

CARIBBEAN

Hurricane Maria: Saffir-Simpson Category 5



Regional need for international assistance	Not required	Low	Moderate	Significant	Major
			X		
Impact	Very low	Low	Moderate	Significant	Major
				X	

Crisis overview

Tropical Storm Maria formed in the central Atlantic Ocean and is the tenth most intense on record. At its peak, the hurricane caused catastrophic damage and numerous fatalities across the north-eastern Caribbean, and is considered to be the worst natural disaster on record in Dominica. It also caused catastrophic damage in Puerto Rico.

As of 19 September, hundreds of people were evacuated in Guadeloupe, Dominica and Martinique. Mandatory evacuation orders were issued for more than 11,900 people in Puerto Rico (ECHO 19/09/2017). Maria made landfall in Dominica on September 19 and in Puerto Rico on 20 September. As of October 10, at least 96 people are confirmed to have been killed: 51 in Puerto Rico, 30 in Dominica, five in the Dominican Republic, four in the contiguous United States, three in Haiti, two in Guadeloupe, and one in the US Virgin Islands. 39,000 children are in need of assistance in countries affected by hurricanes Irma and Maria, more than a quarter of them are under five (UNICEF 18/10/2017).

Affected areas	Population	People affected	%	People in need	People in shelters	IDPs
Antigua and Barbuda	81,000	2,000	2.5%	N/A	420	1,413
Dominica	71,000	71,000	100%	65,000	2,900	N/A
Guadeloupe	400,000	N/A	N/A	N/A	300	300
Puerto Rico	3,400,000	N/A	N/A	2,500,000	N/A	N/A
US Virgin Islands	106,000	N/A	N/A	N/A	279	N/A

Source: UNICEF 18/10/2017; IOM 26/10/2017; OCHA 09/2017; OCHCHR 30/10/2017

Key findings

Worst affected islands

- Dominica: The recovery is estimated to cost as much as USD 1 billion, though the exact figures are still pending.
- Puerto Rico: The damage in Puerto Rico has been projected to reach USD 50 million
- Barbuda: Recovery needs are estimated at XCD 596 million (USD 220.8 million), of which shelter recovery cost is XCD 214.9 (USD 79 million), health XCD 19.8 million (USD 7 million), and education XCD 13.2 (USD 4.8 million)
- US Virgin Islands: The hurricane caused extensive and severe damage. There is no available estimated cost of recovery.
- Guadeloupe: Damage from Maria across Guadeloupe amounted to at least USD 120 million.

Key priorities

One month after the Hurricane, efforts continue to re-establish critical services in the region:

- Infrastructure: Restoration of essential services (electricity and telecommunications) and equipment to clean the islands.
- WASH: Safe drinking water and sanitation facilities remain a critical issue across the region, especially in Dominica.
- Shelter: Building materials for reconstruction.
- Food/Food Security: Canned food, seeds and agricultural goods.
- Health: Vector control, health and dignity kits.
- Fuel
- Education: Reopening of schools, rehabilitation of buildings, and provision of educational materials.

Humanitarian constraints

- There was no established humanitarian presence in the region. Operations and coordination mechanisms had to be assembled from zero.
- Operational constraints: Most commercial flights were cancelled, as many airports were closed due to damage. This made the shipment of equipment and movement of staff challenging.
- Exact number of affected population in certain territories still remains unclear.

Hurricane Maria: Crisis Impact and Priority Needs per territory

CRISIS IMPACT	Priority Needs									
	WASH	HEALTH	FOOD	SHELTER	LIVELIHOOD	PROTECTION	EDUCATION	INFRASTRUCTURE	COMMUNICATIONS	
Antigua and Barbuda	X			X	X		X	X		
Dominica	X	X	X	X	X	X	X	X	X	X
Puerto Rico	X	X	X	X			X	X		X
US Virgin Islands				X				X		X
Guadeloupe			X					X		

Crisis impact per territory

Antigua and Barbuda

Need for assistance	Not required	Low	Moderate	Significant	Major
		X			

Impact	Very low	Low	Moderate	Significant	Major
				X	

Priority needs: Rebuilding of houses, water and electricity infrastructure, and education.

The island of Barbuda was devastated by Hurricane Irma in September, with 95% of all properties on the island destroyed. When it was feared Barbuda would be struck again by Hurricanes Jose and Maria, all the 2,000 residents were evacuated to the larger island of Antigua (*The Guardian* 29/10/2017). According to the Post Disaster Needs Assessment (PDNA) in Barbuda, recovery needs are estimated at XCD 596 million (USD 220.8 million), of which shelter recovery costs are estimated to be XCD 214.9 (USD 79 million), health at XCD 19.8 million (USD 7 million), and education at XCD 13.2 (USD 4.8 million) (UNICEF 18/10/2017).

Infrastructure: Barbuda still has no water, electricity, and communications (*The Guardian* 29/10/2017; *Los Angeles Times* 09/10/2017).

Shelter and Displacement: Most of the evacuees are living with friends and family on Antigua, and 207 of them in large shelters run by the government in technical colleges, churches and a cricket stadium in Antigua. People have begun to return to the island for a few days at a time to start the clean-up, often sleeping in tents on their lawns. Rebuilding on Barbuda has been complicated by most people not taking out home insurance due to a land tenure system, and so will not receive any money from private insurance companies (*The Guardian* 29/10/2017; UNICEF 18/10/2017).

Education: All Barbudan children are now attending school in Antigua (UNICEF 18/10/2017).

Livelihoods: 37 fishing vessels in Barbuda, 69% of the island's fishing fleet, sustained damage, including destruction of their hull or engine. Some 2,177 fish traps from Antigua and Barbuda combined sustained damage. The damage to fisheries facilities was valued at a total of XCD 178,001 (USD 66,000). For every 100 households in Barbuda, 84 individuals are financially dependent on fishing (*SeafoodSource* 20/10/2017).

Aggravating factors: More than 75% of standing structures in Barbuda were destroyed by Irma (OCHA 18/09/2017). In June 2017, Barbuda graduated to a high-income country and is now largely ineligible for concessional financing and official development assistance, due to revenue per capita exceeding the criteria set (UN ECOSOC 24/10/2017). The hurricane has also already affected the country's economy with airport closures and people cancelling holidays to Antigua under the belief that it, too, had been destroyed by the hurricane (*The Guardian* 29/10/2017).

Dominica

Need for assistance	Not required	Low	Moderate	Significant	Major
			X		

Expected impact	Very low	Low	Moderate	Significant	Major
				X	

Priority needs: Food distribution, subsidised sales of necessities, shelter, rehabilitation of damaged housing, education, rehabilitation of health centres, and livelihood (agricultural) assistance.

Irma spared Dominica of any major damage, but on 18 September Hurricane Maria made landfall on the island with maximum sustained winds of nearly 160 miles per hour (IPS 20/09/2017). More than 90% of roofs were damaged or destroyed and 57,000 people, around 80% of the population, were directly affected (UNDP 18/10/2017).

As of 16 October, 57 people were confirmed dead and 18 missing (IRIN 16/10/2017). The hurricane destroyed entire crops, and disrupted power and water supplies. All of the health centres on the island have been affected. Landslides have blocked roadways, making it difficult for aid workers to access affected people in remote corners of the island (OCHA 26/09/2017). 19,800 children have been affected (UNICEF 18/10/2017).

Three weeks into the disaster, food, water, electricity, tarpaulins, and building repair materials remain the most urgent needs for 65,000 people; since markets and basic services are not yet restored. Field visits have confirmed that housing destruction was massive (at least 50% according to CDEMA), in addition to the total loss of roofs (ECHO 12/10/2017). An emergency appeal for USD 31.1 million to reach 65,000 people has already been launched. The recovery is estimated to cost as much as USD 1 billion, though the exact figures are still pending (UN 03/10/2017).

Operational constraints: Aid agencies said that communication with their counterparts in Dominica has been affected (OCHA 19/09/2017). Debris and waste management is reaching a critical point, hindering access across the different parts of the country. Trucks are in high demand and limited, constraining the delivery of assistance (*Logistics Sector* 15/10/2017). Most of the island is accessible for light vehicles, as of 30 September (IFRC 09/10/2017). Humanitarian cargo planned to arrive in Dominica requires 48 hours prior notice to prepare handling and reception at the main entry points in Dominica: Roseau Sea Port, Canefield Airport and Douglas-Charles/Melville Hall Airport. Dispatch of humanitarian cargo from sea port in Roseau requires 24 hours prior notification to enable preparation of cargo. Lack of regular commercial flights requires ongoing UNHAS humanitarian air service from Antigua (OCHA 26/10/2017).

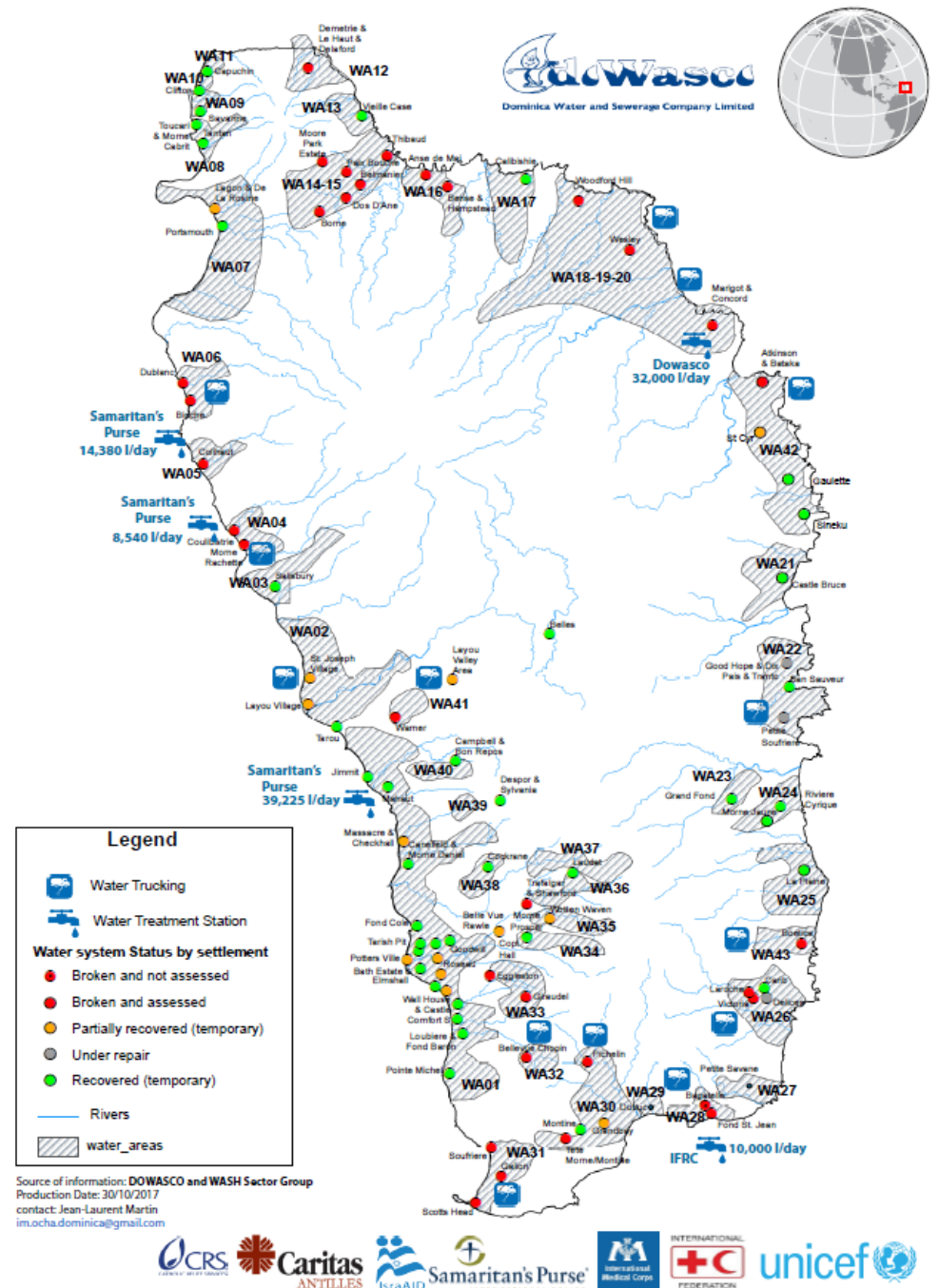
Communications: The hurricane has adversely affected the connectivity across Dominica. The two major mobile network operators—Digicel and Flow, had in total 15 towers, out of which only 5 survived the hurricane. This has left the island in almost complete connectivity loss. In Roseau area, Digicel retained its services, yet people had

no means to charge their phones due to power cuts. There were only a handful of areas where people had access to electricity to charge their phones. During the last weeks, the situation has improved for Roseau, as electricity has been resumed in key areas. In the north, there was a complete blackout of electricity and mobile network after the hurricane. In the fourth week after the Hurricane, Flow has resumed its network at certain places in the north. Loss of connectivity has affected the lives of communities in the south of Dominica more than those in the north, due to urban populations' (more prevalent in the south) dependency on mobile network connectivity. Since northern Dominica is made up of small communities, communication relied on word of mouth, radio announcements and messages from the council members. Social media is the most popular medium among women and men alike to keep in contact with their families and friends. Messenger conversations have replaced word of mouth communication—it is mostly used by people to connect with their trusted friends and family to discuss present situation. In the south of the country, in addition to social media, people have access to information through radio and television, but they are not considered to be reliable sources (ETC 29/10/2017).

Infrastructure: There is no electricity in most communities (IPS 20/09/2017). The Dominica Electrical Services Company (DOMLEC) is repairing electrical lines, prioritising public infrastructure and commercial businesses before residential areas. Burning debris in the vicinity of electrical poles is hindering the repair of lines (OCHA 14/10/2017).

WASH: Emergency repairs to water networks have restored access to 60% of the population. Extensive rehabilitation is required to repair the massive damage suffered and to increase resilience in the future. Water treatment and water trucking is still required to support peri-urban and rural areas, and to ensure the availability of water at collective centres, schools, and health facilities. Heavy rains during 15–19 October caused flash floods and highlighted the urgent need for debris and solid waste management and more extensive repairs of water and sewage systems (OCHA 19/10/2017; OCHA 26/10/2017).

Food: Hurricane Maria has left the landscape in Dominica desolate and the need for replanting is apparent and urgent. The storm severely damaged farm housing, irrigation infrastructure, feeder roads, crop and livestock production, forest reserves, fishing boats and other equipment. Self-sufficiency is a priority, to speed up the recovery process, as the country depends on shipments of food relief from regional and international stakeholders. Fast growing food crops were identified as the priority including seeds for tomatoes, eggplants, pumpkins, sweet pepper, spinach, lettuce, cabbage and kale. Four major sites have been identified as strategic areas for replanting interventions: Roseau, the North-East area, the South-East area and Portsmouth. The Portsmouth community, located in the south of the island, is particularly important as it enables the hospital food supply (FAO 25/10/2017; OECS 13/10/2017). Food distribution continues to be a priority across the country, as access to



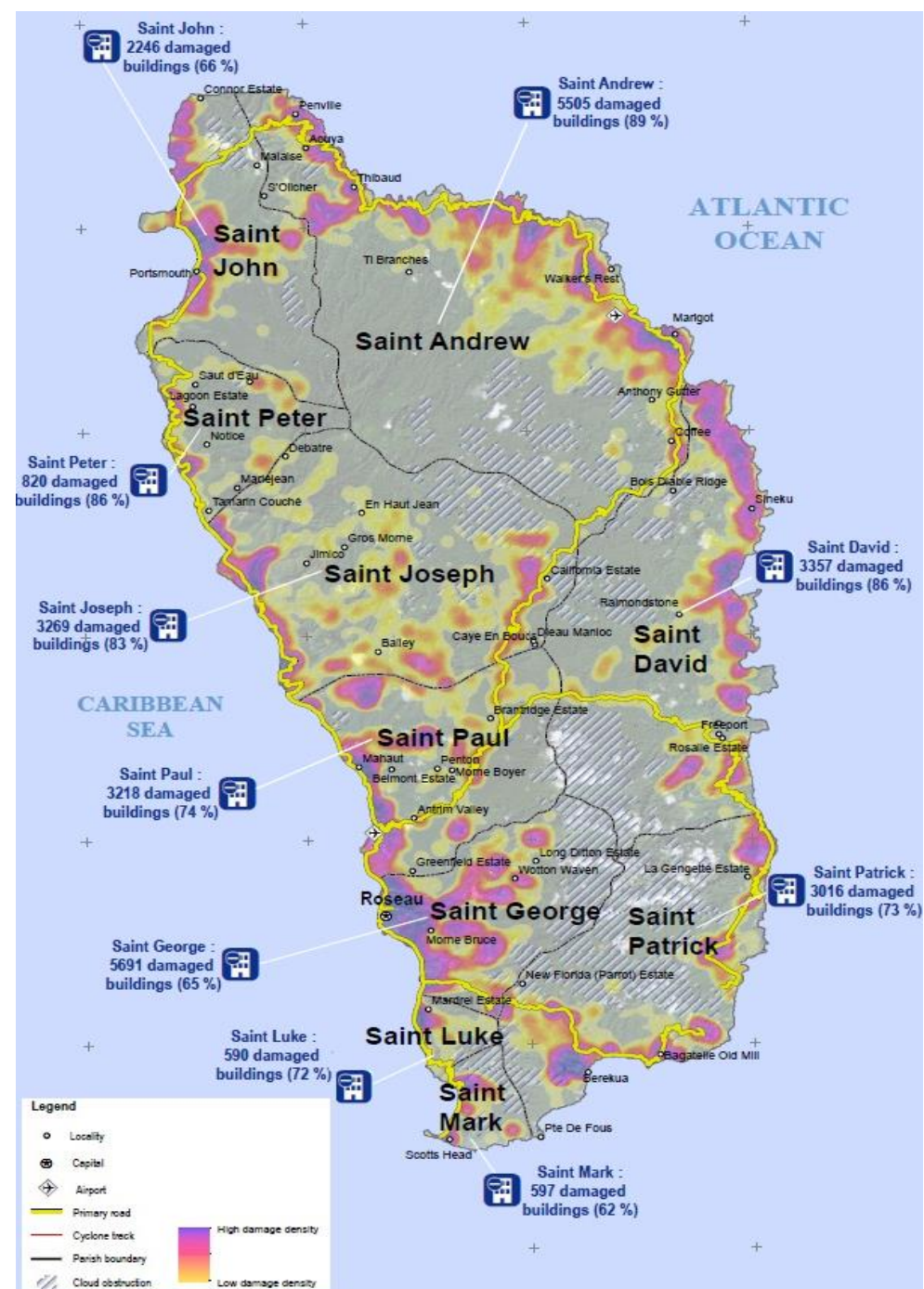
Water Status by Settlements Source OCHA 30/10/2017

and availability of food in markets remains limited. Small shops remain closed, particularly in rural areas, and larger to medium importers are facing short-term pipeline breaks of certain staple foods. Major supermarkets, however, are re-establishing operations in urban centres. Food parcels are particularly critical for public servants such as emergency personnel, health workers, social workers and teachers (OCHA 14/10/2017). Collective centres are in need of cooking gas, particularly for those who face prolonged displacement due to the destruction of their homes (OCHA 19/10/2017). Food distribution continues to be necessary in selected settlements across the country where access to and availability of food in markets remains limited (OCHA 19/10/2017). Import duties and VAT have been lifted for six months on commercial and non-commercial food items, and specific construction materials. Environmental and custom duties remain in place (OCHA 19/10/2017).

Livelihoods: Livelihoods have been severely impacted, with Kalinago farming families among the worst affected. People living in collective shelters report a lack of livelihoods. Access to agricultural fields, and the clearing of fields, remains a problem in rural areas (OCHA 19/10/2017; IRIN 16/10/2017). 90% of the poultry, 65% of the rabbits, and 50% of the cattle and small ruminants in the country was lost (OCHA 26/10/2017).

Shelter and NFIs: A reported 90% of structures on the island have been damaged, including more than 16,000 houses. Approximately 62% of the houses on the island were heavily damaged and 15% were completely destroyed (OCHA 20/10/2017; IOM DTM 19/10/2017; OCHA 26/10/2017; Humanity road 20/09/2017). The most affected parishes, in terms of percentage of damage, are St. Peter, St. Andrew, and St. David, located in the eastern part of the country with an estimate of more than 85% of damage (UNOSAT 18/10/2017). 90% of the Kalinago community, who are among the country's most vulnerable people, had their houses destroyed (UNICEF 08/10/2017). All available public buildings are being used as shelters, with very limited availability of roofing materials (IPS 20/09/2017). A rapid site verification, from 4–6 October, identified 108 occupied collective centres housing 2,911 individuals (IOM 17/20/2017). Many buildings serving as shelters lost roofs, so tarpaulins and other roofing materials are a very urgent need (Humanity road 20/09/2017).

Displacement: 2,900 people live in shelters in Dominica (a slight increase since the previous reporting period) (UNICEF 18/10/2017). 1,862 individuals are sheltered in 63 collective centres, 53% of which are schools (IOM DTM 19/10/2017). Many people are spending the nights in shelters and their days trying to clear debris from their houses and save their belongings (IOM 10/10/2017). There are reports that up to a quarter of the population have already left the island. This is particularly concerning for the Kalinago community, as many families with children might move abroad. This would follow a pre-storm pattern of Kalinagos leaving Dominica for better opportunities elsewhere. With a population of just over 3,000, the viability of the Kalinagos is increasingly at stake (IRIN 16/10/2017; UNICEF 08/10/2017). A plan to support returns, or find alternative



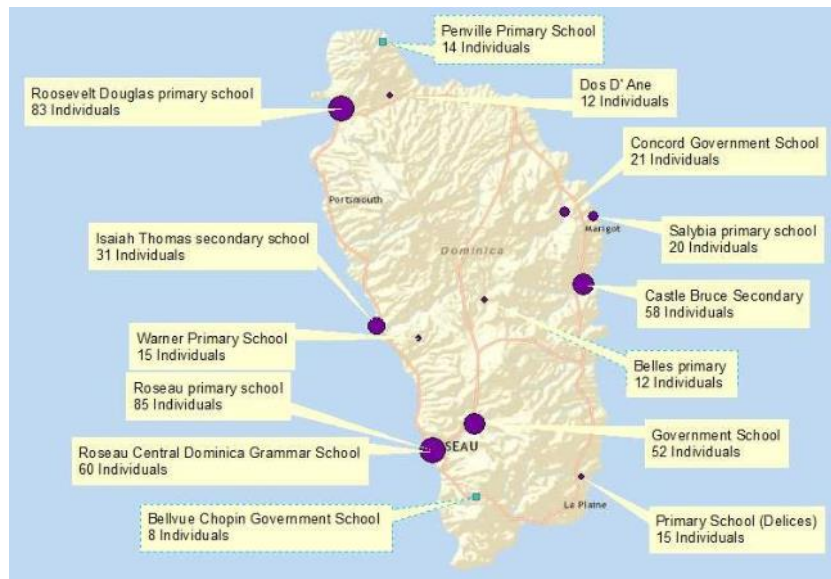
Buildings Damage in Dominica Source: UNOSAT 18/10/2017

solutions for people sheltering in collective centres inside schools, is urgently required. 43% of these people present vulnerabilities, 26% being elderly people, 15% single female headed households, and 11% people with chronic illness (OCHA 19/10/2017).

Health: Only 21 or 43% of the health facilities are functional with staff at the facility and available water and electricity. The remaining 28 facilities (57%) are either non-functional or only partially functional, with staff but no water or electricity. 17 health facilities are connected to the power grid, leaving some 32 facilities in need of power via generators. The main hospital in Roseau was also damaged (OCHA 19/09/2017; Humanity road 20/09/2017; OCHA 26/10/2017).

Protection: Psychosocial support for children, teachers and caregivers is needed (OCHA 19/09/2017).

Education: As of 14 October, 18,000 children and adolescents are without access to school (OCHA 14/10/2017). 81% of primary schools are partially or mostly damaged, affecting more than 6,100 primary students. 67 school facilities are significantly damaged, 43 are partially damaged and only 17 have suffered minor damages. Eleven secondary schools opened on 18 October, and 20 primary schools opened on 23 October (OCHA 19/10/2017; UNICEF 25/10/2017). As the majority of the 83 day-care and early childhood education facilities are private, the Ministry of Education is not responsible for repairing damage. Alternative forms of support to ensure that the centres are able to reopen and attend to the needs of children under five is needed (OCHA 19/10/2017). Pedagogical material and furniture are needed (OCHA 19/10/2017).



Schools used as collective centres that are prioritised for re-opening

Source OCHA 19/10/2017

Aggravating factors: Dominica was still in the recovery phase following Tropical Storm Erika, which hit the island on August 27, 2015, killing more than two dozen people, leaving nearly 600 homeless and wreaked damages totalling more than a billion dollars.

Information gaps: Livelihoods and populations affected at community level. The lack of telecommunications is causing information gaps between the humanitarian responders and affected communities (OCHA 19/09/2017).

Guadeloupe (France)

	Not required	Low	Moderate	Significant	Major
Need for assistance	X				
Impact	Very low	Low	Moderate	Significant	Major

Priority needs: Rebuilding and repairs in housing, repair road infrastructure.

The island of Guadeloupe even though not severely hit, endured widespread flooding, damaged roofs and uprooted trees, and two deaths were reported (ECHO 20/09/2017; SERTIT 21/09/2017). Damage from Maria across Guadeloupe amounted to at least USD 120 million (FranceInfo 22/09/2017).

Infrastructure: According to initial assessments by authorities, all road networks in the archipelago had been affected by fallen trees, roofs of houses had been blown off and at least 80,000 homes were left without power (OCHA 19/09/2017).

Food and livelihoods: Almost all of the banana plantations have been affected (Humanity road 20/09/2017).

Puerto Rico (The United States of America)

	Not required	Low	Moderate	Significant	Major
Need for assistance			X		
Impact	Very low	Low	Moderate	Significant	Major

Priority needs: Shelter, WASH

Puerto Rico is considered to have avoided the worst of Hurricane Irma, but was directly hit by Hurricane Maria. 163 people have been recorded dead or missing. There is some controversy over the exact number of fatalities as official numbers are not counting patients who are not receiving dialysis, oxygen and other essential services (Centro de Periodismo Investigativo 28/09/2017). After Hurricane Maria electrical power generation was cut for 100% of households, cell phone towers went offline, and the airport and other ports closed operations, pending damage and safety reviews. In the days that followed, many municipalities, particularly in the interior, were entirely out of contact. Nearly five weeks after, the majority of the island is still without electricity and running water

(Theirworld 25/10/2017; Direct Relief 09/10/2017; Lutheran World Relief 28/10/2017). The damage in Puerto Rico has been projected to reach USD 50 million (El Vocero 25/09/2017)

Operational constraints: Due to logistical and communication challenges, humanitarian aid remained stuck in the port of San Juan for weeks. Distribution centres have now been set up but assistance has yet to reach many communities in rural areas of Puerto Rico, who were among the most affected by the hurricane (Lutheran World Relief 28/10/2017). The mountain community of Utuado, has had limited road access, since daily rains have washed out much of the roadways and bridges that link the municipality to the rest of the island (Direct Relief 16/10/2017). Puerto Rico is a US territory with no voting representation in Congress and therefore could not call for external support or for UN support, as foreign relations are handled as if Puerto Rico were fully domestic (MiamiHerald 27/10/2017).

Infrastructure: 70% of the island of Puerto Rico is without power, and many people have no communications. San Juan Airport is damaged, along with a number of hospitals. Half of San Juan is flooded (Humanity road 20/09/2017; CNN 27/10/2017). Less than 10% of roads are passable (MAP International 19/10/2017). More than 80% or 2,8 million of the islands' residents have no power (Theirworld 25/10/2017; OCHCHR 30/10/2017). Only buildings with generators have power (Humanity road 20/09/2017). Power outages are expected to continue for six months or longer (MAP International 19/10/2017).

Health: As of 25 October, severe medical shortages persist (Direct relief 25/10/2017). While 98% of the hospitals are reported open, many do not have generators. Supplies of critical medicines, such as insulin for diabetes management and antibiotics to treat bacterial diseases, are in increased demand with supplies running low (MAP International 19/10/2017). As of 24 October, 76 cases of leptospirosis have been reported, including 2 deaths. Spiral-shaped Leptospira bacteria, which are found in the urine of rodents and other animals, tend to spread after floods through drinking water or infection of open wounds (CNN 24/10/2017).

Communications: Many people have no telephone service (Humanity road 20/09/2017).

Food: Hurricane Maria wiped out most of the island's crops. Banana and coffee - the Island's most valuable exports - were the hardest hit. The population is facing immediate food shortages but also long-term consequences from the destruction of the entire agricultural infrastructure (OCHCHR 30/10/2017)

Education: As of 24 October, a total of 119 schools in the San Juan and Mayagüez regions were reopened. Puerto Rico has 1,100 schools in total. Between 15–20% of Puerto Rico's schools will have to be closed permanently because of the damage. About 190 schools are being used as community centres and another 70 as shelters for displaced families. Some students have enrolled in schools on the American mainland (Theirworld 25/10/2017).

WASH: A third of the population don't have safe drinking water (Theirworld 25/10/2017; CNN 27/10/2017). Millions of people have resorted to collecting rain water for consumption leading to dangerous health risks (Lutheran World Relief 28/10/2017). There are allegations that the water available - for those who have access to it - may be contaminated (OCHCHR 30/10/2017)

Shelter and NFIs: 90,000 homes have been totally destroyed (OCHCHR 30/10/2017) In the northern coastal city of Cataño, known as Juan Matos, it is reported that 80% of the buildings have been destroyed (Humanity road 20/09/2017).

Displacement: Thousands of people are displaced, with homes destroyed (OCHCHR 30/10/2017). 40,000 Puerto Ricans have migrated to the mainland, many to Florida (MiamiHerald 27/10/2017; CNN 27/10/2017).

Aggravating factors: Puerto Rico was already dealing with a weakened economy and fragile power grid (Reuters 18/09/2017). Human rights were already being massively undermined by the economic and financial crisis and austerity policies, affecting the rights to health, food, education, housing, water, and social security. Half the population of Puerto Rico were living below the poverty line (OCHCHR 30/10/2017) Many people from the surrounding Caribbean islands sought medical care in Puerto Rico after Irma, and as many as 2,000 people were being triaged and their health evaluated before Maria hit (Direct Relief 19/09/2017).

United States Virgin Islands

	Not required	Low	Moderate	Significant	Major
Need for assistance			X		
Impact	Very low	Low	Moderate	Significant	Major

Priority needs: Restore the power and communications. Repair houses.

St. Thomas was spared the brunt of the wind but has severe flooding (Humanity road 20/09/2017).

Operational Constraints: US Virgin Islands are a US territory with no voting representation in Congress and therefore could not call for external support or for UN support, as foreign relations are handled as if USVI were fully domestic (MiamiHerald 27/10/2017).

Communications: Cell phones are not working on the east end of Saint Croix. Satellite phones are being used for communication (Humanity road 20/09/2017).

Infrastructure: In Saint Croix there are reports of flooding, downed trees and power lines and structural damage. There is no power. Cell service is reportedly down in the east end (Humanity road 20/09/2017). The US Virgin Islands are relying on stopgap measures like gasoline-powered generators (Vox 30/10/2017).

Shelter and NFIs: Large numbers of roofs have been blown off all over Saint Croix, trees have been stripped and toppled, debris covers the streets and many roads are impassable with utility poles lying across the road. Many report flooding in their homes (Humanity road 20/09/2017). Survivors in the U.S. Virgin Islands have until December 18 to register for assistance with the Federal Emergency Management Agency (FEMA). Survivors may be eligible for grants to repair and rebuild their homes and/or replace essential personal property. FEMA grants do not have to be repaid, but they cannot duplicate benefits from other sources, such as insurance coverage. FEMA assistance is non-taxable and will not affect eligibility for Social Security, Medicaid or other federal benefits. The extension also gives survivors more time to apply for low-interest disaster loans from the U.S. Small Business Administration (FEMA 21/10/2017).

Response capacity and Gaps

Regional response capacity

The Barbados-based Caribbean Disaster Emergency Management Agency (CDEMA) is coordinating the emergency and disaster response. Under CDEMA, the United Nations and donor agencies in the Caribbean, including USAID/OFDA, ECHO, DFID, Global Affairs Canada and others, have mobilised resources. Antigua is the CDEMA sub-regional focal point responsible for north-eastern Caribbean islands, including Anguilla and the British Virgin Islands, and is the logistical hub for support to other countries and territories. National authorities have made valuable efforts to coordinate the wider community of humanitarian actors (CDEMA; UNICEF 18/10/2017).

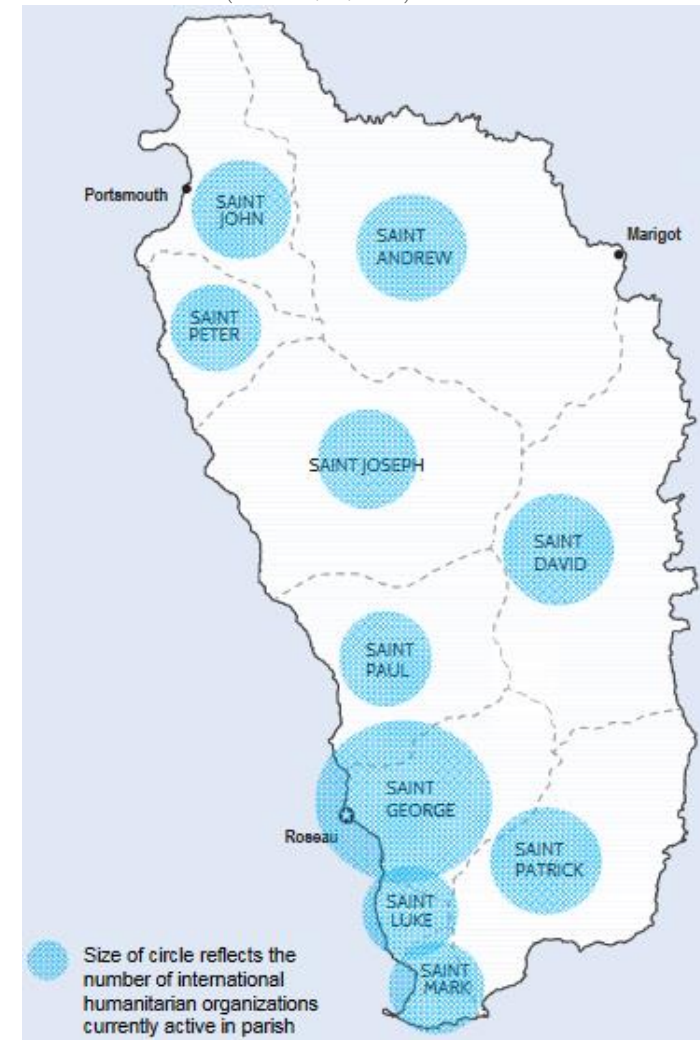
Most countries in the hurricane-stricken region were middle-income status and ineligible for concessional financing from multilateral institutions or official development assistance (ODA) (UN ECOSOC 24/10/2017).

International response capacity

PAHO is leading support in the health sector, WFP on food distribution and providing logistical support to partners, and IOM on shelter. UNFPA and UN Women have provided support on gender specific issues, while UNICEF is leading in areas vital to children. DFID and the Red Cross have initiated and led cash transfer programmes to vulnerable families from Barbuda and in British Oversea Territories. A similar programme is being developed in Dominica, with support from UN agencies (UNICEF 18/10/2017).

The government of the Republic of Korea will provide humanitarian assistance worth USD 550,000 to Cuba, the Dominican Republic, and Antigua and Barbuda (Government of Korea 16/10/2017). The Ministry of Commerce of China has provided USD 5 million for UNDP to assist communities in post-disaster recovery (UNDP 20/10/2017). ECHO

responded with the immediate release of EUR 250,000 to cover the most pressing logistical and food needs, while undertaking more comprehensive needs assessments in the field. An amount of EUR 500,000 was added at a later stage (ECHO 12/10/2017). USAID deployed a Disaster Assistance Response Team (DART) on September 7. The DART, which at its height comprised 54 people, deployed to 11 locations in the Caribbean to lead the US government's humanitarian response in coordination with affected governments. USD 15 million were provided to Antigua & Barbuda, The Bahamas, Dominica, St. Kitts & Nevis, Saint-Martin, and Sint Maarten (USAID 13/10/2017). The FEMA approved USD 44 million for assistance to individuals and USD 96 million for emergency work in Puerto Rico (FEMA 11/10/2017).



Humanitarian presence in Dominica. Source: OCHA 27/10/2017

Information Gaps

- There are serious gaps in information on the total number of affected population per territory.
- Logistical and communication access to many islands has been problematic, causing delays to assessments, analysis, and the development of response strategies.
- An assessment of childcare centres and preschools is needed in Dominica, as they do not fall under the responsibility of the government.

Lessons learned

The lessons learned are a result of the analysis of the main findings and lessons from the impact and response to past hurricanes, specifically Hurricane Matthew in 2016.

Assessment techniques

- Consult with other sectors and national authorities on the questions vital to assessment quality.
- Including return areas in assessments improves understanding of current and future needs, both during displacement and after return.

Communication with affected populations

- A dialogue-based approach is more effective than a one-way information campaign.
- Messages must be clear, well-defined, and unambiguous.
- Repetition of messaging is key.
- The response must take the result of consultations into account.

Coordination between responders

- Lack of coordination in the response process can result in an unreliable response.
- Communication and coordination between actors can prevent secondary impacts.

Health

- Delays in the treatment of injuries heighten the risk of tetanus and infection.
- Overcrowding, due to displacement, facilitates disease transmission.
- Waterborne diseases can break out among the affected population, as the disruption of usual water supplies and contamination by damaged sewage infrastructure can result in consumption of unsafe drinking water.

- Mosquito-borne disease incidence may fall in the first few weeks after the hurricane, as high winds and flooding may destroy mosquito-breeding sites. However, approximately three weeks after the impact, when flooded waters subside and mosquitoes rebreed, transmission is likely to return to previous levels.

WASH

- Chlorine is the most effective drinking-water disinfectant.
- Rainwater catchment systems can make a long-term improvement to water supply.
- Water trucking is not sustainable after the initial response.

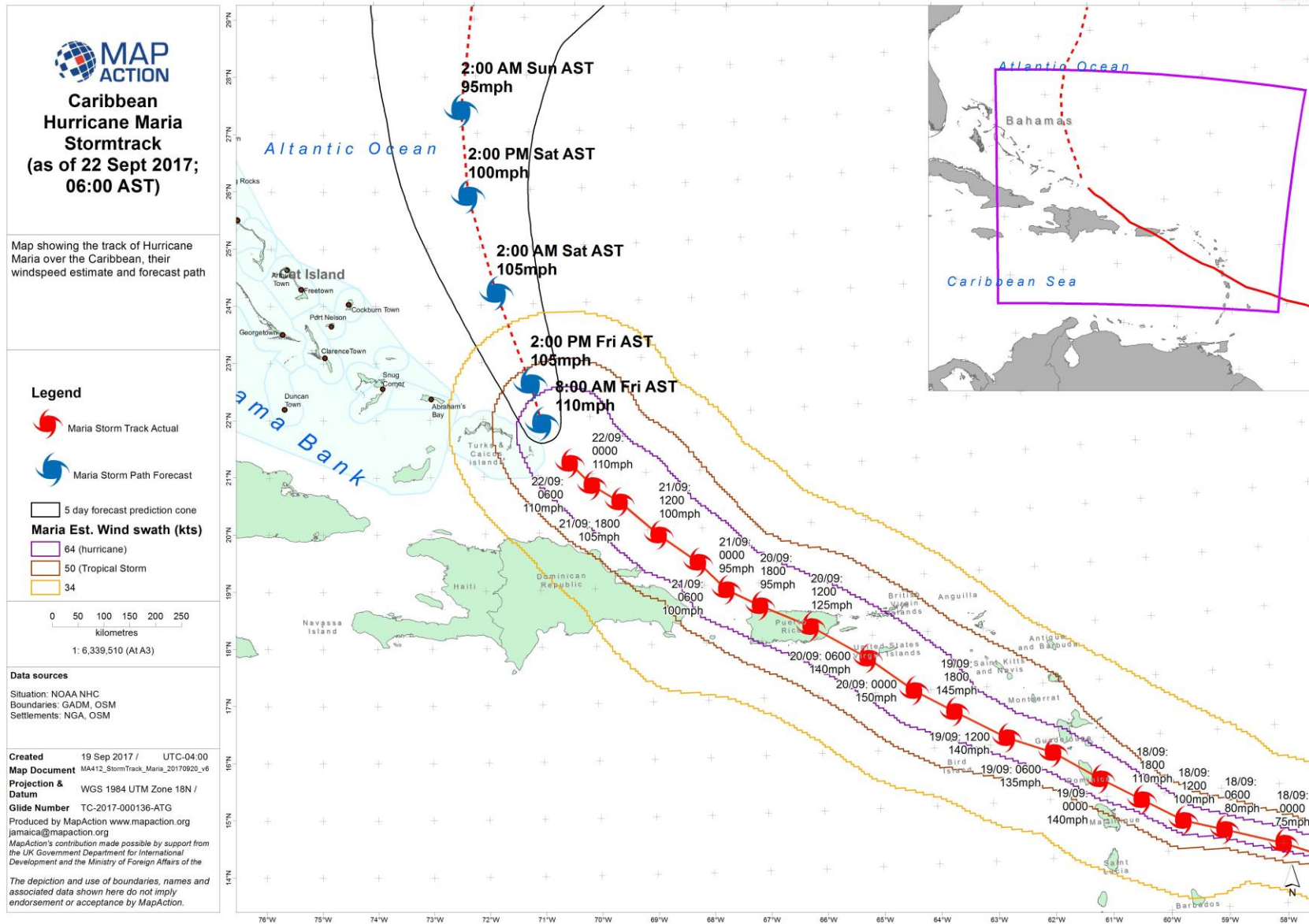
Shelters and NFIs

- Build camp management capacity by involving local authorities and community leaders.
- Involving community members in shelter management benefits everyone.
- Collective housing enables better response planning but can cause tensions and heighten health risks.
- Shelter must take into account other sectoral needs; carry out integrated planning.

Sources: Take from information gathered in previous ACAPS reports

ACAPS has published a **Lessons Learned Document from Tropical Storm Erika in Dominica**.

Path and wind speed zones



Source: Mapaction