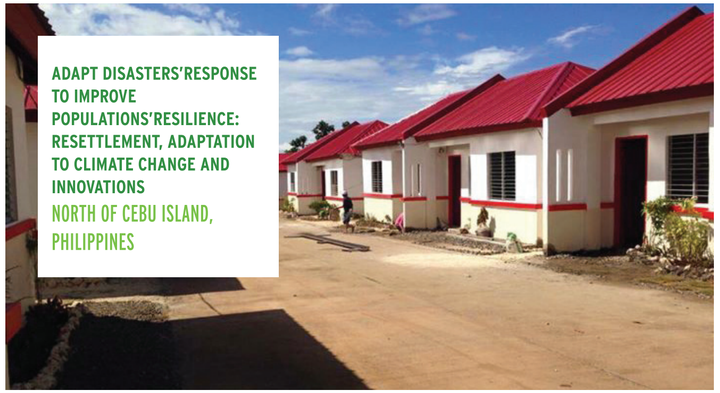


ADAPT DISASTERS'RESPONSE TO IMPROVE POPULATIONS'RESILIENCE: RESETTLEMENT, ADAPTATION TO CLIMATE CHANGE AND INNOVATIONS

NORTH OF CEBU ISLAND, PHILIPPINES

THE PHILIPPINES: NUMEROUS VULNERABILITIES EXACERBATED BY CLIMATE CHANGES

The Philippines are one of the most affected countries by natural disasters in the world. Exposed to numerous extreme events like typhoons, earth quakes, volcanic eruptions, landslides, floods, tsunamis and droughts, their 7 700 islands are extremely vulnerable to climate changes, which tend to increase the number and the intensity of climate related natural disasters. The country's vulnerability is exacerbated by a major demographic growth, unplanned and rapid urban development, and the massive destruction of natural resources.

A natural disaster is a major disrupting and traumatic event for vulnerable populations, – it may take them several months or even years to recover. These disasters' frequency and intensity is increasing, preventing the communities' development since there are pinned down by a vulnerability cycle.

For humanitarian workers the only way to sustainably strengthen the populations' resilience is to take into account **all their vulnerabilities**, when responding to disasters. The French Red Cross'project and the Philippines' Red Cross took the opportunity of the Haiyan typhoon to implement such measures.

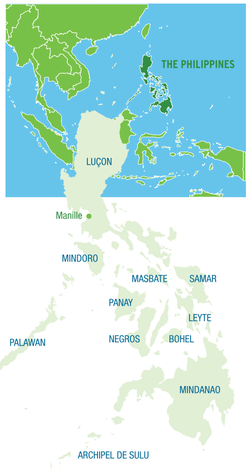
THE HAIYAN TYPHOON: A DEVASTATING IMPACT

On November 8, 2013, typhoon Haiyan (locally called Yolanda) made landfall in the Philippines with wind gusts'speed above 270km/h, killing more than 6000 PEOPLE, INJURING 29 000 AND LEADING TO THE DISPLACEMENT OF 4 MILLION PEOPLE. 16 MILLION PEOPLE WERE AFFECTED IN 10 PROVINCES OF THE COUNTRY BY THIS CATEGORY 5 SUPER-TYPHOON. Material damages were estimated at more than 10 billion US$.

The impacted populations' recovery was affected in the long term: the disaster's scope combined with the pre-existing vulnerability in several impacted zones made it difficult to quickly go back to an equivalent standard of living. Humanitarian and government workers, national and international, reacted quickly and agreed on the necessity to « Build Back Better » and to integrate risk reduction in the post emergency aid supplied. What is at stake for the humanitarian response is to break the poverty cycle and to sustainably strengthen the populations' resilience.

THE CONCEPT OF RESILIENCE

For a population at risk, resilience must be understood as the community's ability to absorb a disruptive event and go back to its living conditions of before the disaster, while pursuing its development.



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ADAPTING TO CLIMATE CHANGE

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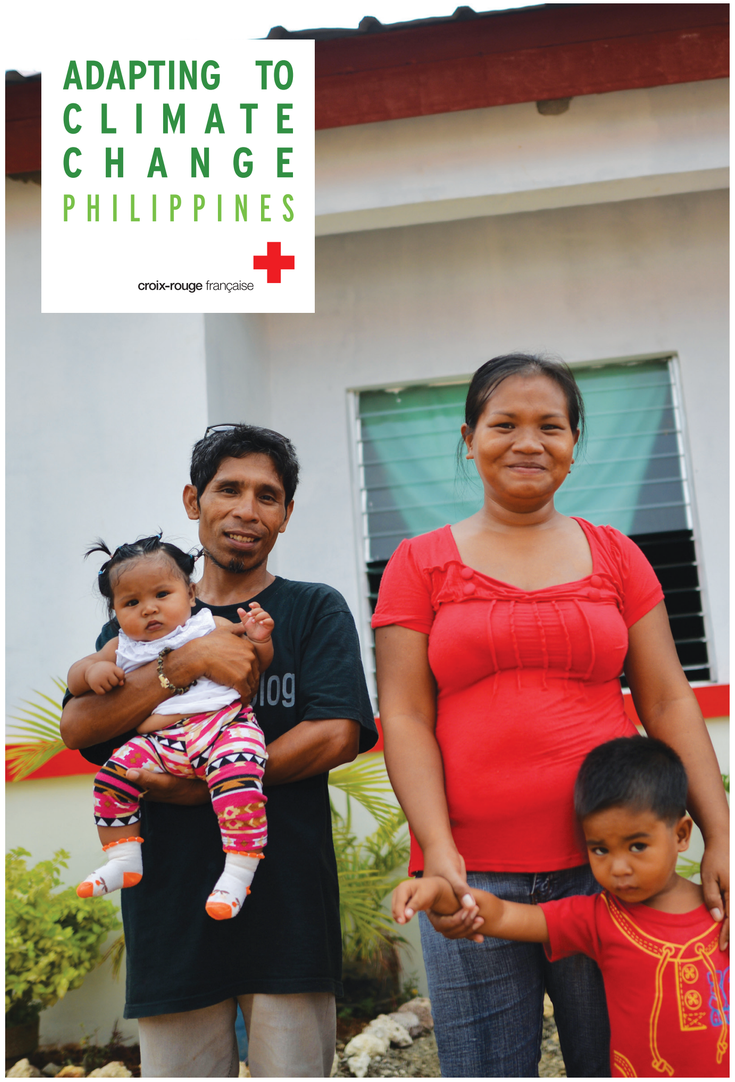

PROJECT'S IMPACTS

The project implemented by the French Red Cross and the Philippine Red Cross in Barangay Paypay, Municipality of Daanbantayan, in the North of Cebu island, is part of a holistic or integrated approach, since it addressed the immediate humanitarian needs of the targeted population, while working on all the components of its vulnerability cycle. The actions implemented have double targets and a double temporality: we had to act in the short term **(cyclical action A)** to quickly support the recovery of part of the community and the progressive improvement of its living conditions and resilience's capacity, while planning for a long term action at the beginning of the project **(structural action B)**, with a wider target and aiming at reducing the ecological footprint, thus addressing the root causes of the risk factors, which worsen the vulnerabilities in the targeted region.

SHORT TERM ACTION CYCLICAL ACTION (A)

The main aim of the project is to resettle the populations in residential areas, which are less exposed to climate hazards and which offer living conditions with dignity, stability and supporting a sustainable social and economic development. The following elements were taken into account depending on the pre-existing vulnerabilities or those acquired after the disaster:

HABITAT AND PROTECTION

Vulnerabilities

> Habitat destroyed or severely damaged by the latest climatic events, subjected to floods or seriously exposed to climate risks, with informal buildings structurally unsuitable to climate risks (light buildings materials, building or repair techniques not appropriate).
> Low level of access to property or to building land

Project's Objectives and Actions

> Resettlement of 128 families (750 people) among the most vulnerable in an area less exposed to extreme climatic events thanks to the supply of housing built in compliance with the highest national and international standards and including anticyclonic features (reinforced concrete structure, reduced roof's exposed surface and hurricane strap).
> The assisted families were guaranteed the legal right to use the property and the housing with a long-term transmissible usufruct.
> Construction of additional emergency evacuation centres with a capacity of 250 people.

ECONOMIC

Vulnerabilities

> Cost and accessibility of energy sources, environment damaged by unsustainable fishing and agricultural techniques (dynamite fishing, cyanide fishing, intensive agriculture, massive deforestation) and low productivity.
> Low level of training and education, lack of economic opportunities or information on existing economic opportunities.
> Limited conservation and distribution chains, low level of transformation and added value for basic products, few facilities available for the production or the processing of products.

Project's Objectives and Actions

> Construction of a photovoltaic electricity production plant with a capacity of 36 Kwp covering all the basic electricity needs of the families (lighting, ventilation, communication) and public facilities (public buildings, water supply, public lighting) and promotion of an improved combustion cooking system (refractory tiled stove or « rocket stove »).
> Recovery of the damaged ecosystems through replanting or rehabilitation of 20 ha of mangrove and awareness raising on the protection and sustainable management of natural resources; soil stabilisation with bamboo planting.
> Support the local development of a sustainable, high yield agriculture and vegetable gardening (permaculture), thanks to training programs and assistance to economic development and diversification of income generating sources, the implementation of income generating activities with the development of high added value products (sale of moringa based products).
> Construction of a multi-purpose livelihood centre of 100 m² with water and electricity.
> Ideal location in the heart of the Barangay, for residents to be able to keep their previous livelihoods, facilitate communication and community inclusion.

SANITATION

Vulnerabilities

> Cost and accessibility of water, substandard housing, insufficient or non-existent sanitation systems, no waste water treatment.
> Use of polluting energy sources for lighting and cooking, which affects the ambient air and represents a household hazard (risk of fire).

Project's Objectives and Actions

> Production of 20 m³ of clean water per day with the construction of a water supply network providing each of the 128 houses of the resettlement site with running water. Equipment of the houses with a tiled bathroom and toilet. Ventilated houses, smooth and elevated floor.
> Individual system of rain water collection on 20 m² of roofing and storage of 250 litters. The annual potential of water collection amounts to 3000 m³ for the 128 houses (1200mm cumulated annual rainfall at Cebu).
> Equipment of each house with a septic tank connected to a sewage system and a wastewater treatment plant (DEWATS system).
> Installation of five lighting points in each house and wood cooking forbidden inside the houses.

SOCIAL AND WELLBEING

Vulnerabilities

> Access to perfectible social services' structures, importance of local community and social networks, feeling of being stuck in a lesser social condition.

Project's Objectives and Actions

> Reconstruction of a fully equipped 70 m² community health centre with a community day care.
> Creation of a residents' association for all the resettled families to manage their common assets and to organise a safe and comfortable environment.
> Accessibility of social services on site for all the barangay residents to facilitate the site's inclusion in the community landscape, avoid tensions and cover the entire population.

RISK REDUCTION

Vulnerabilities

> Non-protecting housing, housing built in risk areas, environmentally destructive habits and practices and lack of understanding of the risks.

Projects' objectives and actions

> Development of vulnerabilities' and capacities' studies, formalisation of an action plan at the level of the barangay and of the site, support its implementation and include the local plans in the municipal plans.
> Training of a team of 143 volunteers from the Philippine Red Cross to facilitate emergency response in case of a new disaster and to run awareness campaigns on disaster risk reduction, including at the local, family, household level etc.

LONG TERM ACTION STRUCTURAL ACTION (B)

the fundamentals of an integrated approach focus on bringing back the target populations' ecosystem to the centre of the project. This project's component is aiming at implementing environmental mitigation actions and at applying on a local scale the three major principles to reduce the human ecological footprint and to limit the scope of climate changes.

The carbon footprint of production, transport and materials assembly (cement + steel) to build a resettlement house, including roads and networks is estimated at around six tons of CO2, which represents a total of **768 tons for the entire project.** It was limited and compensated for at each stage of the project. The replanting or rehabilitation of 20 ha of mangrove planned in the project will allow for the absorption of 3280 t of CO2 over a period of 12 years. As a result, **the net balance of the project's carbon footprint amounts to 2515 t of CO2.**
All the basic electricity needs on site are covered by the photovoltaic plant built on site. The solar plant's installed capacity amounts to 36 KWp (for 33KWp needed), which is an average annual production of 60 MWh over a period of 20 years. The electricity produced is not sold to the beneficiaries but an electronic management system is allocating 200W per housing unit on a permanent basis and 0,8 KWh of energy per period of 24 hours. The families can check their consumption in real time, which makes them aware of how to control their energy management.

Most of the residents cook outside on wood/coal stoves with a thermal efficiency below 10%. The dry wood consumption is assessed at around 2 tons per year, which adds up to the equivalent of 450 t of CO2 per year for 128 families. The support to use mass stoves (« rocket stove ») could double the energy efficiency and it is aiming **at reducing the cooking emissions to 225 t of CO2 per year.** Over a period of 12 years, the cooking wood usage will reach 2700 t of CO2 and will be virtually compensated by the 2550 t of the net balance generated by the 20 ha of mangroves.

The replanting of 20 ha of mangroves is meant to limit the destructive or non-renewable techniques exploiting the environment and to correct their impacts. The mangrove contributes in the economic development by supporting the spawning of exploitable fishes, stabilising sediments and avoiding the coral's asphyxiation. The mangroves' reasonable exploitation provides a significant production of aquaculture, forest and agricultural products. In terms of risk reduction, the coastal mangrove is recognised as a very efficient mean to limit the impacts of typhoons by dissipating the waves' energy in case of strong winds (up to 70% of additional protection).

- AN IDEAL LOCATION:
  1,3ha of property, 200 m away from the main municipal road and 300 m away from the sea.
- 123 permanent houses of 30 m² each
- A 70 m² COMMUNITY HEALTH CENTRE
- A COMMUNITY DAY CARE
- A MULTI-PURPOSE CENTRE dedicated to local producing organisations
- 150 LATRINES and septic tanks
- AN INDEPENDENT WATER PRODUCTION SYSTEM producing 20 m³ of water per day with a 15 m³ storage tank and a piped distribution network
- A DECENTRALISED WASTEWATER TREATMENT SYSTEM
- A SOLAR PLANt with 33kWp capacity
- Concrete access roads

Shelter

The Dia family house was completely destroyed by Typhoon Haiyan. Their new house, « decent and safe » in the Red Cross village represents « a much better and much brighter future for our family ».

Livelihood

Ray Lederos, 31 years old, former landless farmer, decided to use the Red Cross emergency donation to become a barber: *"this is a job I can take with me to the new village. I will be the only barber there. We have 750 inhabitants and I believe they will prefer to come to me instead of spending money on transport to the city. Now this is my profession and thanks to the house and to my skills I will no longer have to depend on anybody. »*

INNOVATION AT THE HEART OF THE APPROACH

The French Red Cross resettlement project on the Cebu Island is integrating the three principles of adaptation to the environment, taking into account the climate change related issues as well as the pre-existing vulnerabilities to address the objectives of sustainable strengthening of the target populations resilience. The project is offering for each of these issues innovative solutions adapted to the social, economic and environmental situation in the Philippines and in the region. Here are the main solutions adopted:

ISSUE: Project's sustainability and adhesion of the families at risk to the concept of resettlement.

PROPOSED SOLUTIONS: to keep the relocated people in their initial social and economic environment (resettlement within the barangay) by choosing a sustainable urbanisation integrating all the essential networks and services and setting up from the very beginning of the project a local team of volunteers originating from the community, which will raise awareness on the project and explain the selection criteria of the beneficiaries. The project will be open to all people living in the barangay for social services.

ISSUE: Access to electricity for a poor population (income below 2500 PHP /months, which is 48 EUR / month per family with an average of five members).

PROPOSED SOLUTIONS: set up a partnership with the NGO Electricians without Borders to build a 36KWc photovoltaic plant, which can be dismantled in case of typhoon, ensuring the site's electric autonomy and backed up by a 288 KWh battery array (2.5 days of autonomy). Maintenance technicians are from the community and receive training.

ISSUE: Access to running water for a poor population.

PROPOSED SOLUTIONS: Production of 20 m³of water per day from protected surface wells and distribution through a low-pressure network at 0.5 bars to limit consumption.

ISSUE: Access to a reliable wastewater treatment system in a semi urban environment.

PROPOSED SOLUTIONS: use of pre-treatment septic tanks connected to a community scaled waste water treatment (DEWATS)

ISSUE: Reduction of the project's ecological footprint.

PROPOSED SOLUTIONS: Production of renewable electricity to cover the needs of the resettled families. Replanting 20 ha of mangrove to compensate for the project's emissions and the site use. Installation of a rainwater collecting system in each house. Distribution of improved combustion stoves to decrease the volume of wood used for cooking. Promotion of organic agriculture and of permaculture principles for improved autonomy.

MAIN EXPERIENCES AND RECOMMENDATIONS

THE PROMOTION OF AN INTEGRATED APPROACH IS INDISPENSABLE TO HAVE A TRUE IMPACT ON RESILIENCE

If we neglect any component of the project, the overall action's impact will be considerably reduced.

ACT AT THE LOCAL LEVEL TO PROMOTE A GLOBAL CHANGE

The implementation of successful projects at a local level, showing that climate changes can be taken into account at a lower cost while addressing several different needs (CO2 emissions' reduction or compensation but also the local economic needs), makes it easier to decide on replicating these projects.

INTEGRATE THE PROJECT IN ITS ENVIRONMENT

Avoid tensions taking into account the change in status induced by the move to a full-fledged village by integrating infrastructures and services available to everybody, is one of the successes of this project.

ACQUIRE AN IN DEPTH KNOWLEDGE OF THE BENEFICIARIES AND MAKE THEM PARTICIPATE IN THE DECISION-MAKING PROCESS

The Barangay Recovery Committee (community committee), which is a true link between the community and the Red Cross, provided us with an in depth knowledge of the local social and family stakes and helped to better target the beneficiaries, while avoiding tensions thanks to a relationship with the community based on trust and transparency. Taking a close look at the economic capacities (capacity to/willingness to pay) of the beneficiaries enabled us an optimal dimensioning of the solar plant. Finally, the election of beneficiaries' representatives and their participation in the organisation of the site's maintenance and management should ensure the site's sustainability.

COOPERATE WITH RELEVANT TECHNICAL PARTNERS

The technical support of Electricians without Borders for the dimensioning and the installation of the solar plant were crucial.

DECOMPARTMENTALISE THE INTERVENTION SECTORS TO MAXIMISE THE PROJECT'S IMPACT

An integrated approach means the mobilisation of different skills and their efficient coordination. To make such an approach successful, communication plays a key role for all stakeholders, including the Red Cross, the partner organisations, the local authorities, the private sector or the families benefiting directly or indirectly. This can become quite challenging, whether in terms of internal organisation or at the level of the relationships to be maintained with numerous stakeholders.