces were given a lower priority than toilets and water provision, with few resources directed towards them. A number of IDP sites still have bathing-space ratios that need to be improved. As of 30 May, 75 percent of IDPs living in ECs and TSs had access to adequate numbers of bathing facilities.
- Until the facilities were/are constructed, IDPs had to improvise. People often showered in the open, adjacent to water bladders, utilising trucked water in excess for bathing and laundry.
- Although IDPs expressed a desire for taps inside the bathing spaces, these were not provided as experience demonstrated that it resulted in high water consumption.
- Majority of the laundry spaces initially consisted of an unshaded concrete slab with built in drainage to a soak pit. IDPs tended to find shaded locations to undertake laundry. In areas where tarpaulins were erected over the laundry facilities, usage improved.
- Drainage problems and grey water pooling were

encountered in some sites due to poor localised and overall site drainage.

- Washing machines provided at one site, and supplied with trucked water, equated to an expensive laundry solution.
- As of 31 April, a total of 526 bathing spaces had been constructed across the IDP sites, and the percentage of IDPs that had access to an adequate bathing facility (1:80 for Transit Sites and 1:100 for Evacuation Sites) stood at 69 percent.
- In general, showers and laundry were included as part of the "WASH units" (consisting of a number of toilets, showers and handwashing in a single building), so the shower cost is difficult to separate (see p. 51 for total unit costs). However, ACF constructed emergency showers consisting of plastic sheeting and coco lumber structure with gravel flooring that cost approximately PhP6,000 per unit, including labour. CRS constructed laundry areas at PhP8,482 and handwashing stations at PhP4,593.

## Lessons Learned

- Achieving appropriate coverage for bathing spaces is difficult, particularly in smaller sites that were utilising pre-existing toilet facilities or portalets. WASH Cluster should work with an "odd jobs" agency to fill the gaps in the smaller camps, or those where other donors have not provided the complete package.
- WASH should play a strong advocacy role in ensuring WASH is well integrated into site planning and that site planning occurs.
- Standard designs for facilities should be circulated, building on lessons learned from this emergency, including roofing for laundry areas.
- Taps should be located close to bathing spaces, but not inside, to help control water consumption.
- A bathing schedule can be implemented by the WASH committees to assist in organising the IDPs.

- The role of the WASH Committees should be intensified regarding proper use of facilities and responsible use of water.

## Preparedness Actions

- Establish a ToR/mechanism for an agency to fill the gaps in facilities in the smaller camps in the next emergency.
- Ensure WASH Committees ToR includes proper use of facilities and responsible use of water.
- Produce standard designs for bathing and laundry facilities that include allowance for PWDs.

## SOLID WASTE

### Need/Gap

- High debris load in affected communities and increased solid waste load in IDP sites overstretched the pre-existing government solid waste facilities.

### Interventions and Outcome

- The LGUs of both CDO and Iligan worked hard in the collection of solid waste from evacuation sites and from affected communities. As the LGUs appeared to have solid waste under control, WASH Cluster focused efforts elsewhere.
- Debris clean-up drives in affected communities were expedited using cash/food programmes. This was predominantly coordinated through the Livelihood and Food Clusters. ACF provided additional solid waste services for two weeks in Barangay Consolacion and four weeks in Barangay Balulang, to assist during the peak load period. Costs were PhP0.7M in Consolacion and PhP1.9M in Balulang.

These costs included heavy equipment rental, one dump truck, and fuel for solid waste management, with an average of two trips/ eight-hour day.

- Food distribution in Styrofoam contributed to much of the bulk of solid waste.
- Agencies provided waste bins in a number of sites. Two bin sizes were required, the collection bin and the central depository. There were regular requests for bins, particularly in camps without WASH focal points.
- Despite general success reported in segregation of waste at the camp level, with good participation by IDPs, it was common that during collection by the solid waste contractors, the waste was recombined. Achievements were made in the training of IDPs previously unfamiliar with segregating waste.

Table 11 Various types of waste bins

Design	Cost (Php)	User Feedback
200 gallon drums cut in half as garbage bins	600	Subject to theft
Rubber trash bin with cover (made from recycled tyre)	250	Less subject to theft
Plastic trash bin (part of cleaning kits)	110	

- The City Health Office in CDO and Iligan provided regular distributions of black plastic bags to facilitate solid waste programmes. However, exhausted funds prevented ongoing distributions.

### Lessons Learned:

- Solid waste was not given much attention within the WASH Cluster. The LGU garbage collection focal point should have been encouraged to attend WASH Cluster meetings.

- The WASH Cluster should have assessed the solid waste disposal system as a whole, and where the waste was not remaining separated at the landfill, advocated for a suspension of waste segregation at the camp level. We need to be realistic. However if SWM is used, biodegradable, non-biodegradable and recyclable placards should be placed above trash bins inside the camps.
- Distribution of garbage bags, particularly early in the emergency assists to make collection easier. However, it is advisable to encourage the City Government/all agencies to limit the use of polyurethane plastic bags and substitute these with other biodegradable materials. This will in turn help garbage collection and make dumping more effective and eco-friendly.
- Market mapping of trucking services should be promoted for waste collection.
- Community participation and volunteerism for clean-up campaigns should be strengthened.
- Composting in sites should be considered further as a large portion of solid waste collected consisted of leaves etc.
- Disposal of menstrual napkins was not considered in toilets for women and needs further study on how to address this issue.

### Preparedness Actions

- LGUs should have a comprehensive contingency plan for solid waste management in emergencies. This may include arrangements with private contractors and inter LGU cooperation.

Figure 21 Example of HRC/OXFAM Solid Waste Containers/Photo by Kate Davis



Figure 22 Waste baskets made out of recycled car tires/  
Photo courtesy of ACF



## DESLUDGING/SLUDGE DISPOSAL SITES

### Need/Gap

- The large number of portalets and high loadings on new and existing septic tanks/pits in evacuation centres create a high demand for desludging and centralised sewage treatment facilities in both CDO and Iligan. Neither city had such facilities prior to the emergency.

### Interventions & Outcome

- The need for desludging was identified from the onset of the emergency, based on lessons learned from previous emergencies. The existing facilities would fill rapidly, increasing public health risk from overflowing septic tanks and open defecation.
- To meet the need for safe sludge disposal, the HRC established a centralised sewage waste treatment facility, utilising lime stabilisation in both CDO and Iligan. This facilitated efficient management without environmental risk, in close cooperation with the LGUs. Lime stabilisation involves the application of hydrated lime (calcium hydroxide) which when mixed with the sewage raises the pH above 12 which kills the pathogens. Experience showed that 50kg of hydrated lime was required per

10,000L of sludge. After this, water can be separated from the solids, and the solids decomposed safely.

- A facility was opened in CDO on 1 January 2012 and in Iligan on 20 January. Unfortunately on the first week of February, the facility in Iligan had to be closed due to complaints from neighbouring communities because of issues with desludging contractors who accidentally spilled untreated effluent on the access roads to the site. A new site was built by the LGU and opened in March.
- In CDO, ACF, ASDSW and DoH all had contracts with private desludging companies. In Iligan, the majority of desludging was covered by the LGU and HRC. Desludging services for all IDP sites were made available and systematised through the WASH Cluster.
- The new desludging sites can facilitate safe disposal of the sewage even after the emergency, provided the systems are maintained by the LGU.
- Construction of the sludge disposal site for six months had a total cost per site of PhP90,000 with a monthly operating cost of approximately PhP45,000 (salaries and chemicals).
- On 30 April a total of 418,000 liters of sludge had been processed in the two sludge plants.

### Lessons Learned

- In emergency situations sludge disposal is critical. Unfortunately, even during non-emergency conditions, sludge management is an issue in most areas of the Philippines. Outside Metro Manila, access to sewage networks are practically nonexistent with only three sewerage systems—in Baguio, Vigan, and Zamboanga—serving less than 3 percent of their respective service area populations<sup>4</sup>. Sludge disposal from septic tanks is done by private contractors. These contractors are limited in number, expensive, and often,

<sup>4</sup> WPEP. 2003. Urban Sewerage and Sanitation: Lessons Learned from Case Studies in the Philippines.

their treatment facilities do not comply with environmental standards or they are disposed illegally in rivers, lakes or the ocean.

- Revisiting the local policies and laws on sanitation, particularly on septage management, would facilitate efforts in advocating for funding for sewage/septage treatment plants to be established in municipalities, including operational expenses.
  - Professional organisations and networks should be tapped to provide technical support to government and explore options for onsite/off site septage/sludge management during emergencies. WASH Cluster needs to have prepared guidelines on various options for onsite or off site septage management and disposal during emergencies.
  - LGUs should strictly monitor sludge disposal by private contractors or provide government operated facilities. Due to limited technical knowledge and the belief that such facilities are costly (financial resource for both establishment and O&M), most LGUs do not maintain a local sludge disposal site.
  - Disaster Risk Reduction plans should account for sludge disposal at the municipal level, including site selection for the processing area, creating a database of potential pumping contractors and material suppliers, and identifying people or an organisation to implement in case of an emergency. National agencies such as DENR and DoH should also provide guidance to LGUs and response agencies to ensure that in an emergency situation this methodology is approved while ensuring minimum standards are met.
  - In any emergency, early establishment of a sludge disposal site is required if not already in place. Operation of this facility should be handed over to LGU as early as possible. Agencies should advocate for their continued use after an emergency and the allocation of operational costs for the facilities in LGU annual budgets, both during and post emergency.
- The lime stabilisation method of sludge disposal has low capital costs, is easy to manage and effective. It should be reviewed as a potential method to treat waste NOT ONLY during a disaster but also during regular times. In this process:
    - Site selection is critical. Landfills are ideal locations as they are accessible, and odour etc. is masked by the landfill. Traffic and communities (scavengers) should be considered greatly in the site selection to lessen their occurrence in the future. Ideally the dump site should be chosen on the downstream side and well distanced from any water source. The hydrogeological factors of the area should also be considered (i.e depth to water table, recharge, soil media, topography, hydraulic conductivity). If construction in a risk area is unavoidable, care must be taken to completely seal the pit to prevent infiltration. Pit sides and bases must be lined with impermeable material with a good drainage and temporary roofing.
    - Soil type is critical for digging, stabilizing pit sides, and controlling groundwater contamination. Clay soils are best.
    - Pit lining can be a challenge. Initially tape was used to join the plastic, but this had a tendency to come apart allowing the liquid to seep under and float the lining. Potential alternatives are:
      - Sewing the tarpaulins together before installation and putting adhesive on the sewn lines.
      - Clay lining of the pit to ensure minimum infiltration. Bentonite lining is another method if the material is available.



- Weighing down the lining with stones or installing wooden frames to keep the lining in place.
  - Storage areas for lime and site fencing are also needed.
- Although hydrated lime was used in this response, further cost assessment should be made on the use of quicklime (calcium oxide) as there would be improved dewatering & heat emitting effects. A 40kg bag of quick lime costs PHP300 compared to PHP150 for hydrated lime.
  - It is essential to monitor and control the quality of work of desludging contractors to ensure appropriate sludge transport and disposal. Desludging contractors should have clauses in their contract that ties them to repair or pay for any damages caused by improper desludging. It was found that having the desludging company accompanied by a government or NGO supervisor improved the process.
  - All newly constructed semi-permanent latrines should have adequately-sized septic pits to prevent the frequent need for desludging (see Semi-Permanent latrines p 44).
  - Clogging of toilets was a common issue. Proper use and maintenance of latrines should be strongly integrated in the entire hygiene promotion process to lessen the number of misused toilets. Toilet cleaning materials including a rubber plunger should be provided to all sites. Provision of waste bins in latrines helps minimise items flushed down the latrine. However, safe disposal of this waste needs to be ensured. After the provision of cleaning tools, declogging of toilets is to be considered an IDP issue for them to resolve.

Figure 23 Dried sludge/Photo courtesy of HRC



Figure 24 Dumping of sludge with perimeter fencing/Photo courtesy of HRC



Figure 25 Spraying of hydrated lime on sludge/Photo courtesy of HRC





Photo by Jen Hardy for CRS

# Hygiene Promotion

## HP MESSAGING & IEC MATERIALS

### Need/Gap:

- Hygiene promotion (HP) messaging and Information, Education and Communication (IEC) materials are required to assist the IDP population in practicing behaviour that helps reduce the likelihood of disease outbreaks or transmissions.

### Interventions & Outcome

- At the onset of the emergency very few IEC materials were prepared. The HP Technical Working Group met to develop a wide range of IEC materials in the local language. The developed materials went through pre-testing and consultation. The IEC materials were printed and distributed locally in a staged approach as they became available, availability dates are shown in Table 12.
- HP materials were printed by HRC-OXFAM and shared free of charge to interested agencies. The direct cost of IEC printing was approximately PhP300,000. The total cost of IEC reproduction, including pretesting expenses and the professional fees of Fit for School for the lay-out was approximately PhP430,000 (US\$10,000).
- HP posters/materials were distributed and placed in strategic areas around the IDP sites by partner WASH agencies, particularly alongside toilets.
- Focus Group Discussions using IEC materials revealed the following:
  - They were very useful in promoting good hygiene practices, and helped IDPs know the correct procedures and conduct in using public/shared facilities;
  - Eye catching materials or concepts such as comic strips should be used to encourage readership especially among children; Comics should also be made into posters, and placed in central locations;

- Use of light materials (e.g. board papers) should be avoided, as the posters were easily destroyed/damaged when installed outside or, improperly stored;
- Where applicable, posters should be made of sticker paper to avoid easy removal;
- Game Boards were extremely popular and effective. A set was provided to each BHW for future use;
- Printing HP messages on items such as fans and umbrellas is encouraged.

- A clean green campaign/contest was held in Iligan, encouraging different camps to incorporate the Hygiene Promotion Key messages through their daily behaviour and take pride in their TS/EC. A culmination event was held that brought over 1,500 IDPs together for a day of celebration.

### Lessons Learned

- Preparing and printing IEC materials prior to emergencies will help ensure uniformity and standardisation of key messages. It is important that IEC materials are available in the local language or with pictures in the first few weeks, as this is a key risk time for health outbreaks.
- Close coordination with barangay health centres and the CHO is crucial to getting the message

Figure 26 Children playing with customised Snakes & Ladders board game/Photo by Jen Hardy for CRS



across. It is also important that the IEC materials show uniformity in content.

- The materials chosen for printing should be durable and able to withstand outdoor conditions. Thus, they will require a higher budget allocation.
- IDP feedback highlights the value of a variety of communication methods or concepts for HP.
- Local health staff from the Regional Health Office and the CHO provided the much needed support on language translation for the IEC materials.
- Having a local partner (Fit for School) with background experience on developing WASH materials undertake the execution and rendering of the IEC materials facilitated faster production.
- Mobilising WASH partner agencies to support the pre-production work (i.e., conceptualisation and pretesting), has always been a challenge as it conflicts with their agencies' schedule of activities. Providing the materials for free was a valuable incentive to encourage/strengthen their cooperation
- Plans to use audio visual materials, including SMS were considered but the team was limited by time and resources to localise existing materials.
- At the onset of the emergency, a baseline Knowledge, Attitude and Practice (KAP) survey needs to be conducted to analyse risk behaviour and to develop IEC materials and hygiene promotion practices that are based on local motivations and appropriate channels of communication. Follow up KAP surveys will also assist in demonstrating progress and areas for improvement in hygiene promotion.

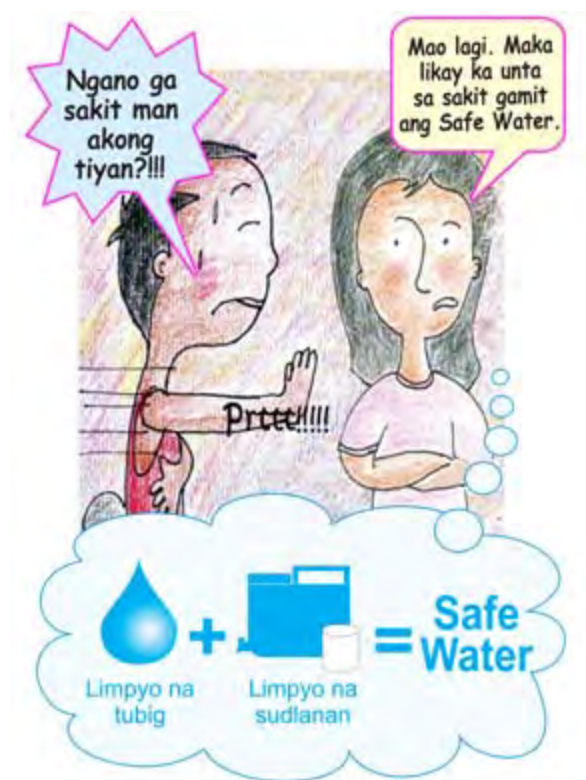
### Preparedness Actions

- IEC Materials should be prepared in a number of languages ready for distribution. Standby agreements with printers should be ready to enable rapid response.

Table 12 IEC materials produced with cost estimates

HP Topic	Type	Date	No. copies produced
Handwashing Steps	Poster	19 Jan	2,000 (1000 each for the male & female child model) – PhP 35k
Handwashing at critical times	Poster	19 Jan	1,000 –
Handwashing after defecation	Sticker	19 Jan	PhP17k
Safe water	Comic Strip	20 Feb	1,000 10,000 – PhP 50k
Hyposol	Fan	2 Feb	3,500 – PhP 35k
General WASH messages	Game Board for Children	16 Feb	50 sets – PhP 56,250
Clean as you go (for toilets)	Sticker	9 Mar	1,010 – PHP 60,580

Figure 27 Comic strip clip on clean water by Fit for School



## WASH NON-FOOD RELIEF ITEMS: HYGIENE KITS, WATER KITS, CLEANING KITS AND POTTIES

### Need/Gap

- Following Tropical Storm Sendong, thousands of families had reduced access to hygiene products such as soaps for washing and bathing as well as laundry. Toothbrushes, toothpaste, sanitary towels for women, and jerry cans for transporting and storing water were also scarce.

Figure 28 Standard HK/Photo by Jeffrey Maitem for UNICEF



### Interventions and Outcome

- Immediately following the storm, WASH agencies distributed stockpiled hygiene kits. UNICEF had 11,500 hygiene kits and 8,500 Water Kits repositioned in Manila and 900

Hygiene Kits and 4,900 Water Kits in Cotabato. This facilitated the distribution of more than 12,300 kits within the first three weeks of the emergency. Initial distributions focused on ECs, however, home-based evacuees were also targeted in the weeks that followed. A considerable portion of home-based areas never received distributions. UNICEF stockpiles were replenished by mid-January to be ready for another emergency.

- The standard for Philippine WASH Cluster Hygiene Kits was adopted by a large portion of humanitarian actors. Private/media donations and PRC distributions were not in line with the Cluster's standard.

Table 13 Contents of a Hygiene Kit

Item	Quantity	Unit
Laundry Soap, 380g	4	Bars
Toothpaste	6	Each
Toenail Cutter	3	Pcs
Sanitary Pads (8pads/pack)	3	Packs
Bath Soap, 135g	12	Bars
Toothpaste, 150ml tube	2	Tubes
Malong	2	Each
Plastic pail with cover 16L	1	Each
Plastic dipper		Each

- During the first inter-cluster meeting, the WASH Cluster requested that coordination of WASH NFIs be done through the WASH Cluster rather than the NFRI Cluster.
- Despite attempts at proper coordination, distributions of Hygiene Kits during the onset of the emergency were not always equitable, and duplications were reported.
- As of 30 May, 71,751 hygiene kits had been distributed. Although the total value is difficult to estimate, as PRC kits are material donations, a total cost of more than US\$1.5M is estimated. Approximately 30 percent of these went to IDP sites and 70 percent to home-based IDPs.

- Experienced WASH agencies conducted hygiene promotion sessions alongside their distribution of hygiene kits. This revolved around critical times for hand washing, use of Hyposol and other water treatment options, and the importance of proper hygiene (using the kit's contents – jerry cans, toothbrush, soap etc.). However, many private donations distributed in the initial weeks were not accompanied with the above sessions.
- Agencies undertook post distribution monitoring.
- The frequency and continuation of Hygiene Kit distribution was discussed at length. The WASH Cluster targeted two-month distributions (of a one month supply) to all IDPs living in IDP sites, taking into account improved access to hygiene materials in the local market. Initial plans to distribute only “replenishment kits” for the 2nd and 3rd round of distributions were shelved due to excess supply of full kits among WASH Cluster members and minimal cost difference between a replenishment and a full kit.
- CRS conducted a voucher distribution valued at Php1,000, with the vouchers received by 167 families ( 25 families in 2 return sites and 142 families in relocation sites). The voucher could be redeemed at three branches of the SM Department Store for any of 12 pre-identified hygiene items (refer to [Annex 23](#) for listing). This system was established to give IDPs a sense of self-worth by giving them the freedom and capacity to choose. A ToR document between CRS and SM was signed to orient management and staff to the vouchers system and to establish reporting and payment guidelines.
- The use of “vouchers” through local sari-sari stores was explored briefly, but shelved due to the lack of purchasing power of these stores and also when several other organisations appeared to still be distributing hygiene kits. The WASH Cluster undertook a small research assessment into the sari-sari store distribution system in May 2012 for reference for future emergencies. (refer to [Annex 24.](#))
- DoH/CHO in both CDO and Iligan were trained in distribution of non-food items by the Logistics Section of UNICEF in late January/ early February. Training focused on planning and organising systematic large distributions including good coordination with barangay officials. After this training DoH/CHO took on a considerable number of WASH distributions. Experience found that distributions should be limited to 500 families in one day.
- Some agencies reported difficulty in clarifying beneficiaries lists, particularly outside IDP sites due to the multiple different lists: DSWD List (Yellow Cards), the Barangay List and the Social Action Centre (White Cards).
- Various agencies also distributed toilet cleaning kits once for each toilet. The ACF kit contained one bucket, a plastic dipper, a toilet brush, one toilet plunger, one broom stick, one dust pan, and a plastic trash bin at a total value of Php935. The CRS kit also included 1kg of powder detergent soap, 1L of liquid bleach for the flooring, hand gloves and mask, but did not include the dustpan and trash bin.
- CHD distributed cleaning kits and underwear garments for females and children due to requests of IDPs in early January, but not all ECs were given due to limited resources.

## Lessons Learned

- Pre-stockpiling is essential for quick distribution. Pre-positioning (to be included in WASH Cluster/ LGU/LDRRMC contingency plans) of stocks is vital. The immediate roll out of the DRRM law is necessary to facilitate the possibility for LGUs to stockpile.
- Hygiene and Water Kit Contents: Focus Group discussions/post-distribution monitoring with IDPs indicated a general satisfaction with the content of the hygiene kits. The packaging of the standard hygiene kit inside the plastic bucket aided distribution. Suggestions were made to replace the three nail clippers with one adult nail clipper and one child nail clipper.

Requests were also made for hand sanitizing alcohol, combs, towels and shampoo. Based on requests and recommendations made by the IDPs, WASH Cluster should review the items in the hygiene kits. WASH cluster should also establish a replenishment kit standard. Brand names of items in the hygiene kits standard listing content should be removed. IDPs also expressed desire to have two jerry cans per family in the Water Kits due to insufficient storage capacity for their families. Requests were made for potties for both children and the elderly.

- Distribution Mechanisms: Beneficiary selection was best made within IDP sites through validation with the camp manager. On the day prior to the actual kit distribution, vouchers (claim stubs) were distributed by the Camp Manager/BHW/Agency. On the day of distribution, the vouchers were exchanged for hygiene kits. There were reports of attempts to fake vouchers, and for outsiders to also try to claim kits. For distributions in affected barangays, coordination with barangay officials is required to aid in the efficiency of the distribution. Distribution training of local authorities is an excellent mechanism to speed up distributions and capacity building, and ensuring both dignity and equity in distribution (refer to [Annex 26](#) for the Distribution Training Handout provided by UNICEF).
- Voucher System: Despite finding the voucher system time consuming to establish, it was deemed worth the effort as it supports local economy and gives IDPs the freedom to choose items. Post-distribution monitoring found that vouchers should be in both English and Visayan to avoid confusion with terms used; SM Management should be requested to provide additional orientation to staff; the list of items should be expanded to include items like deodorant, laundry baskets, and first aid supplies; and options to utilise local stores to provide more direct local income should be explored. The WASH Cluster recommends that key items such as soap should remain a mandatory item even in the voucher system.
- Discussions with one of the main manufacturers nationwide highlighted the possibility of purchasing stocks from the distributor at the local level. Distributors get their stocks from the manufacturers free of delivery costs, and they make their profit from a further discount (2-3% for a CDO distributor), thereby selling the commodities at the manufacturer's price (i.e. the same price one could get from a manufacturer in Manila).
- Hygiene Promotion vs. Hygiene Education: There was mixed feelings between cluster members on the strength of the initial HP campaign. However, the HP team was pleased with their response, highlighting the difference between hygiene promotion and hygiene education. Having an agency focus efforts on the follow-up of distributions by the private sector with hygiene education campaigns should be considered for future emergencies.
- It was deemed that the two-month frequency of hygiene kit distribution was appropriate, taking into consideration the purchasing power of IDPs and the duration of displacement. It is suggested that monitoring of hygiene kit coverage and supply should be improved through inclusion in the ToR of the WASH Focal Point Agency. Lack of clarity on the replenishment plan created confusion, and led to inequality and duplication of efforts. The Cluster should have clear messaging/strategy for the replenishment plan. Early market mapping of local emergency supplies will help facilitate a clear decision on planning for the replenishment Hygiene kits.
- Private Sector: Hygiene Kits are a high cost activity; improved collaboration/partnership with the private industry should be explored. (See "Private Sector and other goodwill" page 23).
- A request for Liquid bleach from IDPs were common, but was avoided due to concerns that bleach will interfere with the normal decomposition of the human feces.

Table 14 Contents of a Cleaning Kit

Item	Unit Qty
Bucket	1
Plastic Dipper	1
Toilet Brush	1
Toilet Plunger	1
Broom Stick	1
Dust Pan	1
Plastic Trash Bin	1
1kg of powder detergent soap	1

Figure 29 PRC conducting hygiene education trainings/  
Photo courtesy of PRC



## WASH COMMITTEES

### Need/Gap

- Provision of WASH hardware alone will not ensure proper use or maintenance of facilities. Establishing WASH Committees in every camp helps ensure the sustained use and maintenance of facilities.

### Interventions and Outcome

- WASH Focal Points in each IDP site worked with the Camp Committee to establish WASH committees within the sites. These committees,

composed of IDPs who took on the role of ensuring that all installed WASH facilities were properly used and maintained, monitored the mortality and morbidity cases in the camps and encouraged fellow IDPs to practice good hygiene by conducting HP activities and setting up policies on facility operation and maintenance. Camps with no WASH Focal Point experienced delays in creating a WASH Committee (refer to [Annex 28](#) and [Annex 29](#)).

- Majority of sites had WASH Committees established towards the end of January with guidance from WASH Focal Points or through volunteer groups. Newly established camps followed suit.
- IDPs were very responsive to and involved in their WASH committees.
- Camps with strong WASH committees had increased awareness of WASH issues and decreased cases of open defecation.
- Toilet Segregation: Two predominant systems for toilet segregation was adopted during the response based on decisions from IDPs during their WASH Committees/Focus Group discussions:
  - Gender Segregation – toilets were constructed in physically separated blocks by gender, but in some instances physical separation was insufficient. UNFPA printed male and female signs in the local language for distribution.
  - By block/cluster – IDPs were assigned toilets by cluster of families. Doors were locked and each family was provided with a key, and given the responsibility for cleaning the facility.
- Barangay Health Workers (BHWs): were largely unutilised for WASH for the first two months of the emergency and were often deployed to do house-to-house disease monitoring in their barangays. In early February, 39 BHWs from CDO and 30BHW (and 30 BNS) from Iligan underwent a one-day hygiene promotion training facilitated by WASH Cluster agencies. Training



topics included hygiene promotion methods and the establishment of WASH committees. BHWs were assigned to each of the IDP sites without a WASH focal point agency and tasked to conduct daily hygiene promotion visits and provide weekly reports to CHD/CHO. The reports were compiled and updates were provided at WASH Cluster meetings. As WASH agencies began to pull out, additional camps were assigned to BHWs. In late April, BHWs were assigned to every evacuation site/transitional area to help ensure sustainability after the exit of all WASH agencies.

- BHWs are paid an honorarium by the LGU of Php1,500/month. UNICEF supplemented this for 50 BHW/CHVs assigned to the IDP sites with a per diem of Php80/day to cover the costs of transportation.
- In early May, the WASH Committee of one evacuation centre self-instigated a “user fee” system to ensure sustained provision of cleaning materials in the camp. IDPs were required to pay Php2 per family on a weekly basis for general needs, and Php2 for every 20L of water from the tap. Following this success, BHWs plan to work with other sites to encourage similar schemes.
- The PRC conducted Hygiene Education in select barangays in CDO and Iligan, following the standardised method of PHAST (Participatory Hygiene and Sanitation Transformation), developed by the WHO and adapted to local contexts. The programme had a high impact through the mobilisation of facilitators and Community Health Volunteers (CHVs) from the affected barangays in which the activities were conducted.

## Lessons Learned

- WASH committees worked effectively within the camps as they coordinated efforts and fast tracked actions. WASH committees greatly increased the general public’s WASH awareness. WASH committees should be an integral part of the WASH response in all

disasters involving IDP centres, and should be established as soon as possible within the first six weeks of site operation.

- Focus Group discussions with IDPs highlighted the value of the WASH committees. IDPs reported that the committees gave them a greater respect for themselves. For those in the WASH committees, they said their status in the community was uplifted.
- LGUs should be capacitated to implement WASH programmes during emergencies, particularly in the establishment of WASH committees.
- The Barangay Health Workers are an excellent resource to be tapped to assist in the provision of Hygiene Promotion, provided that proper training is given. Trainings should be conducted as early as possible as the CHO/BHWs felt that two months into the emergency was too late.
- LGU/BHWs and new WASH actors could have greatly benefitted from a guide/training on how to set up WASH committees.
- Better coordination is required between the BHWs and the WASH Agency Hygiene Promoters, to ensure that resources are maximised and streamlined. WASH agencies should make a stronger commitment to involve BHWs in any HP activity planned. Lack of coordination between hygiene promotion actors and BHWs caused some confusion in camps, with IDPs expressing confusion over who they were to follow.
- Improved communication between WASH and Camp Management is required to avoid the overlapping of functions of WASH committees with Camp committees, and improve WASH awareness. Theoretically, under CCCM there should be several committees including the WASH committee. They work together to meet the needs of the IDPs. Strengthening the WASH committee will not only improve WASH but can also strengthen other camp functions by good example.
- Toilet segregation of semi-permanent latrines can be done by either male/female, or by

cluster. IDPs are best placed to decide which system works best in their site. Where female/male segregation is chosen, the labeling of latrines with stickers is a very clear, easy and visible method.

- “Pay per use” schemes for latrines are not recommended. However, depending on how long an IDP site is needed, a “user fee” scheme aimed to ensure maintenance of facilities (i.e., cleaning products and minor repairs) may be appropriate. The “user fee” scheme should be carefully considered and is not recommended in the early stages of an emergency, as IDPs may not have re-established their livelihood, and hence have no capacity to pay. All systems must be in consultation with the IDPs.
- Establishment of a community-driven/user-friendly complaint handling system needs to be improved as part of camp management or in the intervention area. WASH Committees should advocate this.

## Preparedness Actions

- The Terms of Reference for a WASH Focal Point and WASH Committee should be created. (refer to [Annex 28](#) and [Annex 29](#) for draft ToR.)
- Roll-out of WASH in Emergencies training for local health staff (provincial, city/municipal and barangay levels)
- Contingency planning for the local health offices that clearly identifies WASH as one of its priority sectors in which their local health staff would play a significant role.
- Prepare a manual of Operation for BHWs assisting camp sites

## PREPAREDNESS ACTIONS REQUIRED

This document has identified a lot of preparedness actions that need to be undertaken to improve our future responses. Accomplishing these preparedness actions will entail both technical and financial resources. The National Cluster needs to integrate these actions into the cluster work plans. All WASH Cluster agencies should be responsible for some of the work load.

During this response the WASH Cluster has been innovative, learned many lessons, and came up with many ideas to explore the continued process of raising the bar in emergency response.

Section	Preparedness Actions Needed
CLUSTER COORDINATION	<ul style="list-style-type: none"> <li>• DoH WASH Cholera Strategy should be shared and reviewed/localised by WASH Cluster where appropriate.</li> <li>• Prepare a guide for WASH Cluster Coordinators of key activities that should be undertaken at various stages of the emergency response (i.e. 24 hours, 48 hours, one week, two weeks, etc.) A 30-day timeline used in Bangladesh is available in the annexes section of the WASH Cluster Coordinator Handbook to help prepare this.</li> <li>• Improved clothing visibility for CHO and DoH staff, to clearly identify that they represent WASH will help improve coordination on the ground. Equally agencies involved in WASH will be clearly identified as such (i.e. vests marked "WASH" + "Agency").</li> <li>• Prepare Terms of Reference (ToR) for the WASH Focal Point Agency.</li> </ul>
ASSESSMENTS	<ul style="list-style-type: none"> <li>• Review assessment forms now, especially the MIRA at National WASH Cluster/Core Group level, while the cluster members are still clear on what questions need to be answered, and before the next emergency occurs.</li> <li>• Prepare different assessment forms to collect appropriate data for:               <ul style="list-style-type: none"> <li>• Rapid assessment and detailed technical assessment;</li> <li>• The different stages of an emergency;</li> <li>• ECs and barangay levels; and</li> <li>• Types of emergency (conflict or disaster).</li> </ul> </li> <li>• Develop procedures for the coordination of assessments.</li> <li>• Work on providing an "assessment team" for remote areas through the Inter Cluster arrangement.</li> </ul>
FUNDING/APEALS	<ul style="list-style-type: none"> <li>• Prepare a clear briefing/briefing note explaining the funding appeals process and the funding limitations.</li> <li>• Document the full cost of WASH in this emergency to provide a good base line for calculating resources needed, should another emergency arise, noting that this was an urban-based response</li> </ul>
INFORMATION MANAGEMENT	<ul style="list-style-type: none"> <li>• Train WASH cluster on SPHERE standards for government and other interested agencies.</li> <li>• Revisit and adapt IM tools developed and used during Sendong</li> <li>• Strengthen cluster capacity on WASH information management amongst humanitarian and government partners.</li> <li>• Improve links between the WASH Cluster and the Health Cluster, and include diarrhoea data in regular reporting, due to its importance as an indicator of the WASH Clusters' performance.</li> </ul>

Section	Preparedness Actions Needed
	<ul style="list-style-type: none"> <li>Provide DoH-HEMS National level with a summary table of achievements against key cluster indicators and numbers of interventions to date on a regular basis. Relevant information from the full matrix being issued was difficult to extract.</li> </ul>
CCCM/WASH COORDINATION	<ul style="list-style-type: none"> <li>Review the DTM Questionnaire with regards to WASH in preparation for the next emergency.</li> </ul>
PRIVATE SECTOR	<ul style="list-style-type: none"> <li>The WASH Cluster should conduct a mapping of private firms that provide support during emergencies.</li> <li>The WASH Cluster should advocate for NDRRMC to take the lead in explaining the Cluster System to the Philippines top firms so it can be integrated into their Corporate Social Responsibility (CSR) plans.</li> <li>WASH Cluster should prepare a “wish list” of priority items/services that will be needed by the Cluster during an emergency. This list should be shared with large national and global firms and the local bureau of commerce in the event of an emergency, to help guide the response (refer to Annex 15, for a sample letter to a bureau of commerce). The WASH Cluster should coordinate with umbrella organisations such as Corporate Network for Disaster Response &amp; Philippine Business for Social Progress to present the Cluster System and mode of communications to be better prepared for the next emergency.</li> <li>The WASH Cluster should establish MOAs at the National level with some of the major Philippine industries that have a direct link to WASH such as cement factories, soap suppliers, water bottling facilities and fuel suppliers.</li> <li>Discuss with possible suppliers the potential for either bipartite (Company/DoH) or tripartite (Company/DoH/WASH Cluster Agency) agreements, where in the event of an emergency the company dispatches to the WASH Cluster Agency the goods/services for management and distribution. A trigger arrangement will need to be clearly outlined, as a corporate response is likely to be dependent on emergency type/size/location. Consideration could be given both to “donations” and “cost price” arrangements. An example would be the provision of concrete from a local cement factory to a WASH Cluster Agency for latrine construction, rather than asking the factory’s CSR to construct the latrines. This process will expedite the response and capitalise on the expertise of all.</li> </ul>
WATER SYSTEMS	<ul style="list-style-type: none"> <li>Prepare a database of water system experts, including WASH cluster members such as Manila Water, to supply expertise to help water districts with low capacities during an emergency.</li> </ul>
WATER QUALITY	<ul style="list-style-type: none"> <li>Stockpile water testing equipment including pool testers for immediate deployment on the first planes.</li> <li>Undertake further research on EM (Effective Microorganism) solution and other locally available options that can resolve the foul odour emitted by the portalets. Partnering with DOST and other research agencies/institutions will facilitate developing these technologies for an emergency response (refer to Annex 21 for an ASDSW Report on EM for Central Mindanao).</li> </ul>
PORTALETS	<ul style="list-style-type: none"> <li>Prepare a standby contract (LTA-Long Term Agreement) for the rapid deployment of portalets. This contract should include: <ul style="list-style-type: none"> <li>A provision that the portalet company is fully responsible for the operation and maintenance of their units;</li> <li>A handwashing facility;</li> <li>Management and reporting functions</li> <li>Handwashing mechanisms with minimal water use and drainage requirements (i.e. Tippytap should be looked at as an interim solution).</li> </ul> </li> </ul>

Section	Preparedness Actions Needed
	<ul style="list-style-type: none"> <li>• Draft a guidance note on the use of portalets, particularly in terms of Operation and Maintenance.</li> </ul>
SEMI-PERMANENT LATRINES	<ul style="list-style-type: none"> <li>• Prepare Standard Designs, Bills of Quantities etc. See CD for a copy of the Publication: Excreta Disposal in emergencies book, Peter Harvey (an inter-agency publication), 2007, which includes work already on bills of quantities on various options for latrines, including septic tanks.</li> <li>• Involve Handicap International or the local PWD organisation to ensure that designs are PWD-friendly or specific latrines are constructed for their use.</li> </ul>
ECOSANS	<ul style="list-style-type: none"> <li>• Undertake further research and development of both the Ecosan Unit and the back end support to help promote Ecosan as a viable emergency sanitation option in the Philippines.</li> </ul>
HANDWASHING	<ul style="list-style-type: none"> <li>• WASH Cluster should facilitate an “odd jobs” agency to fill the gaps in the smaller camps, or those where other donors have not provided the complete package. A mechanism for this should be considered further.</li> </ul>
BATHING & LAUNDRY SPACES	<ul style="list-style-type: none"> <li>• Establish a ToR/mechanism for an agency to fill the gaps in facilities in the smaller camps in the next emergency.</li> <li>• Ensure WASH Committees ToR includes proper use of facilities and responsible use of water.</li> <li>• Produce standard designs for bathing and laundry facilities that include allowance for PWDs.</li> </ul>
SOLID WASTE	<ul style="list-style-type: none"> <li>• LGUs should have a comprehensive contingency plan for solid waste management in emergencies. This may include arrangements with private contractors and inter LGU cooperation.</li> </ul>
HYGIENE MESSAGING	<ul style="list-style-type: none"> <li>• IEC Materials should be prepared in a number of languages ready for distribution. Standby agreements with printers should be ready to enable rapid response.</li> </ul>
WASH COMMITTEES	<ul style="list-style-type: none"> <li>• The Terms of Reference for a WASH Focal Point and WASH Committee should be created (refer to Annex 28 and Annex 29 for draft ToR).</li> <li>• Roll-out WASH in emergencies training for local health staff (provincial, city/municipal and barangay levels)</li> <li>• Plan contingencies for the local health offices that clearly identifies WASH as one of its priority sectors in which their local health staff would play a significant role.</li> <li>• Prepare a Manual of Operation for BHWs assisting camp sites.</li> </ul>



## Annexes

Annex 1 Letter of Acceptance of International Assistance  
Annex 2 Philippine Republic Act 10121  
Annex 3 Sample WASH Cluster Meeting Agenda  
Annex 4 Tropical Storm Washi (Sendong) WASH Cluster Water Strategy  
Annex 5 Tropical Storm Washi (Sendong) WASH Cluster - Sanitation Strategy  
Annex 6 Directory of DoH and CHO staff  
Annex 7 MIRA Assessment Form  
Annex 8 OCHA Second Phase Joint Multi Cluster Rapid Needs Assessment Report  
Annex 9 Rapid Assessment Form (Improved)  
Annex 10 Flash Appeal  
Annex 11 WASH IM Tool  
Annex 12 WASH Costing  
Annex 13 Sample Exit Strategy  
Annex 14 Programme for the WASH Lessons Learned  
Annex 15 Sample of Letter to Chamber of Commerce  
Annex 16 IDP Focus Group WASH Response Guide Questions

#### SANITATION

Annex 17 Bill of Quatity of EcoSan  
Annex 18 CCCM, Shelter, WASH & Protection Cluster Transitory Tent Site Guidelines  
Annex 19 Handpump and Sanitation Design Manual – HRC/OXFAM  
Annex 20 HRC Sludge Processing Documentation  
Annex 21 ASDSW Report on Effective Microorganism for Central Mindanao

#### HYGIENE PROMOTION

Annex 22 Protect and Survive Sample Poster  
Annex 23 List of Items redeemable on the CRS Voucher System  
Annex 24 Sari-Sari Store Voucher System Research  
Annex 25 UNICEF Distribution Powerpoint  
Annex 26 UNICEF Distribution Handout  
Annex 27 Gender Marking Tip Sheet  
Annex 28 Draft WASH Focal Point ToR  
Annex 29 Draft WASH Committee ToR  
Annex 30 OCHA Action Review Report

