



# Reconstruction with local architecture, Panay Island, Philippines, 2014 - 2017,

Thierry Joffroy, Elsa Cauderay, Florie Dejeant, Olivier Moles

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# RECONSTRUCTION WITH LOCAL ARCHITECTURE

PANAY ISLAND, PHILIPPINES, 2014 - 2017

CAPITALIZING ON EXPERIENCES FROM TWO SHELTER PROJECTS IN  
THE AFTERMATH OF THE SUPER TYPHOON HAIYAN



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CRAterre Editions

*We wish to express our sincere  
thanks to all those who took part  
in the realisation of the projects  
presented in this publication as  
well as those who facilitated and  
contributed to the capitalization  
of experiences and to the  
development of this booklet.*





# FOREWORD

THIERRY JOFFROY

Architect – Researcher (HDR), CRAterre research Laboratory  
Director of AE&CC research unit, ENSAG / Univ.Grenoble-Alpes

Within our changing world, one of the new global trends is that natural hazards result in more and more severe destruction. Recent studies undertaken on such situations have revealed that, often, the cause is that new building designs don't refer sufficiently to existing local knowledge on how to cope with these hazards. People tend to neglect traditional building cultures to apply standards which are most of the time difficult to achieve, resulting in poor resistance and sometimes errors that endanger people, more specifically in hazard prone areas.

To address this issue, for several years, CRAterre, together with many other organizations has been working on the hypothesis that, before making any proposal for a reconstruction project, the local experience on coping with hazards should be examined. That involves the consideration of assets at different scales with both its tangible (siting, urban planning, shape, structure, building details) and intangible facets (alerts systems, building organization, mutual assistance systems). The idea is that the strengths within these various assets can be identified and re-used – and possibly adapted – in the design of the proposals made as part of the housing design and the reconstruction project strategies, with the goal of remaining close to what populations can afford to do on their own, thus with potential for increasing their long-term capacity for resilience.

This proposed approach has been studied through a series of experimental field projects that have regularly contributed to the discussion on how it could be theorized so as to establish new knowledge on housing resilience and also on the conditions for implementing it. To that end,

in parallel to field projects in various countries (Pakistan, Indonesia, El Salvador, Haiti, etc.), a series of international seminars were organized and several Ph.D. thesis conducted, leading to some first published results and a continuity in reverse engineering and reverse design efforts by numerous research laboratories around the world.

When in 2013 the Philippines was hit by super typhoon Haiyan, more than thirteen million people were affected. At least one million houses were damaged, of which more than half were fully destroyed. In the specific context of Panay Island, a number of international organizations decided to offer assistance to local organizations as implementing partners, and two of them were supported by CRAterre through the different steps of the project's implementation.

Interestingly, these two projects, implemented with the same overall approach, brought about similar but also different decisions. This led to the idea of giving a closer look to these two field projects and to reflect on what could be learned from each of them. This could be accomplished through the mobilization of research funds from the Labex AE&CC resulting in this publication that I am pleased to introduce as it actually provides us all with wholesome “food for thought” for both scientific research and reconstruction programs, and, moreover, with elements to become more efficient when undertaking our common responsibility of helping people living in hazard-prone areas all around the world to improve their resilience capacity.



*Indigenous housing (left: traditional, right: shelter project), barangay Dalagsa-an in Libacao, Aklan.*



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# PREFACES

## DSAC PROJECT

### THE DIOCESAN SOCIAL ACTION CENTRE OF KALIBO (DSAC)

In November 2013, the DSAC Kalibo had been virtually inactive for many years, working with only one staff member, the director, and very limited funding. Having been revived through the Haiyan recovery and rehabilitation projects, DSAC Kalibo is a very young organization. It had never been engaged in such colossal shelter project such as this Shelter Improvement Project for the Indigenous Peoples of Libacao, Aklan (Philippines). And so, the publication of this booklet is very helpful for us as a social action center engaged in community-based development.

DSAC Kalibo is most grateful to Caritas Belgium and Secours Catholique - Caritas France and to CRAterre for their technical assistance. Their guidance, assistance and enduring support have placed DSAC Kalibo as a leading non-government organization in the area of shelter reconstruction using indigenous materials and enhancing community capacities and skills towards resilience on Panay Island.

The publication of this booklet, which is full of treasured experiences and achievements not only of DSAC Kalibo but also of the Panay Center for Disaster Response (PCDR) in Cuartero, Capiz, will guide and inspire DSAC Kalibo when similar disaster hits the Province of Aklan or other nearby localities here in the Philippines.

On behalf of the Panay-Bukidnon Akeanon in the Indigenous Cultural Communities of Barangays Manika, Oyang, Dalagsaan and Sitio Taroytoy, we express our sincerest and unending gratitude to everyone who made the publication of this booklet possible and made our efforts and experiences worthy to become a future reference for those engaged in similar undertakings.

### CARITAS BELGIUM & SECOURS CATHOLIQUE-CARITAS FRANCE

In the aftermath of super typhoon Haiyan (November 2013), Caritas Belgium and Secours Catholique - Caritas France, in collaboration with the Diocesan Social Action Centre of Kalibo as implementing partner, started a rehabilitation program in Libacao, Aklan. As other NGOs were willing to work in the area, the barangays Dalagsaan, Manika, and Oyang were selected as project areas and an integrated livelihood and shelter program was developed.

The overall approach was to strengthen local capacities for durable shelter and sustainable livelihood through integrated community-based activities (including shelter; livelihood; water, sanitation & hygiene; Disaster Risk Reduction and capacity enhancement), building on existing locally available resources and know-how, local building cultures and traditions and disaster-resilient practices. The expertise of CRAterre was used to help the shelter section of the program.

The remoteness and difficult access to the project area made the implementation challenging. However, we achieved designing, repairing or building 226 culturally acceptable homes using locally available and traditional materials. The project trained approximately 100 local artisans in technical skills but also on DRR resilient housing features and awareness. In addition, by employing local labor (approximately 8,000 Cash for Work days) and using local materials, the project invested most of the expenses in the local community (approximately 350,000 EUR), contributing to a revival of the local economy, while providing 226 families with safer homes. Finally, the iterative process, consistently involving the future homeowners and referring to (and strengthening) existing local expertise and resources not only resulted in the construction of safe and comfortable homes, but also in the empowerment of IP communities.

The booklet highlights some of the housing features and good practices of the project but also some of the challenges encountered. It is certainly important to document these experiences and share them widely.



*Participatory risk mapping in barangay Manika, DSAC project in Libacao, Aklan.*





*Training on site, PCOR project, Cuartero, Capiz.*

# PREFACES PCDR PROJECT

## PANAY CENTER FOR DISASTER RESPONSE (PCDR)

### ARMIE F. ALMERO

Executive director, Iloilo City, Philippines.

PCDR's experience has shown that community participation in decision-making, the partnership with People's Organizations, as well as the cooperation and support of local government units are essential to the success of any community intervention. This experience affirms PCDR's adherence to the Community Based Disaster Management approach, which recognizes people's existing capacities, aims to strengthen said capacities and encourages people's participation in disaster management as well as in addressing the roots of vulnerabilities at local levels.

This booklet documents emerging good practices in Disaster Risk Reduction, how PCDR has worked with the communities to address the damages caused by Typhoon Yolanda and how these communities resiliently coped therefrom.

Our experiences and collective efforts bear examples of good practices and could be replicated and shared to others. These experiences allowed us to realize the difference between resilience and resistance, to appreciate the value of local materials in construction, and most significantly, to foster our will to preserve our environment.

The partnership with CRAterre and Caritas Luxembourg in implementing the shelter project enhanced our technical skills in construction and repair towards more resilient houses and structures. The experience in this shelter project also enriched our community-based disaster management framework by integrating structurally-sound techniques and local building culture strategies in disaster management. Likewise, this improved our work with the partner organizations by enhancing their capacities, an essential step in allowing them to build resilient communities.

I hope that this booklet will inspire and yield appreciation for other partner Non-Government Organizations and People's Organizations, engaged in disaster risk reduction, in any vulnerable part of the Philippines.

## CARITAS LUXEMBOURG

Nearly five years after Typhoon Yolanda hit the Philippines a lot of efforts were undertaken, lessons learned and best practices witnessed on the long journey not only towards recovery but also towards enhanced resilience, awareness and decent living conditions.

Caritas Luxembourg was on the ground to assist the most affected two days after the Typhoon hit. We supported the emergency appeals of Caritas Philippines and cooperated with the non-profit organization Panay Center for Disaster Response (PCDR). Over the past years, we partnered, learned and grew with PCDR and supported twelve communities on the Island of Panay in their rehabilitation efforts. As Caritas Luxembourg, we hold our Filipino colleagues and the Yolanda survivors in high esteem for their hard work, their creativeness, their wisdom, their power of endurance, their patience, their strength and courage to deal with all the challenges that poverty, disaster, systemic problems, and the search for sustainable alternatives pose.

At the end of the program, we see communities of fisher, farmers, and vendors that grew together, and achieved successes of their own and for their communities. Not only were the communities supported to repair their homes and to make them more resilient for future disasters. Students furthermore have an affordable and sturdy dormitory to board in and can regularly attend school and residents of mountainous areas can cross the Panay river safely through the construction of a bridge. The communities were trained and developed their own community-based disaster management systems. They enhanced their dayaw systems (mutual aid) and strengthened their organization through capacity building and the hands-on work in the program. In effect, they feel better prepared in the face of calamities yet to come. Lifelong learning continues for all of us, but the program concludes with twelve hopeful, promising and resilient communities on the Island of Panay.

The partnership with CRAterre is not only extremely valuable for both Caritas Luxembourg and our partners but also for the beneficiaries. The lessons learned summarized in this booklet are a good basis for future beneficiaries and organizations to make use of it.

# RISK MITIGATION: SOCIAL OR NATURAL HAZARD VULNERABILITY?

From November 6 to 9, 2013, the super typhoon Yolanda, (the international name is Haiyan), struck the Philippines. It has been the strongest tropical typhoon ever recorded, causing more than 6,000 deaths, affecting 16 million people, destroying and damaging over one million houses and causing devastation across wide areas of the Central Philippines, particularly the Eastern, Central and Western Visayas.

The Philippines is composed of more than 7,100 islands and islets, with a population of over 101.6 million – around 55% living in rural areas. The country ranks 116th in the HDI (human development index) putting it in the medium human development category close to Indonesia or South Africa. Notwithstanding an apparent sustained growth, wealth inequality is high and poverty remains a serious problem in the Philippines. Overseas Filipino workers (OFWs) represent 15% of the population and their contribution to the national income is important.

The country is located in an extremely hazard-prone area. It is ranked among the countries deemed most vulnerable to natural hazards in the INFORM index for Risk management (2018). On average, about fifteen calamities per year are recorded. Among them, storms and floods are the most frequent but the Islands are also exposed to earthquakes, volcanic eruptions, landslides, and tsunamis.

The country has a long history of disaster response administrative frameworks and policies and was even the first to establish a national office focusing on managing emergency relief, and more recently (2005), to implement a comprehensive risk response as well as risk mitigation strategy. As for the civil society, there is a long and strong tradition of community-based organization and pluralistic networks engaged with local stakeholders in disaster response.

Given the number of calamities and disasters each year, the Philippines has become an important case study area to understand community resilience and vulnerabilities, as well as the link between poverty



*Path of Typhon Yolanda path on the Philippines, November 2013.*



and hazards. The relevant research carried out by J.C. Gaillard (2008) reveals that the data on natural hazard recollected from 1900 shows a constant rate of events and intensity, but that the number of casualties and the extent of damages have risen dramatically over the century. This phenomenon is attributed to several factors related to demography, urban migration, change of agricultural practices such as the implementation of monocultures, the absence of social services and neglect. Above all, poverty and food insecurity lead a great number of people to live in vulnerable situations, in areas exposed to natural hazards.

The same research study shows that, generally, the dominant view in natural disaster risk management tends to emphasize the “exceptional” nature of hazards and not the “daily” character of vulnerability. This was highly visible in the aftermath of typhoon Yolanda with a generic disaster response focusing on reaction rather than prevention and mainly based on natural hazard risk mitigation, without addressing the social vulnerability.



*Traditional housing in barangay Oyang in Libacao, Aklan.*

# CULTURE OF RISK

The high recurrence of hazard in the daily life of the Filipinos is part of their culture. Disasters are not seen as abnormal occurrences but instead as frequent life experiences. Researcher G. Bankoff (2007) points out that the Filipino culture can be regarded as the product of community adaptation to natural hazards. A number of scholars have studied the deep integration of hazards into the fabric of Filipino social and political life showing how disasters are a core element of the Filipino identity. This is most evident in the agricultural system, the half-nomadic rural lifestyle and in local building traditions. These cultural and social specificities constitute the coping mechanisms that the Filipinos have worked up for centuries to continue living in spite of constant threats.

A notable coping practice the Filipinos is the traditional mutual aid system known as *bayanihan*. This practice is in a real community spirit at all levels of the society, especially in rural areas, for intensive field works or in house building activities. It is particularly effective in post-disaster situations. Families are able to help one another and quickly bounce back despite lack of funds. This was the case during the recovery process after Yolanda, where the high efficiency of the *bayanihan* practice impressed the international community.

Those coping mechanisms highlight the cleverness of the existing culture of risk awareness and mitigation. It reaffirms that the resilience of rural communities is based on a broad range of capacities involving social, economic and environmental components. Therefore it has quickly appeared relevant to strongly consider those specificities and moreover to strengthen them to ensure the provision of appropriate disaster response measures in the future.

## THE NIPA HUT OR BAHAY KUBO



### Issue

Extremely hazard-prone areas.

### Description

The Bahay Kubo rural style house is a good example of adaptation to the climatic and environmental context.

### Hazard resilient design

The structure, composed of light materials (local wood, bamboo, palm leaves, rattan) behaves like reeds, as it is prone to bend under wind action but rarely totally collapse, reducing the likelihood to injure inhabitants.

Stilt houses are not designed to resist super typhoons and earthquakes but rather to make it easily to repair or rebuild after the retrieval of scattered materials. Therefore, a damaged house can be used as a temporary shelter where the main structure still in place receives scattered panels of bamboo. It provides a decent place to live until the owners gather enough resources to properly repair the house with new walling and roofing panels.

### Location

Mainly in rural areas and seldom in suburban areas.

### Application

Requires the knowledge and skills of local carpenters.

### Intervention / construction duration

1-2 weeks to build,  
1 day to fix temporarily if damaged  
2 to 4 days to repair.

## TYPHOON & EMERGENCY SHELTERS



### Issue

Sheltering during and after typhoons.

### Description

Low-rise constructions with a rectangular plan built using local natural materials (wood, bamboo, palm leaves, rattan) are traditionally used as family shelters during and after cyclones.

### Hazard resilient design

The very low height of the shelter and the roof extended to the ground provide an improved aerodynamic shape reducing the impact of strong winds. When a typhoon is announced, people gather their belongings and move into the shelters to be protected from the possible partial or total collapse of housing and other risks. Later, these shelters are often used as temporary living spaces as the damaged houses are being reconstructed / repaired.

### Location

On an open site protected from falling trees or other debris, close or far away, depending on the exposition context.

### Application

Commonly known and applied.

### Intervention / construction duration

Very short - 1/2 day.

## TEMPORARY CONSOLIDATION



### Issue

Main structure's stability during typhoon.

### Description

Temporay wall propping up.

### Hazard resilient design

Temporary consolidation with bamboo or timber is a very common practice. The wall panels are propped up with full-length bamboo poles or timber logs and the roof is ballasted. If possible, stilts are braced.

This consolidation principle prevents the building from bending or collapsing. Generally, the consolidation system will remain after the emergency until the structure is repaired or rebuilt.

### Location

Roof, wall panel, wood stilts.

### Application

Commonly known and applied.

### Intervention / construction duration

Very short - 1/2 day.



# GENERAL APPROACH

## Resistance or Resilience ?

The two following reconstruction projects present an approach based on the resilience, rather than on the resistance of housing. The analysis of the local building culture and its coping mechanisms makes it possible to understand the extent to which house affordability, the capacity to recover, accessibility to resources, the safety of users as well as local skills and knowledge are factors to be put in balance with the structural resistance of housing units. The adopted approach assumes that local style houses reflect the local populations' capacity of resilience. In other words, while houses are designed to resist strong storms and typhoons, it would be beyond people's capacities to seek for a structural resistance able to cope with less frequent super typhoons. In such exceptional situations, rebuilding seems a more accessible and affordable option, using salvaged materials or otherwise. To illustrate this "resistance vs. resilience" approach, a roof made of palm leaves is easily replaced without external assistance and without the need to spend substantial savings. Palm leaves are available locally and manufacturing doesn't usually require extra-familial skills. On the other hand, a CGI sheet roof covering is not easily affordable and households would require to access substantial savings or external assistance to recover their CGI sheet roof.

The nature of damages is another important perspective of analysis: post-Yolanda field assessments showed that damages are likely linked to a pre-existent poor condition of structures. In many cases, high winds and heavy rains just triggered a pending collapse. The depreciation of local building traditions is probably one of the main factors accounting for the weakening of housing structures and can be perceived through the lack of maintenance and the unsuitable modern modifications made on traditional buildings.



## Local Building Culture approach

Improving local building cultures and developing post-disaster responses based on existing good practices do not lead to some kind of nostalgic return to the past. Several recent experiences have proven that considering local building cultures is extremely valuable when working towards the enhancement of community and housing resilience. Identifying, understanding, recognizing and, where needed, improving and strengthening local practices often result in very useful knowledge for the definition of relevant disaster risk reduction and re-construction programs.

This approach ensures the respect of local culture and customs, the identification of the real basic needs and the valorization of local knowledge and capacities.



*Traditional on site building in barangay Madalag, Aklan.*

### Scale of intervention

After a major natural disaster, whatever the level of available funds may be, only a small portion of the affected population, generally the most vulnerable, is provided with support. The majority of affected families will recover through self-rebuilding, using the local informal building sector (Parrack, Flinn, Passey, 2014).

The purpose of the two following projects was to develop disaster preparedness and risk reduction strategies applied to the housing sector, based on the existing local resources, building practices, and coping capacities. The projects paid special attention to economic accessibility issues so that the duplication of proposed housing interventions would be possible for a great number of households not directly benefiting from the projects, thus significantly expanding the impact of the project.

### WHAT IS A LOCAL BUILDING CULTURE (LBC) ?

A building culture results from the adaptation of a community to the environmental conditions of the territory in which it is established - physical, climatic, social, economic and cultural. As with biodiversity, a multitude of local building cultures exist throughout the world and it is important to consider that all of them evolve and change over time and that several building cultures may coexist in a given territory.

*(for further information see the practical guide Assessing local building cultures for resilience and development, CRAterre editions, 2015)*



*Example of local building culture: structural elements are tied together without nails using vegetable materials (here rattan).*

# PROJECTS & PARTNERS PRESENTATION

## DSAC PROJECT



### THE DSAC OF KALIBO

The Diocesan Social Action Centre (DSAC) of Kalibo is the social action constituent of the Diocese of Kalibo. The DSAC-Kalibo provides support to vulnerable populations from 22 communities in the province of Aklan in Panay Island. DSACs are responsible for the coordination of social action activities in parishes and Basic Ecclesial Communities (BECs).

The DSAC of Kalibo is one of the 85 DSACs of the Caritas network in the Philippines under the National Secretariat for Social Action (NASSA)/Caritas Philippines. The NASSA is the humanitarian, development and advocacy body of the Catholic Church in the Philippines. It was created by the Catholic Bishops' Conference of the Philippines (CBCP) in 1966. It is a faith-based, non-governmental organization which supports and sustains social action initiatives on peace advocacy, democratic governance, children's rights, sustainable agriculture, environmental protection and disaster management.

The DSAC Kalibo played a part in the three-year Yolanda Rehabilitation Program #REACHPhilippines, covering 166 communities across 9 provinces and dealing with housing, water, sanitation & hygiene, food security, livelihood, Disaster Risk Reduction, capacity building, community organizing and ecosystem recovery related issues.

### LOCATION

Three barangays (Dalagsa-An, Manika, Oyang), in the municipality of Libacao – Aklan. The three barangays are remote and difficult to access (many villages are accessible only by foot).

### LOCAL PARTNERS

Diocesan Social Action Center of Kalibo (DSAC)

### FINANCIAL PARTNERS

Secours Catholique – Caritas France (SCCF)

Caritas Belgium

### PERIOD

2014 - 2017

### BUDGET

Livelihood improvement project: 836,786 €

Housing construction and restoration project: 503,880 €

### OVERALL OBJECTIVE

To improve the living conditions of Indigenous Peoples affected by typhoon Yolanda, supporting access to healthy, resilient and sustainable houses.

### BENEFICIARIES

The project aims to benefit the overall communities from barangays Manika, Oyang and Dalagsa-An. However priority was given to those whose housing had been totally damaged and not yet rebuilt, and among them to the most vulnerable families, that is to say to those lacking the capacity to recover on their own.



## INDIGENOUS PEOPLES

In the Philippines, indigenous peoples (IPs) have a holistic concept of the land, referred to as ancestral land and ancestral domain, encompassing not only the territory but also its resources: the rivers, the forests, the flora and fauna, the minerals underneath and the air above. It is not a commodity to be sold or exchanged but a resource to be nurtured for future generations.

The Philippine Constitution of 1987 recognizes the rights of indigenous cultural communities. Despite this national IPs law, they are among the poorest and most marginalized sectors of the Filipino society. A major factor causing food insecurity and poverty among IPs is the loss of their ancestral lands due to their displacement linked to development

projects and extractive industries involving mining, dam construction and logging operations and to the degradation of the environment.

In Libacao, various indigenous communities live, among them the Tumandok in barangay Dalagsa-an and the Akeanon-Bukidnon in barangays Oyang and Manika. They are mainly settled upland, in remote mountainous areas and have managed to preserve their culture, language, and rituals. They are represented by their own council and chieftain. One of the major concerns for them is the absence of land tenure. While they are recognized as indigenous to the area and despite the pending claim with the National Commission on Indigenous Peoples (NCIP) submitted in the 1990s, the communities have not been issued the Certificate for Ancestral Domain Title.



*Shelter project in Libacao, example of an 8 posts house with kitchen extension.*

# PROJECTS & PARTNERS PRESENTATION

## PCDR PROJECT



### PANAY CENTER FOR DISASTER RESPONSE (PCDR)

The Panay Center for Disaster Response (PCDR) is an established disaster response service institution servicing all four provinces of Panay Island and the province of Guimaras. It is a non-governmental organization based in Iloilo City serving particularly vulnerable populations during and after natural and human-made disasters.

Since 1984, PCDR has been at the forefront of disaster relief and emergency response activities, assisting a total of 152 communities with relief delivery operations and rehabilitation programs.

PCDR has established a local network of different non-governmental and people's organizations, which provide services and assistance in emergency response, mitigation and rehabilitation contexts. It maintains a pool of committed volunteers to carry on the different aspects of disaster response. PCDR seeks to reinforce vulnerable communities' resilience to disasters by encouraging local and/or collective ownership of resources and through participative approaches to project conception and design.

PCDR has been a member of the National Citizen's Disaster Response Network (CDRN) since 1984, a broad alliance of seventeen regional NGOs all over the Philippines committed to serving vulnerable sectors through a Community-Based Disaster Management (CBDM) approach.

### LOCATION

Shelter project: three barangays (Putian, Manhunod-Hunod, Carataya), in the municipality of Cuartero - Capiz

Student's dormitory: barangay Katipunan, Tapaz, Capiz

### LOCAL PARTNERS

The Panay Center for Disaster Response (PCDR) based in Iloilo

### FINANCIAL PARTNERS

Caritas Luxembourg

### PERIOD

2015 - 2017

### BUDGET

Shelter project: 40,112 €

Dormitory: 62.100 €

### OVERALL OBJECTIVE

Shelter Project aims at improving the living conditions of the population of Cuartero affected by typhoon Yolanda, through raising awareness and supporting access to healthy, resilient and sustainable housing.

The dormitory will serve as a "home away from home" for 50 Tumandok students who live in the far-flung barangays of Lahug, Tacayan and Sitio Tobi, Abangay.

### BENEFICIARIES

The shelter project targeted 3 communities of Cuartero, as some of its members were beneficiaries of the Early Recovery Project but had not been able to recover their homes fully.

## PEOPLE'S ORGANIZATIONS OF THE BARANGAYS PUTIAN, MANHUNOD-HUNOD AND CARATAYA

People organizations (POs) are independent associations of citizens coming from all sectors of society which role is to enable their members to protect and pursue their legitimate and collective interests and aspirations. In the Philippines, the number of POs has considerably increased since the 1980's. Many of them are small and locally based.

Each of the three barangays covered by PCDR's shelter project has a PO representing their communities. They were created with the support of PCDR in 2014 during the Early Recovery Project (ERP) launched in the aftermath of Typhoon Yolanda. POs played a key role throughout the unfolding of PCDR's program, allowing community-based and participatory processes at different stages: assessment, decision-making, implementation, and evaluation. The program also aimed at building PO's capacities.

## BALAY TUMANDOK (STUDENT'S DORMITORY)

The dormitory for about 50 Tumandok students was designed by Filipino architect Romel Romero in consultation with CRAterre. It consists of two buildings of 185 and 75 m<sup>2</sup> (sleeping area and dining area) using wood and bamboo as the main materials and featuring several elements of the local architecture and various disaster-resilient technical solutions. This achievement also serves to demonstrate good resilient practices to the communities.

### TUMANDUK

TUMANDUK is an abbreviation for *TUmandok nga MAngunguma nga Nagapangapin sa Duta Kag Kabuhi* meaning Tumandok Farmers in Defense of Land and Life. The organization brings together different organizations and communities of IPs in Panay among them the Tumandok IP's who have lived for generations at the borders of Iloilo, Capiz, and Aklan provinces and have fought for over more than four decades to protect their ancestral land and their rights. It is this organization that expressed the need to build a dormitory for students coming from remote villages. The organization played an essential role in its implementation and is responsible for its management.



Student's dormitory project in Tapaz, Capiz.



# A COMMON METHODOLOGY

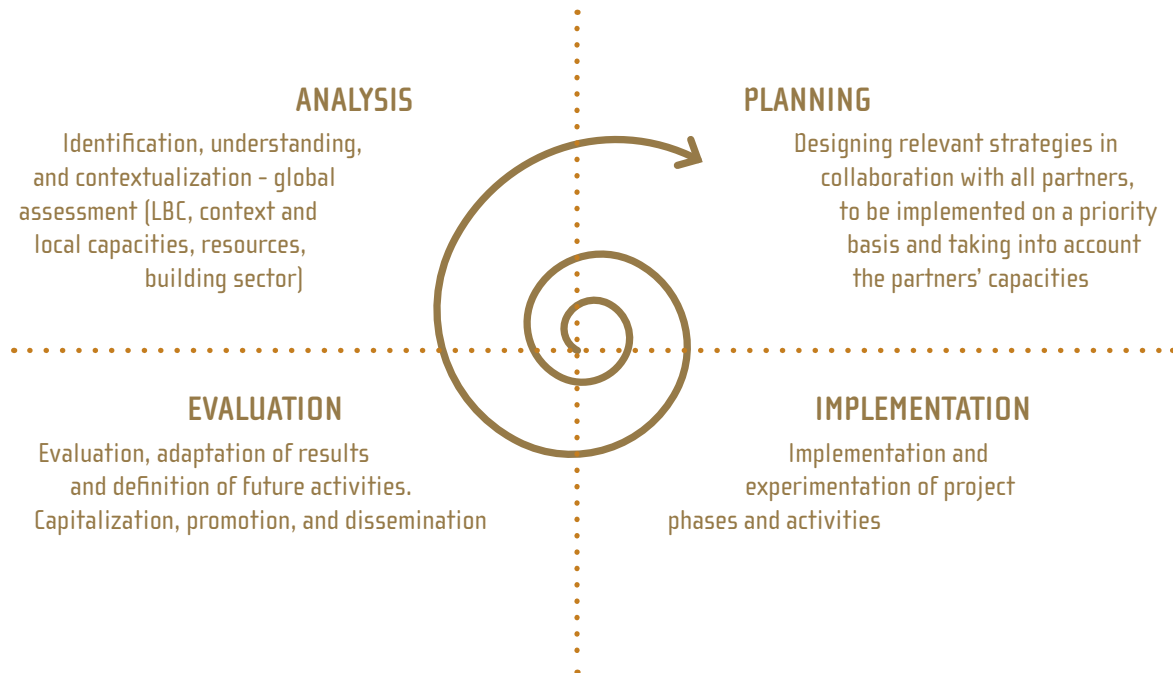
The project implementation methodology has been defined as an iterative participatory approach on the basis of complementary activities. This fosters greater project flexibility with the possibility of fine-tuning project activities as feedback from local communities is received. Also, this allows for a deeper holistic approach and a more Integrated Human Development.

The iterative method is based on the successive implementation of the following steps: analysis, planning, implementation, and evaluation. The project cycle is repeated as often as necessary to enable a permanent improvement of the technical proposal as well as to allow project partners to build their own competencies progressively and thus eventually becoming capable of handling all project activities on their own.

## Implementation methodology

The implementation of this iterative methodology makes each project unique due to the reference made to its specific context. The two following post-typhoon reconstruction projects illustrate this very well: despite the fact that both projects were set up in the same region of the Philippines, it is interesting to notice that the proposed iterative and participatory approaches resulted in two different strategies in link with the specific characteristics of each territory.

The methodology pursues orientations which are deeply interdependent and thus connected (see right).





## AWARENESS AND KNOWLEDGE

- Promoting and demonstrating the effectiveness of local building cultures.
- Strengthening existing skills through the implementation of training activities for builders.
- Disseminating local disaster coping practices.
- Supporting, in collaboration with operational stakeholders and donors, the promotion and recognition of the value of local building and risk cultures.
- Strengthening existing partnerships and creating new cooperation and coordination opportunities among the community, operational, academic and institutional stakeholders.

## PLANNING AND MANAGEMENT

- Involving partners and beneficiaries in all stages of the implementation process.
- Designing activities according to existing capacities.
- Designing projects that are able to respond to urgent needs as well as to long-term challenges.
- Prioritizing facilitation, rather than providing.
- Focusing on direct beneficiaries while allowing the whole community to benefit from the project.
- Adopting a participatory approach throughout the project, involving the community from get-go, especially through the beneficiary selection process.

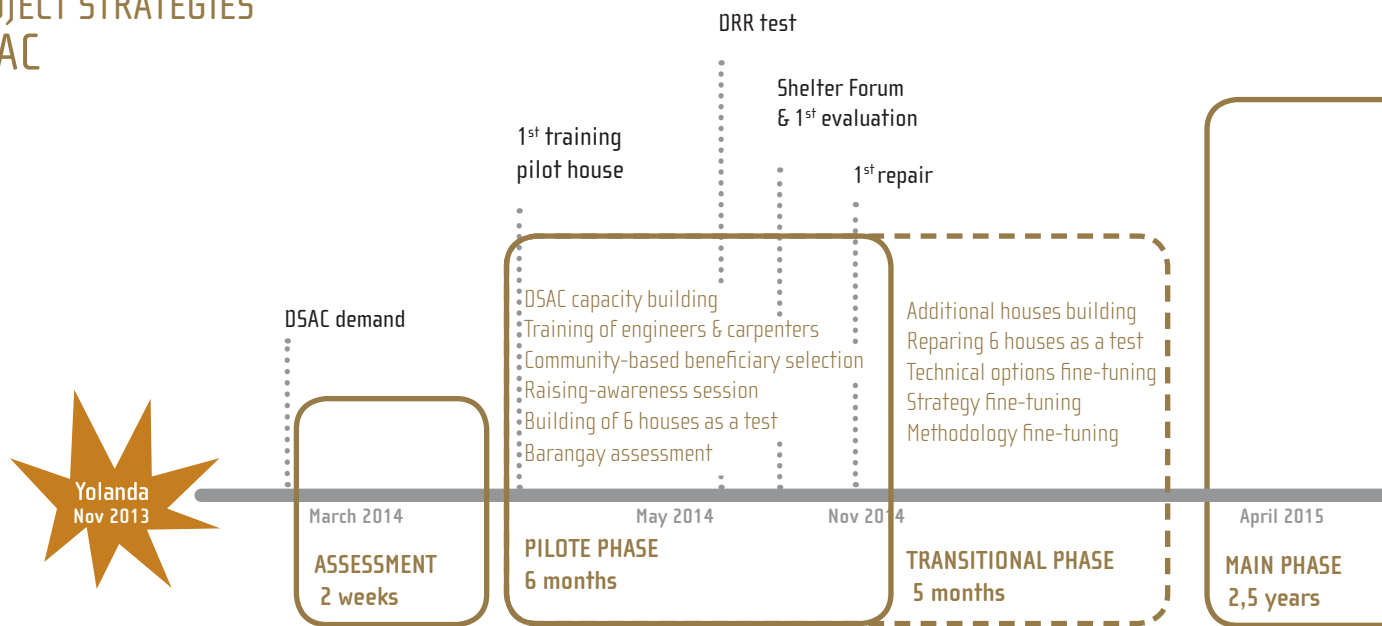
## CONSTRUCTION AND TECHNIQUE

- Learning from local building cultures and disaster coping practices and respecting them.
- Developing strategies to extend the sustainability of local materials and buildings.
- Ensuring resilience, sustainability, affordability, and viability by implementing strategies based on local skills, resources, and materials that are easily accessible.
- Reducing future risks and vulnerabilities through appropriate and affordable technical solutions.

## LOCAL CAPACITY STRENGTHENING

- Building up stakeholders' capacities by involving them in decision-making.
- Facilitating the transfer of responsibilities to local stakeholders.
- Strengthening existing partnerships and creating new cooperation and coordination opportunities among communities, NGOs, CSOs, academic and institutional stakeholders.

# PROJECT STRATEGIES DSAC



## Background

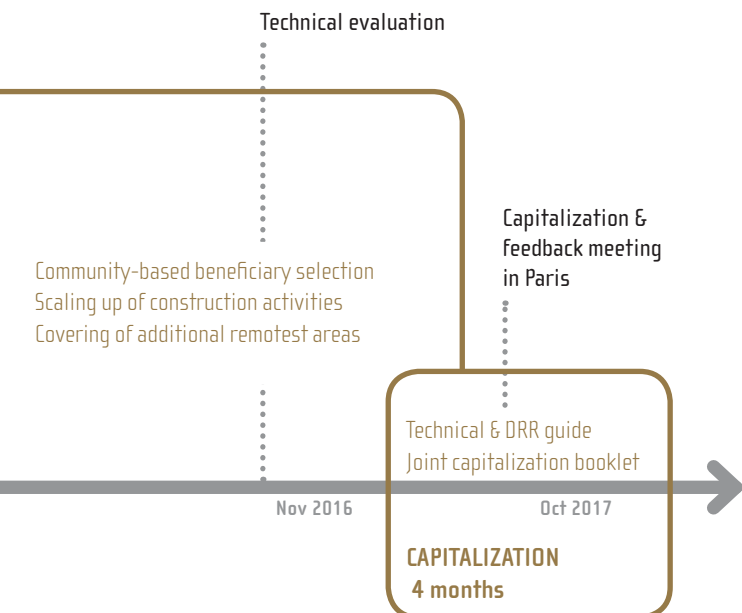
Typhoon Yolanda strongly hit the remote communities of indigenous peoples living in Libacao and aggravated their already difficult living conditions by damaging their main source of food and livelihood, their crops and their homes. The DSAC of Kalibo rapidly planned to grant them assistance. In March 2014, a joint mission was led by the DSAC together with Caritas Belgium, Secours Catholique - Caritas France and CRAterre to jointly carry out an assessment in the field. It allowed to identify the urgent needs as well as the strengths and weaknesses of the local building cultures and stakeholders. This was a key step: the complementarity of shelter and livelihood issues faced by IP communities encouraged the implementation of a holistic approach. This led to design a project strategy aiming at strengthening local capacities for both durable shelter and sustainable livelihood, through an integrated and community-based project, including shelter, livelihood, WASH (water, sanitation & hygiene), and capacity enhancement activities.

## Problem analysis and objectives of the shelter project

The first assessment carried out showed that local building practices are particularly well adapted to a typhoon-prone area and based on local resources and so, affordable. The damages to the local houses mainly resulted from a lack of maintenance and depreciation of traditional building cultures. In the meantime, many aspects of the local know-how, identified as typhoon-resistant, were still visible and applied: specific wood connections, rattan tying, bamboo stabilization system for roofs and walls, ventilation system to mitigate wind strength, etc. Loss of local knowledge was then identified as the main factor of risk and vulnerability for local communities. Another issue was the unavailability of local materials, either as a direct result of the damages caused by the typhoon, as was the case with palm leaves or bamboo, or concerning materials adapted to long-term solutions, such as specific wood types for making posts, able to resist when embedded into the ground.

Thus, the core objective of the shelter component was defined as enhancing the local knowledge and capacity to build and repair while





maintaining existing sustainable and resilient houses, on the basis of locally available resources and know-how, the local building culture and disaster-coping practices.

### Implementation

The shelter and livelihood program started in May 2014. A pilot phase was implemented which was extended to a second phase to include repair and upgrading activities. The main phase started in April 2015. The technical concepts and details were identified and developed during the projects so as to preserve existing knowledge and improve housing structures, making best use of local resources and respecting the environmental, cultural, social, technical and economic realities of the communities.

The selection of beneficiaries was conducted through a community-based process. The selection criteria were jointly defined by the communities and representatives of the DSAC. The list of beneficiaries was proposed by each community, verified by the DSAC staff and published in the barangay for feedback collection.

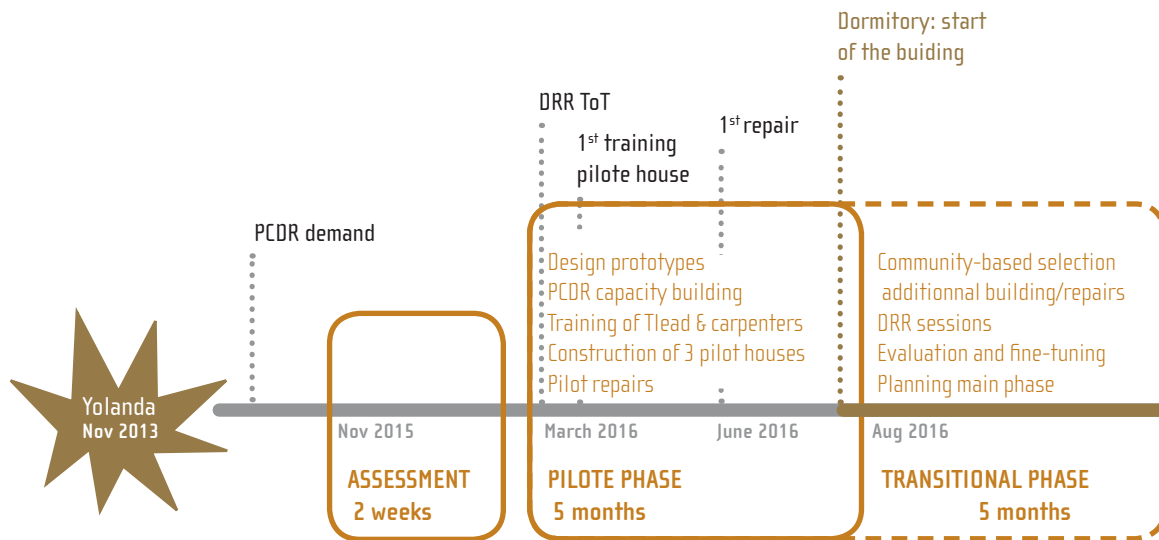
### CHALLENGES OF THE TARGET-GROUP, INDIGENOUS PEOPLE

IPs are not used to receiving external support and maintain a rich tradition of disaster-coping strategies. They live in very remote mountainous regions with difficult access. The challenge was to fill the gap between their capacities and their emergency needs, while revitalizing, strengthening and enhancing their existing knowledge and practices.

For example, the IPs houses are made of wood and bamboo and covered with palm leaves (ambulang or nipa). While fallen lumber and bamboo were easily available after the typhoon, the shortage of palm leaves was identified as an impediment to the recovery of shelters. Rather than providing beneficiaries with CGI sheets, it was decided to deliver them palm leaves from less affected areas until the recovery of local ones. This strategy ensured the continuity of local knowledge and the long-term accessibility of this relevant and affordable roofing solution, which additionally has a good impact on the local economy.

# PROJECT STRATEGIES

## PCDR



### Background

Following Yolanda, PCDR received support from Caritas Luxembourg to implement an Early Recovery Project. But critical sectors including housing, DRR, and livelihood recovery remained in dire need of continued attention and focus. Thus, PCDR and Caritas Luxembourg worked closely with the communities to elaborate a 2-year Rehabilitation Project for 12 communities in Panay Island. It followed a comprehensive multi-sectorial approach and included various components related to shelter, DRR, livelihood and capacity building. The shelter component targeted 3 communities of Cuartero where several beneficiaries of the Early Recovery Project had not been able to recover their home fully.

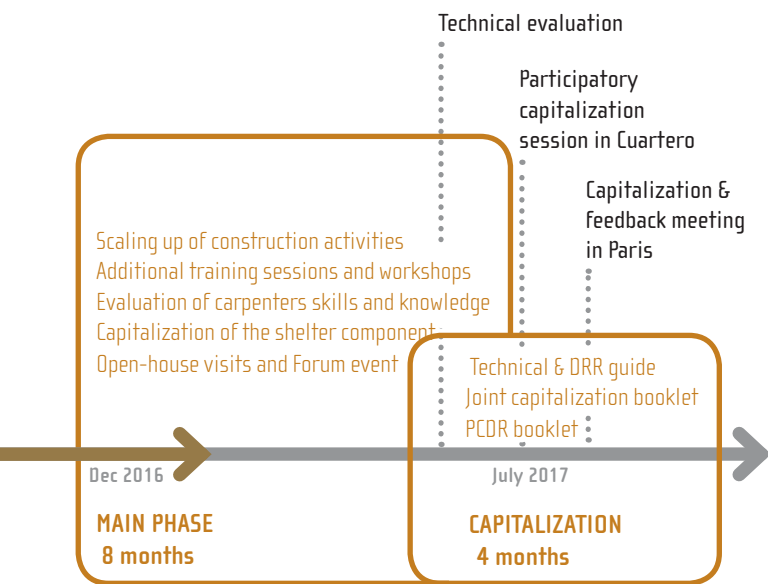
### Problem analysis

The first assessment jointly carried out in November 2015 by Caritas Luxembourg, PCDR and CRAterre, together with the communities, allowed to identify the problems, strengths, and vulnerabilities related to housing, mainly:

- Increased vulnerability towards strong winds and landslide due to deforestation
- Nonpreservation of native materials limiting access to affordable and appropriate housing solutions
- Loss of confidence in local knowledge and preference for industrial materials even though they generally prove less durable and are inappropriately implemented
- Insufficient housing-related DRR knowledge in relation with site selection or general reinforcement solutions

### Shelter project strategy

The overall strategy adopted aimed at supporting the access to resilient and sustainable housing and raising awareness on the relevance of local architectures. The necessity to adopt a cross-cutting approach became evident. Several activities already scheduled in other components of the Rehabilitation Project could be improved with additional building-resilience contents such as DRR capacity building and the construction of a students' dormitory in Tapaz. The latter was an opportunity to demonstrate the viability of a well-built, contemporary community



### CHALLENGES: ENVIRONMENT SEVERELY AFFECTED

One of the main issues raised in Cuartero concerns the many drawbacks and the adverse impact that GMO-corn crops have generated, not only on the health and the environment but also on the socio-economic conditions of populations. Through this form of agriculture, indebted farmers become increasingly dependent on corn traders and agrochemical companies.

In all three communities, the environment is severely affected by a high level of deforestation and pesticide pollution. In regard to housing, while the difficult economic conditions have inevitably an impact on the capacity of populations to properly maintain, build or recover their house after a disaster, deforestation, the absence of vegetation protection and the erosion of soils have increased the vulnerability of built structures to typhoons and landslides. Additionally, the depletion of natural resources, such as wood and bamboo, has drastically reduced access to affordable quality construction materials and therefore to resilient housing solutions. Finally, in many cases, the relocation of houses result from the choice to extend a field rather than find a safe place protected from strong wind, flood and landslide exposure. Similarly, landlessness often forces the populations to position their houses according to availability and permissions instead of safety considerations. This happens to be a serious threat in any recovery context.

infrastructure based on local building culture principles. Therefore, the expected outcomes of the shelter component were:

1. To provide assistance to repair or rebuild damaged and destroyed houses of the most vulnerable households affected by Yolanda in 3 barangays
2. To enhance local knowledge and capacity to build, repair and maintain sustainable and resilient houses, on the basis of existing resources and know-how, the local building culture and disaster-resilient practices
3. To raise community awareness on the importance of preserving local resources and developing DRR knowledge to improve the sturdiness of the buildings through simple and low-cost solutions
4. To raise PCDR's capacities on technical and DRR aspects related to housing
5. To provide technical assistance in the construction of the student dormitory allowing the best use of local materials and local techniques.



# ACTIVITIES & RESULTS

## REPAIR & RECONSTRUCTION ASSISTANCE

### DSAC

#### ACTIVITIES

- Assessment of Local Building Cultures (LBC) in the 3 barangays
- Resource mapping and inventory of local materials
- Securing and guaranteeing the long-term land right for selected beneficiaries
- Community-based selection of beneficiaries
- Development and fine-tuning of technical solutions in an iterative process
- Definition of case-by-case interventions for the strengthening/upgrading of existing houses
- Adaptation of specific and existing house design principles for each barangay depending on locally available resources, capacities and culture
- Development of adequate design solutions taking into account the fact that some beneficiaries received previous support from other NGOs
- Awareness raising sessions on LBCs and community strengthening
- Reconstruction and repair activities.

#### RESULTS

226 households benefited directly from shelter assistance in the 3 barangays:

- 120 safer houses rebuilt
- 106 houses repaired and improved
- 129 house extensions achieved
- 226 latrines built



*Shelter project in Libacao, example of a 6 posts house*



*Shelter project in Cuartero, pilot house in ManHunoHunad*

## PCDR

### ACTIVITIES

- Assessment of Local Building Cultures (LBCs) in the 3 barangays
- Development of adequate technical solutions and design of pilot houses
- Community-based selection of beneficiaries
- Technical assessment of houses, definition of case-by-case interventions and budgeting
- Reconstruction & repair (strengthening / upgrading) activities
- Assessment and fine-tuning of technical solutions and of the implementation process throughout the project

### RESULTS

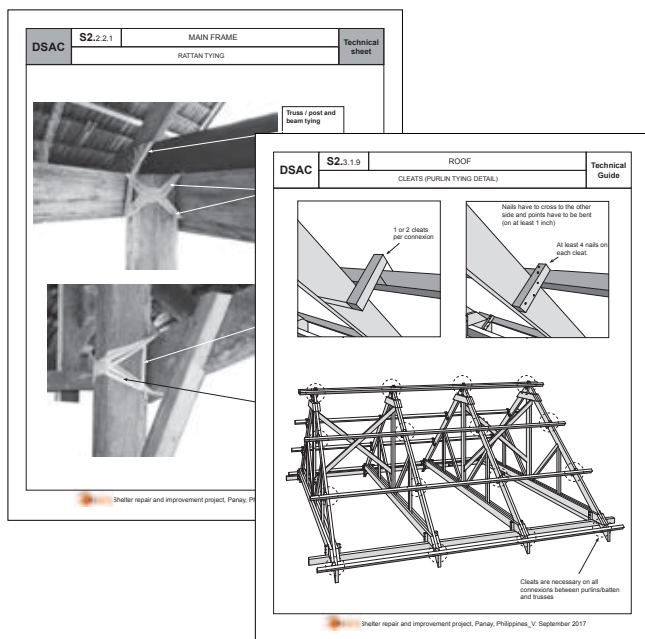
46 households received shelter assistance in the 3 barangays:

- 30 houses repaired & improved
- 16 safer houses rebuilt



# ACTIVITIES & RESULTS

## REINFORCEMENT OF TECHNICAL SKILLS



### A TECHNICAL GUIDE & 34 TECHNICAL SHEETS

Through both projects, a technical guide including 34 technical sheets based on local building cultures was developed. Since both projects were located on the same region, local building culture similarities as well as differences came up and were identified. Thus, technical exchanges between both projects were relevant, and each project has contributed to enhancing the regional knowledge of local building cultures while widening the scope of technical responses.

This guide deals with the specific technical concepts and details that have been developed through the projects to preserve existing knowledge and improve housing in the targeted areas, making the best use of local resources and respecting the environmental, cultural, social, technical and economic realities of the communities.

To download: <https://craterre.hypotheses.org/1858>



*Shelter projet in Libacao, pilot house in Oyang.*



## DSAC

### ACTIVITIES

- Theoretical and technical training for each target audience: local engineers, foremen, carpenters, and masons
- On-the-job training with pilot houses in the 4 barangays
- 2 specific training courses on house repair
- 2 refresher training sessions on new house construction and repair
- Continuous technical training on site

### RESULTS

- 4 pilot houses completed (community buildings) in the 3 barangays
- 3 engineers trained
- 8 foremen trained
- 80 carpenters and 16 masons trained

## PCDR

### ACTIVITIES

- On-the-job training with pilot buildings in all 3 barangays (1 run by CRAterre, 2 run by PCDR technical lead)
- 2 specific repair assessment training sessions on existing houses
- 1 specific repair training session
- Continuous training on site and organization of further workshops and refresher training sessions

### RESULTS

- 3 pilot houses completed (community buildings) in the 3 barangays
- 1 technical lead trained and 3 community facilitators fully sensitized in all technical aspects
- 3 foremen trained
- 43 carpenters trained





## ACTIVITIES & RESULTS

### CAPACITY BUILDING & AWARENESS RAISING

#### DSAC

##### ACTIVITIES

- Shelter forum 2014 with DSAC partners on shelter construction multi-approach
- Awareness-raising community sessions for disaster resilient construction
- Orientation sessions for communities and beneficiaries on project system
- Internal training or capacity reinforcement for DSAC staff
- Internal evaluation and capitalization

##### RESULTS

- 6 animators were trained
- 1,062 households (6,300 persons) participated in community meetings
- 80 carpenters, 8 foremen and 16 masons sensitized
- Increased awareness of local communities on resilience features for housing
- Increased awareness on the importance of sanitation and hygiene practices.
- Increased capacity of DSAC in terms of procurement and logistics

#### PCDR

##### ACTIVITIES

- Capacity building for PCDR staff on training facilitation, construction project management
- Capacity building and training for carpenters to disseminate key messages towards beneficiaries
- Development of a Disaster Resilient Housing Awareness Workshop and training of trainers' for PCDR community facilitators
- Dissemination of the Disaster Resilient Housing Awareness workshop by community facilitators in the 3 targeted barangays towards POs members, community members and trained carpenters
- Continuous and on-site awareness raising towards beneficiaries by carpenters and PCDR staff
- Organization of open house visits and a closing forum by PCDR towards communities and local authorities

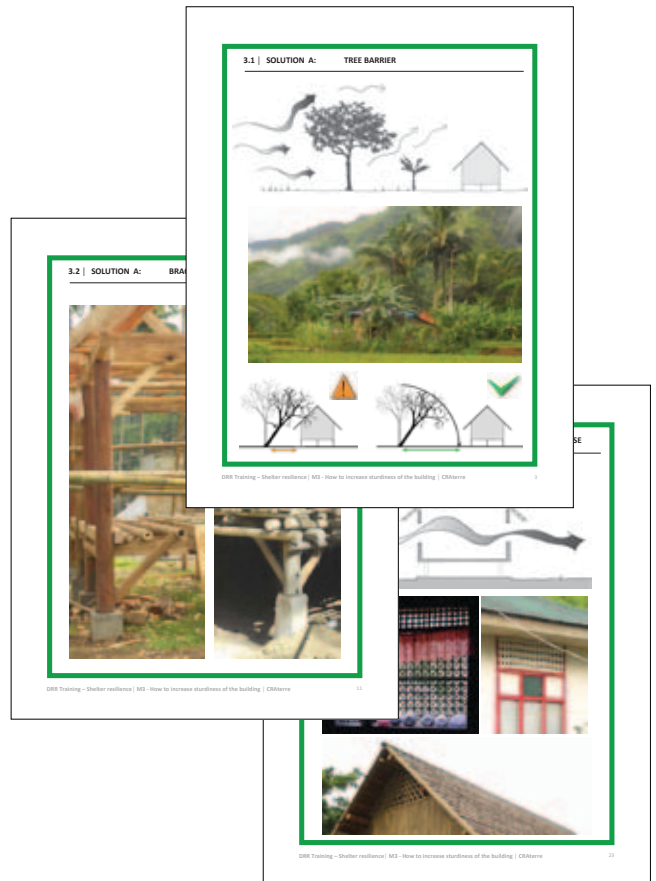
##### RESULTS

- 1 technical lead and 3 community facilitators gained skills in facilitating training and managing repair & reconstruction processes
- 11 PCDR staff members trained as trainers to facilitate the "Disaster Resilient Housing Awareness" workshop
- Increased awareness of local carpenters and an enhanced capacity to share knowledge
- Increased awareness for housing beneficiaries on resilience features
- Over 200 community members participated in the "Disaster Resilient Housing Awareness" workshops in the 3 barangays
- First steps in sensitizing local authorities in Cuartero





*Raising awareness session in Cuartera.*



## A DISASTER RISK REDUCTION GUIDE

Along with the technical guide, a Disaster Resilient Housing Awareness training kit associated with a Training of Trainers (ToT) was developed based on local building cultures. As for the technical guide, the DRR guide is the result of exchanges between both projects adapted to the different specific contexts. This educational material has been tested and improved throughout both projects. The main objectives of this guide are to:

- Raise awareness on the potential of local architecture
- Raise awareness on the benefit of protecting local resources
- Develop DRR knowledge on how to improve the sturdiness of the buildings through simple and economic means

To download: <https://craterre.hypotheses.org/1853>

## IMPACT & PERSPECTIVES

### DSAC

#### Impact at the community level

Communities acted as true partners in every step of the project. IPs were particularly sensitive to the approach integrating the specificities of their traditions and culture. The awareness-raising session during which technical weaknesses and their solutions could be introduced, the sustainable structural options presented as well as the continued discussions among community members, carpenters, and engineers allowed for the project to be particularly well-received. Indeed, all initial negative reactions due to the poor image of local building cultures and resources were rapidly cleared away following the demonstration of the first pilot house. Thus, the 120 rebuilt houses, 106 repaired ones, 129 extensions and the 226 latrines achieved made the beneficiaries very proud.

During the project, the implementation of some of the technical solutions by beneficiaries as well as non-beneficiaries was observed. These cases of duplication highlighted the relevance of the solutions suggested as well as the effective capacity of households to apply them



*Technical discussion among carpenters and the engineer in charge.*

on their own. As a dissemination strategy to give the whole community access to Build Back Safer / Better (BBBS) guidelines, more carpenters than required by the project were trained. This strategy ensured the permanence of skilled foremen and carpenters in the area.

Nevertheless, the lack of awareness activities has led to a limited interest from non-beneficiaries. Misunderstandings regarding a number of technical choices were also identified at the level of DSAC technical team. This revealed the real need for refresher training activities during such projects.

#### Impact for the DSAC Kalibo

The project was an opportunity to reinforce all partners' skills while focusing on enabling as opposed to providing strategies. For both local and international partners, it was a chance to experiment an LBC approach and its positive outcomes. This led the DSAC project manager to show deep commitment in promoting it and the field staff to be very engaged in implementing all activities. But, the team had to deal with other partners implementing shelter projects based on different approaches at the same time. Therefore, in order to achieve the expected physical results in the limited time frame, outputs were sometimes favoured over processes, with limited impact on awareness and capacity building.

Regarding the proposed methodology, the DSAC and its partners demonstrated the capacity to adopt an iterative approach, adapting to feedback by stakeholders to unexpected constraints. The remoteness of communities, seasonal farmer work, challenges concerning the transport of materials, conflicts on land issues as well as dual authorities (IPS and LGU) and local armed conflicts were dealt with through the constant improvement of the project's strategy. The response quality was also re-evaluated and improved at each stage of the project. This included, for example, the decision to add a kitchen component to the houses in order to respond not only to a real need but also to long-term improvement of comfort, health and safety conditions. Another example was the type of water and sanitation support adopted which promoted a multi-perspective and sustainable vision.



## REMAINING NEEDS & PERSPECTIVES

When learning and knowledge management are integrated from the start of a project, there is understanding of the different stages of the project by all partners involved, while also offering the opportunity of re-orientation based on M&E (monitoring and evaluation). This enhances the project's ownership so that, later on, the lessons learned and good practices may be better disseminated through the partners' networks. As it turned out, it was a real challenge for the DSAC to adapt to all its national and international partners, each one carrying its own specific project, involving different approaches and standards. It would be relevant for the DSAC to consider the benefits of this experience in order to develop and redefine its vision and approach, that would be useful to handle similar situations that may take place in the future.

*Traditional way of making roof covering with ambulang (palm leave) and rattan.*



### REMAINING NEEDS & PERSPECTIVES

Various housing-related disaster risk issues have been tackled in Cuartero through different activities of the shelter component (e.g. lack of vegetation protection, scarcity of local materials, soil erosion, etc.). Most of them find their cause in the adverse effects of GMO-corn crops. They are linked to various drawbacks, related to livelihood and agriculture, faced by the communities. Looking forward, and in order to address the root of the problem, it appears that there is a real need for an holistic approach. While efforts are already made at the level of communities, what are the answers at the barangay, the LGU, the Province levels to increase the communities' resilience? PCDR has initiated an advocacy campaign with the closing Forum event with the participation of government agencies and local organizations, but its impact could be quite limited. Advocacy campaigns and further relevant partnerships are much needed, where the relations between habitat resilience, livelihood, and agriculture issues could be further highlighted.



### Impact at the community level

The shelter project put a strong focus on increasing capacity and awareness. Therefore, all carpenters involved have enhanced their knowledge and their understanding of resilience principles. Their interest and commitment in receiving and sharing knowledge with the community have been tremendous. They feel more comfortable applying the existing techniques that were highlighted and valued throughout the project. Also, the project participated in enhancing the teamwork and the cohesion among them. Carpenters were also key actors in raising awareness. And many of them are willing to ensure the permanence of skills and the future dissemination of knowledge.

As a complement, various activities were carried out to raise awareness among the community about the importance of preserving local resources (materials, know-how, skills, social organization, mutual aid). Different target groups were involved in those activities: local carpenters, LGUs (local government units) and POs (People's organizations) members, housing beneficiaries, non-beneficiaries (relatives and neighbors of beneficiaries, various community members).



*Shelter projet in Cuartero, example of repair.*

Furthermore, by establishing links among the components of the project (sustainable agriculture, livelihood, tree planting, housing), PCDR has developed a comprehensive understanding of local resources issues and has started to address them among the communities and other stakeholders such as government agencies and partner organizations.

### Impact for the PCDR

All staff members have appreciated and adopted the proposed LBC approach. Their knowledge and skills (at different levels: technical, community sensitization, training, procurement, budget, coordination with local stakeholders, social) have greatly improved. Today, the capacities at PCDR have reached a higher level amongst more staff members than expected. At an institutional level, the approach matched strongly with the vision of PCDR and its actions in the field. At an individual level, the staff is willing to advocate and take action towards the recognition of LBCs as a way to improve the resilience of communities.



*Shelter projet in Cuartero, example of re-used material building for house.*

# LESSONS LEARNED

The two projects presented in this brochure had the particularity of having been implemented in the same Island of the Philippines, Panay, after it was hit by Typhoon Yolanda in November 2013. Though the two projects had similar objectives, the fact that they were implemented in two different geographical areas and within different institutional contexts led to make different decisions both regarding the building techniques promoted and the project strategies. Thus, after the initial assessment of the **local building cultures** that led to discussing their **strengths and weaknesses with the partners**, similar activities were planned, but in different strategical frameworks. That situation proved favorable for reflecting on the lessons learned which could be useful in the future in the Philippines and probably elsewhere as well.

Identifying local strengths before planning and making sure that recovery of pride and self-confidence in local knowledge are part of the project

A paramount step in both projects has been the **participatory field study of the local building culture at an early stage**. A major challenge to be addressed in the two contexts was the lack of maintenance due to the recent depreciation of local building cultures associated with the **loss of confidence in local knowledge**, but also with risks linked to the **non-preservation of local resources**. As a response, the first prototypes allowed the fine-tuning of a number of options (techniques, site organization) and helped clear away some of the initial negative perceptions. The quality of these first achievements has made it possible to **re-establish pride and self-confidence**. In particular, formalizing existing building techniques making use of local materials through theoretical and practical training was highly appreciated by the carpenters involved. To build on that, the projects promoted the need but also the benefit of preserving local knowledge and resources, as well as to take action towards their recognition.

After the pilot phases, it appeared critical to bring more awareness than what had initially been planned, and adjustments were made to reinforce awareness-raising campaigns aimed at the whole community. Though very successful when conscientiously implemented, those campaigns remained probably insufficient, more specifically those

involving local authorities, government agencies as well as other relevant organizations. Further projects should, therefore, include similar **advocacy campaigns** and actions to **build partnerships** and, as much as possible, **target relevant stakeholders from the onset**.



*Carpenters posing in front of their bracing work in Cuartero.*

**Addressing housing issues within the broader challenges of local development and improvement of living conditions**

Along the implementation of the project in Cuartero, it gradually became clear that the problems with the evolution of the quality of traditional housing were linked to the evolution of agricultural practices. That led to consider that the two problems should be tackled



together, fostering the idea that issues should always be looked at through a **holistic approach**.

Retrospectively, it was realized that the identification of such links at an earlier stage would have been very advantageous with potential leverage for both housing and agricultural **recovery and resilience**. But at the same time, raising awareness takes time, and it is of primary importance to let the communities understand the roots of their vulnerability. It is clear that both projects have triggered new dynamics in valuing, maintaining and protecting local resources but, most of all, they have helped populations and decision makers to question their general resilience.

Identifying, together with the community, the correlations between issues in different sectors should then be understood as a key element within the proposed methodological approach. That leads to the idea of joint multi-sectorial assessments or **enlarging the scope** of the initial assessment to make it possible to **establish links between issues**. However, as it is very challenging to understand all factors in the initial phase, context understanding should be taken as a continuous activity.

It has also been identified that **establishing relationships between recovery components** allows to reinforce them individually. In Libacao, when the primary intention was to design different projects, it was decided to set a larger and more comprehensive response, allowing to address issues together such as material scarcity and the lack of local resources through a cross-cutting strategy. Moreover, within the shelter component, it was decided to adopt an upgrading approach by including a kitchen improvement component and a water & sanitation component.

**Extending the impact: accessibility and replicability of the proposed solutions, even by non-beneficiaries**

In both projects **accessibility and replicability** were strongly considered. That led to abandon some of the proposed alternatives that revealed to be non-relevant in terms of material accessibility or cost. By prioritizing repair and rebuilding activities, close to the day-to-day job of the carpenters, the projects anticipated the fact that they

would finally do their own selection of what they felt being feasible and accessible financially to their future clients. That also avoids the risk of establishing gaps between beneficiaries and non-beneficiaries.

Both projects faced **scarcity of local materials**, temporary or permanent, leading to consider essential the protection of the resources available within the territory. But proposing a project based on local resources have appeared contradictory when materials have to be sourced from other areas, which also involves more costs. Still, in both cases, the adopted strategies prioritized the continuity and enhancement of know-how while also considering the revival of local production, leading to handle the issue in a **short and long term perspective** so as to obtain adequate responses.



*Upgrading and repair training in Cuartero.*

**Adopting an iterative process open to both new construction and repair activities**

Both projects implemented **assistance to housing repair and rebuilding with salvaged materials**. These activities did get strong responsiveness, at a higher level than what had been expected. This observation confirmed the “culture of risk” of Filipinos, which

# LESSONS LEARNED

materializes through both technical and social assets. In particular, the local-style houses are easy to repair and upgrade, and the bayanihan spirit (traditional mutual help system) proves to be efficient. This important finding leads to advocating for self-recovery support in any post-disaster housing projects in the Philippines. This could also be the case elsewhere.

Nevertheless, strategies and processes related to self-recovery assistance need to be further capitalized and studied, more specifically as they have to be **flexible** (in terms of quantities and time) and require specific **condition survey skills** (in particular for repair assistance). And still, the construction of pilot houses was very useful as a first step to get things started. But one should consider that new constructions may not generate as much of an impact as assistance to self-recovery activities could.



*Salvaged material and self-recovered transitional shelter in Qyang, Libacao.*

That leads to recognizing the importance of allowing an **iterative process**. Continuous evaluation throughout the two projects (both formally and informally) allowed to question the interventions and propose improvements along the way. This process was sometimes difficult to understand but has always been accepted when well-argued

and sufficiently discussed to reach consensus and keep a sense of ownership amongst stakeholders.

## Looking forward to preparing a better future

In both projects, local partners were the main actors and, indeed, the projects had not been tailored only to the local contexts but also to the partners' visions and capacities. Still, they invested a lot in **building capacities** within their organizations to implement the activities planned.

Looking forward, the challenge is to ensure the continuity of the application of the knowledge developed and to further build capacities in preparation for the future. But the end of the projects resulted in closing contracts for many and so, even though relevant activities have been implemented to this end - this booklet being part of it - the capitalization of experiences, processes and knowledge management to **prepare the future** remains a question. To reach such objective of sustainability, PCOR is considering to extend the scope of the project through its national network, the Citizens' Disaster Response Network (CDRN). Also, the DSAC briefly approached the Garcia College of Technology of Kalibo.

This situation leads to recommend **exit strategies** to be planned at the early stages and at a larger scale, looking at potentials for fostering institutional anchorage, either governmental (including local), educational or non-governmental, or taking advantage of existing networks.





*Trusses in front of an 8 posts house, shelter project in Dyang, Libacao.*



# SUCCESS STORY

## THE CARPENTERS OF HOPE

*Extract from PCOR's capitalization booklet*

Survivors of super typhoon Yolanda continue to hold on to their hope that one day their homes will not be ripped off by the force of winds. Years after the devastation, carpenters underwent training on how to construct, repair, and upgrade typhoon-resilient houses from locally-available materials. And they rebuilt new homes. Paquito Dumaniel has been supporting his family through carpentry for over three decades. He was among the 43 carpenters to undergo training under CRAterre's guidance. For Paquito, this was the first time he experienced intensive training involving the acquisition of skills and actual practice: "The training was so meticulous and we appreciate that very much. Our patience was put to the test as we were told to do things all over again to meet the [DRR] standards set by the project, and we appreciate it so much".

Paquito underwent training on disaster risk-reduction focusing on shelter repair and improvement. He also learned that the local building culture involving the use of locally available materials is indeed more resilient. This, in combination with the proper use of bracing, setting up cleats and blocks as well as choosing proportionate measurements and angles make a resilient shelter. The trainees also learned that there are factors to take into account before building resilient homes like the location and vegetative cover of the area. This technology is not new to them as the elders in their communities say their forefathers used to practice this kind of carpentry long ago. Through the years "faster, easier and cheaper" became the norm. The project intended to show that, with the natural materials at hand, a native house can be resilient and far more cost-efficient for vulnerable families.

Dojie Delgado proudly occupies the model house of barangay Mahunod-hunod. It has become a reference house for all carpenters. Carpenters would come and see if their own projects met the standards of the model house. The model house is also offered as a venue for meetings held by POs.

The project enriched the carpenters' technical expertise. Now, Paquito and other carpenters have a different perception of the construction. They do not only build houses but homes where families are safe.







*Pilot House in  
Cuartero, first  
carpenters training.*

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### **CRAterre, AE&CC Research Unit – ENSAG**

CRAterre, the International Centre for Earthen Architecture, is composed of two structures: an NGO and a research laboratory within the National School of Architecture of Grenoble (ENSAG)/University of Grenoble-Alpes. Since 1979, CRAterre has been working towards proposing valid responses to the global housing challenge: the protection of the environment, the preservation of cultural diversity and the fight against poverty. For this purpose, CRAterre gathers a multidisciplinary team of researchers, professionals and lecturers and collaborates with many partners worldwide to establish creative links between research, fieldwork, training and dissemination of knowledge.

# CREDITS

## UNDER THE DIRECTION OF

JOFFROY Thierry, Labex AE&CC

## AUTHORS

CAUDERAY Elsa, DEJEANT Florie, MOLES Olivier

## CONTRIBUTORS

DSAC Kalibo: MASIGON Jan, TAYCO Perry John, ZUBIAGA Vincint Jude Josef

PCDR: ALMERO F. Armie

Caritas Belgium: LEYSEN Joeri

Secours Catholique - Caritas France: DEVRIES Romain, HARO PÉREZ Pablo

Caritas Luxembourg: RECKINGER Carole, WOLF Hannah

CRAterre: CAIMI Annalisa

## GRAPHIC DESIGN

CAUDERAY Elsa, DEJEANT Florie, MISSE Arnaud

## REVIEW

DELBOY Leticia

## IMAGE CREDITS

CRAterre

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Caritas Belgium

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*Cover picture: pilot house, Oyang, DSAC project*

*Back cover picture: training on site, Cuartero, PCDR project*

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## CONTACTS

### DSAC-KALIBO

Fr. Dalida Ulysses Ibabao, Director  
Archbishop Reyes St, Kalibo, Aklan, Philippines  
+63 (0)36 268 3568  
dsackalibo@gmail.com

### PCDR

Armie Almero, Executive Director  
3rd Street Lawaan Village, Jaro, Iloilo City, Philippines  
+63 (0)33 503 3276  
+63 (0)9 19 471 6558  
pcdr\_0408@yahoo.com

### CARITAS LUXEMBOURG

Carole Reckinger, Project Officer  
International Cooperation  
29, rue Michel Welter, L-2730 Luxembourg  
+352 40 21 31  
caritas@caritas.lu

### SCCF

Pablo Haro Pérez, Asia Project Officer  
Emergency Department  
106 Rue du Bac, 75341 Paris, France  
+33 (0)145497370  
dept.urgencesinternationales@secours-catholique.org

### CARITAS BELGIUM

Marisol Martinez, Desk Officer Asia  
International Cooperation Department  
43, rue de la Charité, 1210 Brussels, Belgium  
+32 499 106143  
+32 2 2293652  
m.martinez@caritasint.be

### CRAterre - AE&CC

ENSAG, 60 avenue de Constantine, 38036 Grenoble, France  
+33 (0)4 76 69 83 35  
craterre@grenoble.archi.fr  
www.craterre.archi.fr







Over the past 15 years, a number of housing projects undertaken in post-disaster situations have adopted a “local building cultures” approach to efficiently support the initiatives of affected populations, regardless of their location or origin.

This becomes even more pertinent when working in rural areas where, often, populations benefit from the ancestral experience of living in their lands and so, possess a rich knowledge of their environment and traditional housing, and of their strengths and weaknesses facing natural hazards.

Both reconstruction projects presented in this booklet, undertaken in the aftermath of typhoon Yolanda, are a good illustration of this potential. Moreover, they highlight how such an approach favors the establishment (or rather the re-establishment) of resilience within local communities while also offering a vision for local development and well-being in continuity with the local culture, a principle deemed as strongly valuable within the international humanitarian community as a whole.