

# Promoting local building cultures in Haiti

## Organisation implementing the project

This project is delivered by [CRAterre](#), an organisation leading international research, training and collaborative action in the field of earthen architecture.

CRAterre was set up as an NGO (Non Governmental Organisation) in 1979 in Grenoble. It was involved in setting up a research laboratory at [ENSAG](#) (École Nationale Supérieure D'Architecture de Grenoble, the School of Architecture in Grenoble). The two organisations carry out complementary activities to align research and practice.

CRAterre has a multidisciplinary membership of 52 people specialising in a range of fields. Thirty members are currently very active as practitioners (providing expertise, onsite training, training of trainers, technical assistance and teaching materials).

Within ENSAG, CRAterre forms part of a larger group, AE&CC (Architecture, Environnement et Cultures Constructives / Architecture, Environment and Building Cultures) which has participated in feedback and decision making for this work.

CRAterre activities are focused on three main areas:

- Conservation and management of earthen architectural heritage;
- The formation of scientific and technological bases for earthen construction and architecture;
- Human settlement, housing and improvement of living conditions in society.

In 2010, when Haiti was hit by an earthquake, CRAterre was already working with MISEREOR (the German Catholic Bishops' Organisation for Development Cooperation) in the country. They were asked by MISEREOR and Secours Catholique/Caritas France (both active funders) to provide expertise and technical assistance to a number of organisations working in the field (mainly in agroforestry or rural development projects), that wanted to help with rebuilding. This aligned with a call by [ANR](#) (the French National Research Agency) for research projects to study constructive cultures and science for reconstruction and local resilience.

This spread of involvement led to CRAterre's work with multiple Haitian and international organisations in a collaborative and coordinated effort to support reconstruction. This project focuses on their efforts to practically apply research and disseminate strategies for embracing and improving local building cultures.

## Project Description

The focus of this project is the promotion of improved local building techniques (known as TCLA, *Techniques de Construction Locales Améliorées*). CRAterre provides technical assistance and expertise in earthen construction, and one job of its members is to support organisations involved in post-disaster response. In Haiti, this role connected them with multiple organisations working across the country. This allowed them to more effectively coordinate, align and improve efforts to provide emergency response, rehabilitation and development in Haiti.

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CRATERre was directly involved in 25 contracts for technical assistance and training. In addition, between 2010 and 2013 its members were commissioned by MISEREOR to support to organisations within the PADED (Plateforme d'Agroécologie et de Développement Durable, Platform for Agroecology and Sustainable Development Platform) network.

In providing this technical assistance, for each project they worked with, the CRATERre team used research and retro-engineering to evaluate existing and potential rebuilding techniques focusing on local conditions. They then discussed their findings with stakeholders including residents.

During this process they reflected on a range of factors influencing local building techniques including physical, social, environmental, economic, cultural and governance aspects. They prioritised locally available human resources and materials. They also carried out capacity building activities to help local people with project management, while preserving and maintaining the traditional mutual support culture in Haiti, known as 'Kombit'.

Technical assistance provided directly by CRATERre has enabled the construction of 1,150 new buildings and the repair of 500 following the 2010 earthquake. After Hurricane Matthew in 2016, a further 800 households were supported to repair their homes.

Activities to promote TCLA (improved local building techniques) have in turn led to wider adoption both by self-builders and wealthier citizens (who request the use of these techniques when they commission professionals). An estimated total of 6,000 homes have been repaired or rebuilt using techniques promoted by CRATERre since 2010.

CRATERre has an ongoing presence in Haiti, and continues to provide technical support, training and expertise to projects led by partners including MISEREOR and Fondation Abbé Pierre. They have prepared and submitted basic documents to MTPTC (*Ministère des Travaux Publics, Transports et Communications*, Ministry of Public Works, Transport and Communications) to establish norms and standards across a range of building types.

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## **Aims and Objectives**

The project aim is to develop and transfer knowledge and skills in improved local building techniques (TCLA), in particular to people on low incomes. The approach improves local building practice using a scientific approach to testing and adaptation.

Standardised, industrial building techniques ignore differences across Haiti, where different places have different resources and needs depending on the availability of materials, transport, facilities and climate. These differences can influence factors like the type of infill used (stones, earth, vegetal matter) and building materials (for example mountainous zones tend to have stone buildings). The approach to foundations, locations, water and sanitation also needs to vary from place to place, depending on geographical features. By strengthening local capacity to repair or reconstruct, overall resilience to natural disaster is increased and practice is improved.

The project has focused mainly on rural areas, with some work in suburban and urban areas across Haiti. Specifically, CRATERre has been active across five departments (administrative areas). These are the West department (Port-au-Prince, Carrefour, Belle-Fontaine, Kenscoff, Petit-Goâve, Croix de Bouquet), South-East department (Jacmel, Cap rouge), Grand'Anse department (Jérémie, Corail), South department (Les Cayes, Laborde) and Nippes department (Paillant).

A total of approximately 2,500 households have directly benefitted from reconstruction or repair projects (a precise figure is difficult due to the dispersed and varied nature of the project). Direct beneficiaries were exclusively those with the least economic means to rebuild.

CRATERre has also trained 850 local building professionals. Training in safer, more effective and locally sustainable building techniques has also been provided to project managers and headquarter staff in 15 international organisations.

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Twenty-five community and public buildings have been delivered with support from CRAterre, providing greater protection and shelter for people in case of hurricanes and other extreme weather events.

The objective of CRAterre is not linked to a target number of houses, but to establishing conditions that make the best use of local knowledge in construction and ensuring these are recognised by the government and other stakeholders in Haiti. The end goal is to ensure an effective response to natural hazards in the country.

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## Context

Working in Haiti involves multiple challenges. It has a rich and turbulent history containing numerous examples of political and economic turmoil. High levels of inequality are exacerbated by the landscape. Some communities are difficult to access meaning their economies and quality of life suffer generally.

In 2010, a devastating earthquake followed by multiple aftershocks killed over three hundred thousand people in Haiti. Many thousands of buildings and huge parts of the country's infrastructure were destroyed. Millions were left living in makeshift houses or tents, struggling to access basic services and without effective sanitation.

Since 2010, Haiti's recovery has been compounded by further hurricanes, storms, drought, disease, and political, economic and social disruption. Efforts to rebuild have come under intense criticism. Multiple organisations have been accused of being ineffectual and inefficient, with millions of dollars of funding reportedly failing to reach people on the ground.

In 2018, recovery efforts are ongoing. Many people are rebuilding independently while living in tents or temporary shelters, buying materials as and when they can.

The context of fragmented response efforts and challenging terrain were driving factors behind CRAterre's approach. Their work demonstrated the need to adapt to provide effective support at the local level.

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## Key Features

Through on-site surveys of local building cultures, CRAterre sought to identify, understand and strengthen existing disaster risk reduction (DRR) techniques and practices. This enabled them to focus on improving what was already in place. They verified their research by constructing and testing prototypes.

To accompany the development of improved local building techniques, over 850 local practitioners were trained. This increased the number of people with technical and project management skills, leading to greater access to affordable recovery in local communities. Teaching materials were also developed and made available to vocational schools.

Care was taken to embrace and preserve the traditional culture of 'Kombit' (mutual support) to encourage community resilience and avoid dependency on external aid.

Providing technical assistance to a spectrum of different stakeholders enabled CRAterre to achieve continuity in rebuilding methods. They helped develop and shape advocacy campaigns, carried out educational activities and supported professional networks across Haiti. This has all contributed to wider knowledge and support for improved local building techniques. Members were regularly involved in meetings with partners and research networks to exchange experiences. They also carried out regular evaluation visits to capture lessons from the process.

CRAterre has worked with many different partners in Haiti including:

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- **Numerous local Haitian organisations and networks** with a spectrum of interests and specialisms including agriculture, sustainable rural development and sanitation<sup>1</sup>; professional and technical associations<sup>2</sup>; project management organisations and training organisations<sup>3</sup>, and two departments of the Haitian Government<sup>4</sup>.
- **Funding agencies:** [MISEREOR](#), [Abbé Pierre Foundation](#), [Secours Catholique](#); [Caritas France](#), [AECID](#) (Spanish Agency for International Development Cooperation), [AFD](#) (Agence Française de Développement), [Chaîne de l'espoir](#) (Chain of Hope), [Swiss Agency for Development and Cooperation](#), [French National Research Agency](#) (ANR), Agence nationale de la recherche).
- **International implementing organizations:** [Planète Urgence](#), [Habitat Cité](#), [International Federation of Red Cross and Red Crescent Societies](#), [UN-Habitat](#), [Entrepreneurs du Monde](#), [Swiss Red Cross](#), [Caritas Suisse](#), [Misereor](#), [Caritas network](#), [International Organisation for Migration](#).
- **Research laboratories:** [AECC-ENSAG](#) (Architecture and Constructive Cultures unit at the School of Architecture in Grenoble), [Laboratoire 3SR \(Université Grenoble Alpes\)](#), [FCBA](#) (the French Institute of Technology for Forest-based and Furniture Sectors), [CNR-IVALSA](#) (Consiglio Nazionale delle Ricerche, Istituto per la Valorizzazione del Legno e delle Specie Arboree, National Research Council of Italy, Trees and Timber Institute).

## Funding

The work links to multiple projects with many different partners that were funded from a variety of sources. An overall 'traditional' budget is not possible to obtain.

General costs covering all expenses related to the project indicate an average of €5,000 (USD\$5,823) for a new house and approximately €1,500 (USD\$1,747) for a repair.

Without additional costs (training, advocacy etc.), a rebuild for a 45sqm home can be carried out for €3,000 (USD\$3,492) and a repair for €500 (USD\$582).

Costs varied across projects and were allocated by partner organisations. Using the Kombit system helped keep costs low and at times allowed budgets to be stretched so more people could be helped.

<sup>1</sup> This includes PADED (Plateforme d'Agroécologie et de Développement Durable) and PAPDA (Plateforme Haïtienne de Plaidoyer pour un Développement Alternatif), which are networks of local Haitian organisations including VEDEK (a farmers union), Concert-Action (a local NGO focused on sanitation), ENHPRESTEN (Enfants Nécessiteux d'Haïti - Prese Swen Tè Nou, a local agency working on recovery efforts and preservation of Haiti for people on low incomes), EPPMPH (Encadrement des Petits Paysans des Mornes et des Plaines d'Haïti, a group of small-scale farmers), GADRU (Groupement d'Appui au Développement Rural, a group focused on rural development). Other local organisations include GID (Le Groupe d'Initiative pour un Développement Durable, a group supporting sustainable development), and ACAPE (Association des Cadres pour la Protection de l'Environnement, an association for the protection of the environment).

<sup>2</sup> Including ATPROCOM (Association haïtienne d'artisans et de techniciens spécialisés dans l'utilisation de techniques locales, Haitian association of craftsmen and technicians specialized in the use of local techniques (wood frame, stone masonry, etc.), ATECO (Association des Techniciens pour la Construction, construction technicians association), ATECOVA (Association des techniciens en constructions vernaculaires améliorées, association of technicians in improved vernacular constructions), OJUCAH (Organisation des Jeunes Universitaires de Carrefour pour l'Avancement d'Haïti, a local organisation of graduates working to improve living conditions in the mountains of Haiti).

<sup>3</sup> BDE (Diocese Education Office of Port au Prince), Ecole Atelier de Jacmel (Jacmel Workshop School, organised and carried out training).

<sup>4</sup> Ministère des Travaux Publics, Transports et Communications (Ministry of Public Works, Transport and Communications) and Unité De Construction De Logements Et De Batiments Publics, the governmental body responsible for national housing policy.

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The estimated total amount allocated for operations is €15,000,000 (USD\$17,468,670) with additional funding for training, promotion, dissemination and management of approximately €2,000,000 (USD\$2,329,156). Total costs are therefore €17,000,000 (USD\$19,799,322).

[MISEREOR](#) was a key funder, providing approximately €6,000,000 (USD\$6,987,468) to fund support of organisations across the PADED (Plateforme d'Agroécologie et de Développement Durable, Platform for Agroecology and Sustainable Development) network.

Individual projects were mainly funded by grants managed by external agencies. In some cases, full financial management was given to individual families, although this did not happen often.

The research component was funded with €500,000 (USD\$582,336) from [ANR](#) (French National Research Agency) as part of the [ReparH project](#) (set up to fund studies of constructive cultures and science for reconstruction and local resilience in Haiti.) CRAterre was also able to draw in funding through the AE&CC research unit, which has enabled them to valorise research, gather feedback from the field and maintain links across Haiti to share their work effectively.

Running costs were also covered by multiple donors and precise data is not available. A range of funding was drawn into the project to support implementation, evaluation, technical and administrative costs. These activities all contributed to coordinating an effective and collaborative process of continuous learning.

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## Innovation

The work of CRAterre focuses on process, establishing a clear understanding of local circumstances, skills and resources. Through empirical testing and the use of prototype buildings, the project continually innovated in rebuilding in a way that took account of local factors. This approach enabled more effective scaling as it incorporated adaptability and made the best use of local resources and skills. The research element of the project has ensured quality through continuous monitoring and reflection.

The participatory approach, embracing and building on local knowledge, strengthened social ties and supported people to make informed choices.

The work of CRAterre demonstrates that investing in improving local building cultures is an effective approach to disaster risk response. The scientific method used has helped to effectively make this case.

Overall the process has provided a meaningful bridge between theory and practice. The collaborative method of sharing, disseminating and embedding knowledge has helped to ensure continuity and increased local resilience for the future across Haiti.

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## Environmental Impact

The materials used (earth, stones) have low embodied energy. Only a little cement is used at times for pointing. When not locally available or abundant enough for sustainable use, timber was imported. In mountainous areas, 95 per cent of materials (stones, earth) were extracted locally, drastically reducing transport and greenhouse gas emissions.

In 2016, Hurricane Matthew hit Haiti and the homes that had been rebuilt or repaired using TCLA promoted by this project were proven to be comparatively more resilient than others.

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## Financial Sustainability

The project prioritises affordability, keeping costs as low as possible so people can continue the process themselves in the long term. Unit costs have been kept deliberately low and efforts have been made to preserve and promote local cultures of individual self-help and 'Kombit'. CRAterre have seen evidence these practices are being used where they have worked.

No funding is secured to continue the project in its current form. However, transfer of the practice of improving local building techniques has already occurred, with several organisations already replicating the processes through their own support and technical assistance activities. This includes ATPROCOM (networks of local technicians and specialists, see footnote 2) which emerged while CRAterre was working across Haiti and ATECO which adopted TCLA in its building projects.

CRAterre thinks it is likely that their involvement will be required again in the event of further natural disasters in Haiti. If this happens, they will continue the work on dissemination, training and capacity building that began with this project. As their role is to provide technical support they do not bid directly for funding to implement projects.

## Social Impact

CRAterre worked with MISEREOR and its Haitian partners, a network of organisations called PADED (Plateforme d'Agroécologie et de Développement Durable, Platform for Agroecology and Sustainable Development Platform) to establish links with the community. This communication shaped decisions about actions and implementation. Prototype homes were developed using existing local building techniques, then tested and improved using a retro-engineering process including a shaking table test.

Skills have been embedded through the training of local masons (known as 'Boss'). Information about the techniques has been widely disseminated to the local population, including illustrated calendars.

While the initial level of community involvement varied from project to project depending on the partner organisation, CRAterre consistently encouraged the involvement of residents in projects they supported. Their evaluation and monitoring activities also included obtaining the opinions of residents.

After being involved in or witnessing the success of the rebuilding work carried out, local people took on promotion of the approach independently. The project was careful to give specific attention to the inclusion of women in initial field assessment exercises to ensure women participated in feedback, were involved in developing the designs of houses and the spaces around them and were able to access technical training.

Training was carried out through local training schools and professional associations. These organisations have continued to disseminate knowledge through their own work (see footnote 2).

CRAterre has used its work to inform and influence public housing policy. In 2012, [MTPTC](#) (the Ministry of Public Works, Transport and Communication) certified a system for building timber frame houses which was widely used and promoted by CRAterre. This resulted in the use of improved local building techniques for a range of buildings (schools, stations, offices, and one- or two- storey buildings). After [Hurricane Matthew](#) in 2016, homes rebuilt or repaired through (CRAterre endorsed)

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techniques suffered very limited damage. This led to wider adoption of the techniques by UCLBP (*Unité De Construction De Logements Et De Batiments Publics*)<sup>5</sup>, the governmental body responsible for national housing policy in Haiti. CRAterre continues to work with the [International Organisation for Migration](#) (IOM). IOM is the leading coordinator of the Shelter Cluster in Haiti and working closely with UCLBP.

## Barriers

Initially stakeholders were surprised by the inclusive approach taken. This was resolved through demonstration projects which showed the effectiveness of the methods and also provided reassurance to local masons ('Boss') that they would be able to undertake the work themselves.

Standards were lacking in building techniques. To resolve this CRAterre worked with the Ministry of Public Works, Transport and Communications (MTPTC) to establish and disseminate expected building standards across Haiti.

While most organisations became convinced about the greater cost/impact benefit and potential of the CRAterre approach, some resisted a dialogue about these methods. In some areas NGOs (Non-Governmental Organisations) continued to propose building larger houses with reinforced concrete and concrete blocks rather than using local building techniques.

In transferring the approach there is a tendency to opt for direct duplication without adapting to local circumstances. Greater effort is needed to disseminate adaptation techniques, which lead to variation from place to place and even family to family. Methods need to adjust where there are different materials, architectural patterns, resources and environments.

## Lessons learned

Local conditions (accessibility, land availability, local materials, transport) can change drastically even within a short distance. This led to a push to promote methods for adapting to local circumstances. A methodological guide was published targeting politicians and field practitioners<sup>6</sup>.

CRAterre has published detailed research about lessons learned from the project<sup>7</sup>. Their main reflection is about the time investment needed to achieve real change in practice.

## Evaluation

As part of their general way of working, CRAterre members regularly self-evaluate their activities and reflect on the lessons they learn through the research laboratory at [ENSAG](#) (*École Nationale Supérieure D'Architecture de Grenoble*, the School of Architecture in Grenoble). CRAterre also carries out their own evaluation visits to projects they have supported. Beyond this, each specific project had their own approach to evaluation.

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<sup>5</sup> See <http://www.primature.gouv.ht/documents/UCLBP%20Avis%203.pdf>

<sup>6</sup> See <https://craterre.hypotheses.org/999>

<sup>7</sup> See <https://archive.org/details/RebuildingHaiti>

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CRATERRE has found:

- A need for further advocacy about the process in order to prevent people from solely focusing on replicating the technical aspects of rebuilding.
- A need to strengthen the relationship with government to encourage diversification of technical solutions across policy.
- Potential for further work with Haitian universities to improve research on local building cultures.

Scope to improve coordination across local professionals. This could lead to standardising the approach to TCLA and the potential to introduce official training on the practice.

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## Recognition

Building systems promoted by CRATERRE have been adopted by the Ministry of Public Works, Transport and Communication.

The concept of local building techniques (TCLA) has been adopted by UCLBP (the governmental body responsible for national housing policy), the [Global Shelter Cluster](#) (a global platform coordinating post-disaster response) and other humanitarian organisations working in Haiti.

[ANR](#) (the French National Research Agency) has selected the ReparH project (which CRATERRE contributed to via this work) as one of its 10 best projects between 2005 – 2015<sup>8</sup>.

Numerous projects linked to this work across Haiti have been visited by representatives from local, national and international organisations including governmental and humanitarian agencies and political representatives.

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## Transfer

The work of CRATERRE has led to much wider adoption of improved local building techniques (TCLA).

Their approach inspired many projects across Haiti. Large-scale reproducibility is a core element. This has been facilitated by ensuring both technical and cost requirements are accessible to the majority of people. Process and technical details can be duplicated. Educational guidelines and teaching resources were published to support this<sup>9</sup>. Some organizations are continuing to share and disseminate the lessons learned, for example ATECO (Association Des Techniciens Pour La Construction, Construction Technicians Association) which runs a course at Ecole Atelier de Jacmel (Jacmel Workshop School).

In the future CRATERRE plans to continue their involvement in Haiti. They are continuing to collaborate with government authorities, universities and vocational centres, including their recent work providing technical expertise to UCLBP, the governmental body responsible for national housing policy. The growing recognition and adoption of TCLA across Haiti is expected to continue.

CRATERRE and partners are also developing improved local building techniques in other countries, including the Philippines and Nepal.

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<sup>8</sup> <http://www.agence-nationale-recherche.fr/suivi-bilan/suivi-des-actions/10ans/reparh/>

<sup>9</sup> See for example <https://craterre.hypotheses.org/1126> and <https://craterre.hypotheses.org/1131>



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At a global level CRAterre is working with [IFRC](#) (International Federation of Red Cross and Red Crescent Societies) to promote best practices in improved local building techniques and resilience. A manifesto and a number of other publications have been produced to support this<sup>10</sup>. CRAterre is also co-leading a working group with CARE International UK within the [Global Shelter Cluster](#) to promote the approach.

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<sup>10</sup> See <https://craterre.hypotheses.org/182> and <https://craterre.hypotheses.org/tag/habitat>