

CASE STUDY **DOMINICA 2017–2018 / HURRICANE MARIA**

**KEYWORDS:** Roof repairs, Core housing, Training, Migrant labour

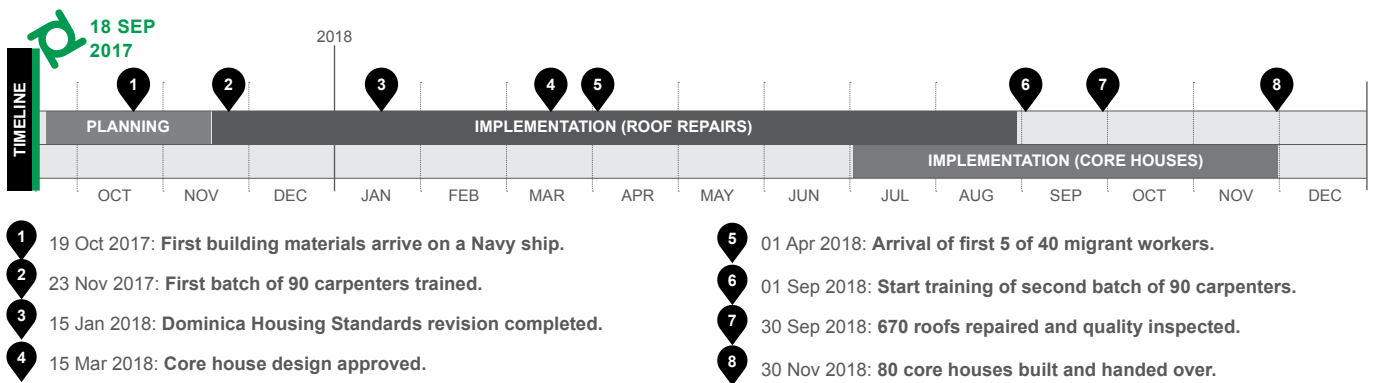
<b>CRISIS</b>	Hurricane Maria, 18 September 2017
<b>TOTAL PEOPLE AFFECTED*</b>	<b>57,000</b> (approx. 80% of the total population)
<b>TOTAL HOUSES DAMAGED**</b>	<b>23,488 houses</b> , either moderately (7,255), highly (10,272) or completely (5,961)
<b>SHELTER NEEDS***</b>	<b>13,039 households</b> (38,117 individuals)
<b>PROJECT LOCATIONS</b>	12 locations in north-east and north-west of Dominica
<b>PROJECT BENEFICIARIES</b>	<b>750 households</b> (2,250 individuals)
<b>PROJECT OUTPUTS</b>	<b>670 roofs</b> repaired <b>80 core houses</b> built <b>180</b> individuals trained in basic carpentry <b>40</b> migrant workers trained and employed
<b>SHELTER SIZE</b>	Roofs: <b>35m<sup>2</sup></b> on average // Core houses: <b>18.5m<sup>2</sup></b>
<b>SHELTER DENSITY</b>	Roofs: <b>11.6m<sup>2</sup></b> per person on average Core houses: <b>6.2m<sup>2</sup></b> per person
<b>MATERIALS COST</b>	Roofs: <b>USD 3,700</b> (2,550 for materials; 1,150 for labour) Core houses: <b>USD 6,182</b>
<b>PROJECT COST</b>	<b>USD 4,666</b> per household

\* Dominica Flash Appeal, Sep to Dec 2017. This figure is for the recovery needs.  
\*\* Building Damage Assessment.  
\*\*\* Shelter Sector estimate, assuming 50% of the affected households could support themselves.



**PROJECT SUMMARY**

The project repaired 670 roofs and constructed 80 core houses in compliance with Dominica housing standards, for households affected by the large-scale damage caused by Hurricane Maria. The island has a shortage of skilled construction workers and labourers compared to the magnitude of destruction and recurring hurricane seasons. Thus, the programme used circular migration of 40 skilled workers from the region and extensive training of local labourers.



**STRENGTHS**

- + Project flexibility allowed for continuous adaptation to challenges, changing needs and regulations.
- + Organizational capacity and timeliness in deploying a programme team.
- + The selection of beneficiaries was quick and effective.
- + The response was well coordinated with other actors.
- + Well-identified and managed partnerships and inter-agency collaboration.

**WEAKNESSES**

- Slow and insufficient admin, finance, monitoring and human resources systems.
- The project did not include retrofitting nor WASH and livelihoods.
- Field staff needed more debriefing and psychosocial support.
- Personal protection equipment should have been enforced more strictly during construction.
- Lack of capacity to develop tailored project- and information-management systems.
- The project did not include necessary structural reinforcements.

## CONTEXT

Dominica is an English-speaking nation with 71,000 inhabitants in the Caribbean. The economy is driven by tourism, agriculture and a “citizenship by investment” programme. Many Dominicans migrated to the US, UK and Canada over decades to seek better economic opportunities.

The island is located on seven active volcanoes, on a fault line and in the heart of the Atlantic Hurricane zone, and has been affected by numerous storms throughout its history. Before 2017, the most recent was Tropical Storm Erika in 2015, which caused serious infrastructural damage and loss of life.

## SITUATION AFTER HURRICANE MARIA

On 18 September 2017, Category 5 Hurricane Maria devastated the entire island, severely affecting houses, telecommunications, power grid, water and sanitation systems, infrastructure, agriculture and livelihoods. Over 80 per cent of the population was affected, over 90 per cent of buildings and 98 per cent of roofs were damaged. The hurricane also heavily affected all schools, government buildings and collective centres. Food, water, electricity, tarpaulins and building repair materials were the most urgent needs until markets and basic services could be restored.

## NATIONAL SHELTER STRATEGY

Despite the scale of the damage, the government focused much of the reconstruction efforts on permanent houses and durable repairs, even when this meant extending the time people had to be displaced or living in damaged houses. The national housing standards were upgraded – mainly increasing the thickness of roof purlins and rafters – and released four months after the disaster.

The Shelter Working Group, consisting of 10 active organizations, worked closely with the government in developing the response strategy. This consisted of three phases:

- **Emergency** (1–2 months), mainly focusing on distribution of plastic sheets, tents and non-food items (NFIs);
- **Early recovery** (2–12 months), targeting 50 per cent of affected households depending on the level of damage. Assistance options included transitional shelter, financial support, collective centre support or roof repairs and – for severely damaged houses – structural repairs. The other 50 per cent of those affected was targeted with technical advice and communication materials;

- **Recovery** (12+ months), consisting of permanent housing solutions for those with a completely destroyed house.

One year after the hurricane, 500 households had received transitional shelters and 2,000 roof repairs (approx. 20% of the targets for early recovery, excluding those who self-recovered), while in the relief phase over 30,000 plastic sheets were distributed. At the time of writing, funding for a large proportion of the targets for permanent housing had been received, but activities had not yet started.

## PROJECT COMPONENTS

Based on assessments and donor preference, the organization prioritized the repair of damaged roofs and – for the most vulnerable households with a completely destroyed home – the construction of one-room core houses. These activities were part of a wider programme which also included emergency distributions of NFIs and collective centre upgrades.

**ROOF REPAIRS.** Roof repairs were provided to 670 households. **An underestimation of the structural damage** in initial assessments, combined with the emphasis on the building code and a shortage of building materials in the region, led to a high increase in the cost of repairs, forcing a reduction in the number of beneficiaries. **For 25 per cent of the targets, “interim solutions” were provided** following a widely adopted approach by the Sector, which highlighted different options for assistance depending on the structural conditions (code compliant or non-compliant) and the safety of the location. For non-compliant (but repairable) houses, the organization implemented the repairs instructing households to further strengthen their structure according to the building code.

**CORE HOUSES.** Given the small average family size in Dominica, the organization initially proposed to build 225 12m<sup>2</sup> timber transitional shelters. However, these did not meet the Dominica building code, which prescribed a minimum floor space of 18.5m<sup>2</sup> including a kitchen, bathroom and connection to sewage or septic tank. **The design had to be adapted into a larger core house** with an already approved studio layout and optimized materials. The donors agreed to a reduction to 80 beneficiaries.

Because the material markets were seriously damaged and labour was in short supply, to meet project deadlines **the organization implemented the construction activities directly**, employing building teams and hiring non-certified contractors, taking on additional liabilities. At a later stage, more effort was placed on the training of local carpenters.



The project repaired 670 roofs in compliance with an improved building code after the hurricane.



For vulnerable households with a completely destroyed house, core houses were built according to a locally approved studio design. Due to its cost, targets had to be adjusted.

**GEOGRAPHIC TARGETING**

In the relief phase the organization – together with five other partners – earmarked 69 communities (42%) for housing repair assistance. The division of responsibilities was done during the emergency NFI distributions, based on which the organization identified 12 target communities on the west and east coasts of the island. All partners then continued working in the same communities for the shelter interventions, to maintain the links already established.

**OFFICE SET-UP AND PROJECT TEAM**

The organization did not have an office in Dominica and there were no local partners with experience in emergency relief and construction. To set up the main office in the capital and three support centres in the affected region, everything had to be done from scratch, including registration, opening a bank account, and hiring more than 100 workers within six months.

During office set-up, shortages of cash for operational expenses meant that several of the trained carpenters were lost to other organizations. Before a bank account was opened, a money transfer service was used for operational costs. The risk of exposure was very high, with staff members carrying large sums of cash, and storing and accounting for large reserves in the office. Months of cash transactions also created expectations from suppliers and staff. As a result, there was some resistance when payments by cheque were introduced.

The project team consisted of 25 staff including a team leader, an admin/logistics department (10 people), a construction department (10 people) and a community engagement department (4 people).

**BENEFICIARY SELECTION**

Vulnerability criteria were developed by the Ministry of Social Services and included poverty level, specific vulnerabilities such as disability, illness or pregnancy, family size and single-headed households. The level of damage and the household’s recovery capacity (including loss of livelihoods) were also factors in the selection.

Beneficiary selection committees were established in all targeted communities. These were composed of village council representatives, social workers, nurses and other community representatives – such as teachers and religious leaders – to ensure greater accountability.

The village councils provided the base lists and the committees had the role of identifying vulnerable households who were not on the list, as well as prioritizing households based on the agreed criteria. As most base lists were incomplete, the organization conducted community meetings, set up a hotline and used the local council offices as registration points. However, especially in larger communities, the selection process took months and was not free from challenges. For instance, the committees were not always aware of all cases and there was room for manipulating the lists based on personalities.

For the core houses, the team had become more experienced and developed a system to weigh vulnerabilities. Qualitative information was still provided by the committees and verified by the organization.

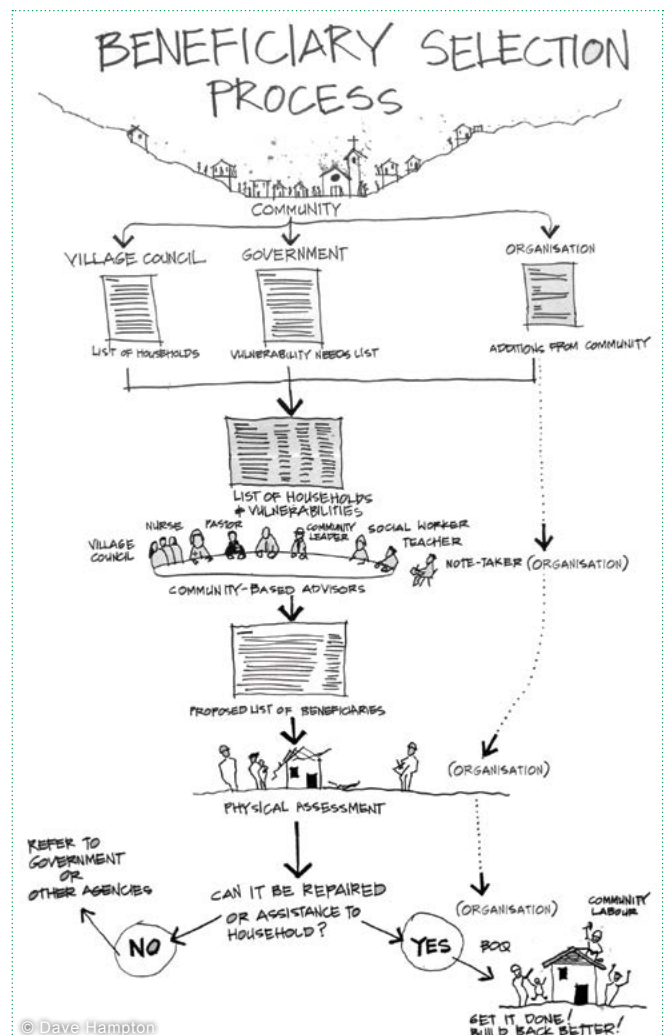
Damage assessments were conducted for all the households on the proposed list before taking a final decision on whether to conduct the interventions or refer the case to the government or other agencies.

**REGISTRATION CHALLENGES**

Dominica does not have a complete citizen registry, no complete address system nor cadastre. In addition, many people left the island after the hurricane. Therefore, community household lists often had to be built from scratch. The Building Damage Assessment conducted after the hurricane was not linked to individual households and the geographic coordinates were not widely shared. Eight months after the disaster, the organization – together with the government – developed a consolidated database of potential beneficiaries, including their conditions and the status of recovery interventions by Sector partners, to avoid duplication and gaps in assistance. The database was also intended to notify the government on the completion of activities by international partners and alert the need for further intervention or inspection.

**LABOUR AND TRAINING**

Initially, the organization had planned to train 200 skilled workers and 1,500 unskilled individuals to work in community construction teams. However, at the start of the project it became clear that **very few construction workers were available in the island**, compared to the scale of the damage. This was either due to labour migration before the hurricane, or because Hurricane Irma had affected other neighbouring islands with higher salary levels two weeks prior to Maria, attracting many workers from Dominica. Additionally, contractors had lost much of their equipment in the disaster. All this contributed to competition and price inflation, forcing the organization to double salaries compared to before the hurricane, to remain competitive (from USD 89 to 185 per team per day).





In the second month of the project, **the organization trained 90 local carpenters** in two-day sessions on Build Back Safer techniques aligned with the national building code. Due to the shortage of labour, **many of the trainees started to work for themselves or with other agencies**, and the organization still faced shortage of labourers.

The organization, together with an international partner, **recruited 40 skilled labourers from other countries in the region**, who arrived six months after the Hurricane. This was possible thanks to the free flow of labour between members of the Organization of East Caribbean States. Migrant workers received an induction in their place of origin and the organization covered transportation, accommodation, food and an allowance. After nine months, the organization started a second batch of trainings in collaboration with the same partner. 90 local workers were taught basic carpentry skills (one week class workshop and one week practical) and the 25 per cent most talented were added to building teams replacing the migrant workers that had to go home.

**COORDINATION AND PARTNERSHIPS**

Activities were coordinated with national and local governments, disaster management committees and humanitarian partners, to harmonize intervention modalities, agree selection criteria and maximize the available resources. The organization led the Shelter Working Group, hosted regular meetings and emphasized the role of training and awareness-raising on code-compliant construction techniques.

Inter-agency collaboration proved essential for the success of the project on several aspects. This included the deployment of shelter and information management capacity, the reception of in-kind donations, the recruitment and training of migrant labour, as well as the mobilization of volunteers.



Community meetings were held on weekends and after working hours to present the project goals and process to the targeted communities.



A model was used to explain safe roof repair interventions.

**COMMUNITY ENGAGEMENT**

The organization conducted **introductory outdoor community meetings** after working hours and on weekends to present project objectives and explain the activities and beneficiary selection process. These meetings were promoted on popular **radio stations and via mobile public announcement systems** (loudspeakers) driven through the communities. The latter proved helpful since the hurricane had left the island with very limited power and radio transmission. Posters were also installed in all villages. The meetings began with **help desks** where staff wearing name tags provided one-on-one sessions to answer any questions and register potential beneficiaries. This helped introduce the project staff to the communities and make them more approachable. Copies of frequently asked questions were then distributed. The hotline number was shared and emphasized at meetings as a tool for two-way communication with the organization.

Printed copies of the Dominica Building Guidelines were distributed to the communities, along with demonstrations through a roof model.

Radio and social media became increasingly effective as communications and other utility services returned to normal, after several months from the hurricane.

**MATERIALS AND SUPPLY**

Materials and tools were sourced outside the island, making orders through local suppliers and using any available material in the interim. Suppliers were often forced to use non-traditional sources from as far as Australia, due to the extremely high demand caused by the hurricanes' devastation in the region.

Direct sourcing proved challenging as the technical terms and specifications were sometimes lost in translation, and suppliers often failed to meet quality standards and deliver the agreed quantities at the suitable times. As a result, suppliers were asked to send samples before orders were placed, which further increased the lead time.

**NEXT STEPS**

After the project ended, the organization continued to support the affected population with owner-driven housing support programmes and the development of technical and administrative capacities of local contractors.

MATERIALS LIST FOR AVERAGE ROOF REPAIR			
Items	Qty	Unit cost (USD)	Total cost (USD)
10' galvanized ridge capping	3	25	75
10' x 33", #24 regular CGI	20	35	700
Expansion bolt 8"	6	3	18
Metal straps, ties, angle bracket	80	1.2	96
Nails 2.5" + 3" + 4" + 5" (lbs)	30	1.6	48
Galvanized roofing screws 3"	800	0.15	120
Purlin Screws 4"	300	0.4	120
Treated timber 2"x 4"x 10'	33	12	396
Treated timber 2"x 6"x 20'	22	20	440
Treated timber 2"x 8"x 16"	2	25	50
Treated timber 4"x 4"x 16"	4	35	140
Plywood 0.5" T1-11 siding	6	40	240
Labour days (average)	16.5	70	1,155

## STRENGTHS, WEAKNESSES AND LESSONS LEARNED



Forty migrant labourers were employed to work on the project thanks to a partnership with another organization that supported their recruitment and training.



Even though roofs were repaired to code, structural improvements were not considered, nor were water, sanitation and livelihood components.

### STRENGTHS

- + **The project flexibility and a motivated, agile team** enabled the organization to continuously adapt to the needs, revise the plans based on challenges and changing regulations, and meet the (extended) timelines.
- + **Organizational capacity and timeliness.** The organization invested a considerable amount of internal funds into the deployment of an experienced team from the headquarters and other countries. After three weeks, a core programme management team was in place for the whole project duration.
- + **The selection of beneficiaries was quick and effective.** Kick-off events in the communities were followed by a thorough selection process by the village councils with support of the organization. A feedback mechanism with dedicated full-time officers was in place.
- + **The response was well coordinated with other actors,** including the government, in terms of geographical division of the country, universal beneficiary selection criteria and alignment of the construction standards and messages.
- + **Well-identified and managed partnerships** and inter-agency collaboration were essential for the success of the project. Among other things, coordinated efforts allowed to bring in and train foreign workers.

### LESSONS LEARNED

- **The labour and material markets should be better assessed** before the development of project plans. For instance, materials and labour costs doubled, leading to significant reductions in the number of people that could be reached. Additional procurement and logistics capacity was also needed.
- **The organization should be better prepared for the administrative side of the establishment of a new country operation** in a disaster-affected location. For instance, pre-positioning and installation of IT and office equipment, registration, bank accounts, internet, and cash transfer systems.
- In the preparedness phase, **governments should be supported with the review and development of building codes,** including standardized specifications of materials.
- **Larger-scale focus on training might have reduced the scope for workers to leave the project.** This was recognized at a later stage, but was constrained by the limited capacity of the organization in the first months after the disaster.

### WEAKNESSES

- **Administrative, finance, monitoring and human resources systems could not keep up** with the scale-up of the organization. This led to inconsistent or improvised administration and reporting, and delayed contracts. The organization was unable to mobilize sufficient support from other offices to fill this in, mainly due to funding restrictions.
- **The project only conducted roof repairs** and, to some extent, core houses. Retrofitting was not allowed by most donors and projects lacked WASH and livelihoods components.
- **Field staff, who were all new, needed more regular debriefing and psychosocial support.** They were often overwhelmed by the suffering of their community members, many of whom had multiple vulnerabilities.
- **The use of personal protection equipment** on construction sites should have been enforced more strictly.
- The office lacked access to internet and did not have a database for the first six months. **The organization also lacked the capacity to develop tailored project- and information-management systems** for its interventions and the Sector. Investment should be made in capacity for such “of-line” systems and training for information-management skills of national staff.
- **The project scope and budget did not include structural reinforcements** needed by many of the damaged houses to support a code-compliant roof.