



# Building back better

## A resilient Caribbean after the 2017 hurricanes

Emily Wilkinson, John Twigg and Roger Few

January 2018



### Key messages

- Disasters represent both a crisis from which to learn and an opportunity to do things better. Understanding the historical dimensions of disaster risk in the Caribbean, as well as future threats to the region, can help in identifying what needs to change.
- Building back better in Caribbean islands requires building resilience to multiple hazards. It also means integration across infrastructure, housing, economic and social development and environmental sectors, to strengthen resilience in all.
- Effective recovery rests on the inclusion of all relevant stakeholders in decision-making. This will help ensure that response and recovery actions do not adversely affect people already impacted by disaster.

## 1. Introduction

This briefing paper highlights how lessons from history and past recovery can inform decisions around building back better after hurricanes Irma and Maria. These two Category 5 hurricanes caused total losses estimated at \$130 billion (Munich Re, 2018a). The countries and communities most affected will need years to recover, but decisions and actions taken in the short term, such as repairs to housing, will have repercussions for long-term resilience.

While disasters are a common feature of the Caribbean (see Table 1), there has been little serious reflection on the types of action needed for long-term resilience. Compounding this are the looming effects of climate change. Sea-level rise in particular is a huge problem for the Caribbean, but we are also likely to see more hurricanes reaching Category 4 and 5 in the future (Knutson et al., 2015). To avoid further human suffering, economic losses, environmental degradation and the reversal of hard-fought development gains, ‘building back better’ must be more than just a slogan. It requires a broad set of policies and investments in housing and infrastructure, economic development and ecosystem

protection that are well coordinated, build on lessons from the past and manage the tension between short-term imperatives and long-term resilience needs.

This briefing paper has been prepared to help policy-makers and practitioners strengthen recovery in the Caribbean after the 2017 hurricanes.<sup>1</sup> The challenges for promoting a more resilient Caribbean are significant; structural issues such as weak enforcement of building codes, economic activities that undermine fragile coastal ecosystems, the highly specialised and vulnerable nature of these island economies and fiscal and governance challenges will all need to be addressed. This will require a comprehensive disaster impact assessment (to understand what was most affected and why); legal and regulatory reforms; a recovery strategy closely linked to existing development and investment plans; and more participatory forms of planning than many of these countries had in place prior to the hurricanes. It will also require more systematic use of hazard information and climate science in planning decisions, to manage future risks.

The paper draws on analysis from two research projects funded by the Global Challenges Research Fund: one on the drivers of disaster risk in Small Island Developing States and the other on promoting self-recovery.<sup>2</sup>

**Table 1. Five costliest tropical cyclones in the Caribbean ordered by inflation-adjusted overall losses (1990–2017)**

Date	Tropical cyclone	Affected area	Overall losses (US\$m, 2016 values)*	Insured losses (US\$m, 2016 values)	Fatalities
6–14 September 2017	Hurricane Irma	Anguilla, Antigua and Barbuda, Bahamas, British Virgin Islands, Cuba, Dominican Republic, Florida (US), Haiti, Puerto Rico, Saint Martin, Sint Maarten, St Barthelemy, St Kitts and Nevis, Turks and Caicos, US Virgin Islands	67,000	32,000	128
19–22 September 2017	Hurricane Maria	Bahamas, Dominica, Dominican Republic, Guadeloupe, Haiti, Martinique, Puerto Rico, Turks and Caicos, US Virgin Islands	63,000	30,000	108
20–30 September 1998	Hurricane Georges	Antigua and Barbuda, Cuba, Dominican Republic, Haiti, Puerto Rico, Saint Kitts and Nevis, US Virgin Islands	14,700	3,800	3,661
6–14 September 2008	Hurricane Ike	Cuba, Dominican Republic, Haiti, Turks and Caicos Islands	7,600	39	82
7–21 September 2004	Hurricane Ivan, storm surge	Barbados, Cayman Islands, Cuba, Dominican Republic, Grenada, Haiti, Jamaica, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago	5,900	2,300	67

\*Figures for 2017 events are approximations and may overestimate losses for the Caribbean as they are total losses (including the US) and at 2017 prices. The figures may change.

Source: Munich Re (2017), Munich Re (2018b–d), EM-DAT (2018)

- 1 This paper marks the start of a process of discussion, research and policy engagement around building back better in the Caribbean. As such, the authors do not propose specific recommendations for policy-makers, practitioners and investors, but rather a set of principles for promoting resilient recovery.
- 2 ‘Root Drivers of Risk in Small Island Developing States’ (November 2016–February 2018) and ‘Promoting Safer Building – Using Science, Technology, Communication and Humanitarian Practice to Support Family and Community Self-recovery’ (November 2016–July 2017). These projects are funded by the UK government’s Global Challenges Research Fund through the UK Natural Environment Research Council (NERC).

## 2. Disasters in the Caribbean: a development constraint

Caribbean countries are economically fragile because of their small size, insularity, remoteness, environmental fragility and high levels of debt. They also face multiple hazards. Many Caribbean islands are at risk from volcanic hazards, earthquakes and landslides. They are also frequently affected by climatic hazards such as tropical cyclones, storm surges, flooding and drought. On average, hurricanes cause \$835 million-worth of damage annually in the Caribbean (GFDRR, 2015). Although capacities to manage disaster risk are improving, small islands lack the strong institutions and systems needed to anticipate and cope with hazards, and vulnerability levels are high because of limited employment opportunities, inequality, difficult market conditions (Boruff and Cutter, 2007; Ferdinand et al., 2012) and lack of access to concessional finance. In the Caribbean (and elsewhere), weak adherence to building codes and the use of sub-standard materials for informal construction exacerbate both exposure and vulnerability (Ahmad, 2007). The Caribbean will face increasing challenges due to sea-level rise, as well as a likely increase in heavy rainfall and tropical cyclone maximum wind speeds (CDKN, 2012).

### Box 1. Exposure and vulnerability in Dominica

There is nothing inevitable about the extent of vulnerability in Dominica or other Caribbean islands: much depends on their governance regimes and very specific historical contexts. In the case of Dominica, European colonial rule from the sixteenth century set the island on a course of high-risk development that has been difficult to reverse. Key features include:

- Under-investment in infrastructure, resulting in poorly constructed roads in coastal areas and limited road networks in the interior.
- A land use regime that pushed former slaves into coastal zones and ravines on the margins of sugar plantations, where they were forced to squat illegally on land owned by the crown, and from which they were often evicted. These informal settlements, with their precarious housing, have expanded and still exist today.
- The promotion of large-scale agriculture (monoculture) with sugar, cocoa, limes and then bananas grown on large plantations despite repeated major losses due to disasters and external economic shocks.
- Post-disaster aid that was only extended to landowners and given in the form of loans, which recipients were often unable to pay back after disasters because of the collapse in agricultural production, damaged infrastructure and crop disease, all of which reduced profits.

Source: Wilkinson et al. (forthcoming).

## 3. Learning from history

It is important to look back at the history of disasters, investment decisions and governance systems to understand how risk has accumulated in these islands, to appreciate the political and economic challenge ahead, and to be realistic about how long building back better might take. What lessons were learned from previous disasters, and if they were not learned or nothing happened as a result, why not? Some sectors are more vulnerable than others to hazards, and decisions to specialise in certain economic activities can have major repercussions when disaster strikes. Box 1 considers the case of Dominica, where historical development patterns and choices produced high levels of exposure and vulnerability to natural hazards. Similar decisions and patterns of risk are seen across the Caribbean, suggesting that governments have not learnt from the multiple and very high impacts of natural hazards, or have not been able to apply lessons from these experiences. Decisions taken in the aftermath of disasters have often not helped economies to recover quickly, promoted longer-term investment or strengthened attempts to avoid similar losses in the future.

## 4. The challenge of building back better

The period following disaster events, when political attention is heightened and key decisions are being made on rehabilitation, can be a chance to radically reduce future risk. Disasters can destroy decades of development gains, but they also offer an opportunity for increasing resilience (Birkland, 1997). Following a disaster, there is likely to be more political and social pressure for longer-term risk reduction measures, and more technical and financial resources are likely to be available to implement them (Ievers and Bhatia, 2011).

The 'build back better' vision came to prominence in disaster thinking after the 2004 Indian Ocean tsunami, and is now regularly invoked in policy and programming. It forms one of the four pillars of the Sendai Framework for Disaster Risk Reduction 2015–2030 (UNISDR, 2015a). Although the term is imprecise, it suggests a holistic and sustainable approach to restoring, rehabilitating and improving housing, infrastructure, services, economies, livelihoods and living conditions in a way that makes communities and societies less vulnerable to future shocks (UNISDR, 2015b). As such, while building back better includes practical measures such as better reconstruction and siting of buildings and infrastructure, the wider concept encompasses much more than this – relating to a general process of strengthening resilience through all aspects of society.

Building back better is a simple idea, but implementing it is challenging. Recovery is not a neat linear progression with a clear end point, but part of an ongoing process of development and change. It is complex, long-term and multifaceted, with many dimensions: economic, social, psychological, physical, environmental, political and institutional. It takes place on many different scales:

---

individual, household, community, national, regional (Tierney and Oliver-Smith, 2012; Davis and Alexander, 2016) – from the crop choices available to farmers to nationwide land use planning.

Recovery takes place at a most challenging moment, in dramatically altered contexts of destruction. In Dominica, for instance, two months after Hurricane Maria more than 80% of houses still lacked adequate roofing and over 90% had no electricity (UNOCHA, 2017). Such situations represent a ‘new normal’, with profound physical, social, political and environmental changes, when societies and institutions are under extreme pressure. After a disaster agencies must act fast to meet basic needs, but careful consideration needs to be paid to ensuring those actions do not undermine long-term recovery. Recovery starts immediately, but also requires weighing, prioritising and sequencing policies and programming. Over time, attention and resources shift towards structural changes and longer-term investments.

Weak local institutions and entrenched power relationships can also severely constrain recovery and resilience-building (Christoplos et al., 2010). Recovery planners are forced to consider a wide range of needs and issues, and balance these against what are usually very limited resources. They have to consider the socio-economic, psycho-social, institutional, physical/technical and environmental dimensions of recovery, and work across the range of scales at which recovery takes place. The speed of recovery differs across sectors, geographies and communities. In Grenada after Hurricane Ivan in 2004, agriculture recovered much more slowly than the private sector in general, and urban livelihoods recovered more quickly than rural ones (World Bank, 2005). Poor communities and households in St Kitts and Jamaica were also slower to recover from hurricanes in 1989 (Berke and Beatley, 1997).

Households and communities tend to be marginalised in recovery decision-making, despite being major actors in response and recovery. Many years of research have demonstrated the important role played by informal, spontaneous responses by local people during emergencies, and the contribution of social support networks to effective response and recovery (Drabek and McEntire, 2003; Aldrich, 2012). For example, community-based organisations provided financial and human resources to support household recovery after hurricanes Gilbert and Hugo in the 1980s, and Ivan in 2004 (Berke and Beatley, 1998; Peters and McDonald, 2010). Most disaster-affected families rebuild their homes relying on their own and local resources, with little or no external assistance (Twigg et al., 2017); exploratory research into the responses to Irma and Maria in Puerto Rico has highlighted the key role of communities in household recovery, in a context where official aid has been slow to arrive (Sou and Aponte-González, 2017).

Recovery processes can be interrupted or come to a halt; there will be a need for continuing adjustment and adaptation to changed and changing conditions (Sword-Daniels et al., 2016). Recovery milestones are reached at different times and through various pathways. However,

our knowledge of this process is still limited, and there is a need for more research into long-term recovery trajectories.

Recovery is usually conceived as a phased process, with humanitarian actors involved in the emergency relief and ‘early recovery’ phases, and development actors subsequently becoming engaged in longer-term recovery. In practice, humanitarian and recovery efforts overlap. Meeting the immediate priorities of humanitarian response takes place at the same time as planning for recovery needs. There is a risk of institutional and funding gaps as humanitarian agencies withdraw – donor timeframes for disbursing funds are likely to be shorter than the time needed to achieve recovery.

Pre-disaster recovery planning, with explicit overall goals, objectives and priorities, is essential to guide post-disaster decision-making, when prompt action may be required (Phillips, 2009). This requires time, skilled personnel and widespread stakeholder engagement, as well as established institutional structures and coordination arrangements. The creation of new recovery/reconstruction institutions after disasters can disrupt existing working relationships between organisations (Osei, 2007). In reality, decision-makers have to overcome limitations in capacity, data, financing and other resources resulting from the disaster, and recovery investment decisions are often made in the absence of robust evidence about the effectiveness of different approaches. Interventions therefore need to be flexible and adaptable to changing circumstances, and further research will be needed to fill the evidence gaps on recovery.

## 5. Conclusions and next steps

Building back better after a disaster intuitively makes sense, but it is challenging and requires a deep understanding of the causes of disaster, recovery processes and future climate and other risks. Critically, it requires high levels of commitment from policymakers and technical staff in national governments; from the international aid agencies and donors supporting recovery; and from communities already engaged in recovery.

Four principles can help guide these stakeholders as they transition from immediate emergency response measures to longer-term recovery:

### Learn from history; avoid repeating it

Understanding the historical and cultural factors that led to disaster is critical to identifying solutions. There is no ‘quick fix’ for building resilience in the Caribbean, but disasters do provide a space for reflection, as well as an opportunity for policies and investments that consider future threats, including those related to climate change.

### Develop a holistic recovery framework

A holistic, cross-sectoral approach is needed. This can be very complex, since building back better after a major disaster requires consideration of how actions in one sector might affect another – for example, resettlement to ‘safer’

locations will affect access to services and employment opportunities. Reducing risks associated with one hazard may increase those to another, and guidance on applying building codes is needed to ensure that houses are resilient both to high wind speeds and to earthquakes. Recovery frameworks should be based on priorities and activities in existing development strategies and land-use plans (strengthening these with new information from impact assessments), to avoid creating a parallel planning system.

### **Create transparent, accountable and participatory processes**

Building back better needs to involve the widest possible array of relevant stakeholders – especially affected

people – in decision-making, in order to build consensus on key issues. Community-based and other civil society organisations have a key role to play in this, together with institutions across government, the private sector and regional and international agencies.

### **Leave no one behind**

Recovery efforts should be built on the principle of ‘leave no one behind’ endorsed in the Sustainable Development Goals and the World Humanitarian Summit’s Agenda for Humanity. Those affected do not benefit equally from recovery interventions: some are overlooked or recover more slowly than others. Certain types of intervention, particularly regarding relocation, rebuild and no-build decisions, can deepen marginalisation.



Damage from Hurricane Irma in St Maarten, September 2017. Photo credit: Arie Kievit, IFRC. CC BY-ND 2.0.

---

# Acknowledgements

The authors would like to thank Donna Pierre, Arabella Fraser and Jenni Barclay for their useful comments and suggestions, Matthew Foley for editing and the Global Challenges Research Fund for supporting the two research projects that form the basis of the paper.

## References

- Ahmad, R. (2007) *Risk management, vulnerability and natural disasters in the Caribbean. Report for the IFRC*. Kingston: Department of Geography and Geology, University of the West Indies
- Aldrich, D. (2012) *Building resilience: social capital in post-disaster recovery*. Chicago, IL and London: University of Chicago Press
- Berke, P. and Beatley, T. (1997) *After the hurricane: Linking recovery to sustainable development in the Caribbean*. Baltimore, MD: Johns Hopkins University Press
- Birkland, T. (1997) *After disaster: Agenda setting, public policy and focusing events*. Washington, DC: Georgetown University Press
- Boruff, B.J. and Cutter, S. (2007) 'The environmental vulnerability of Caribbean Island nations' *Geographical Review* 97: 24–45
- Bruglio, L. (1995) 'Small island developing states and their economic vulnerabilities' *World Development* 23: 1,615–1,632
- CDKN (2012) *Managing climate extremes and disasters in Latin America and the Caribbean: Lessons from the SREX report*. London: Climate and Development Knowledge Network
- Christoplos, I., Rodriguez, T., Schipper, E.L.F., Narvaez, E.A., Mejia, K.M.B., Buitrago, R., Gomez, L. and Perez, F.J. (2010) 'Learning from recovery after Mitch', *Disasters* 34(S2): S202–S219
- Clinton, W. (2006) *Key propositions for building back better: A report by the United Nations Secretary-General's Special Envoy for Tsunami Recovery, W.J. Clinton*. New York: Office of the United Nations Secretary-General's Special Envoy for Tsunami Recovery
- Davis, I., and Alexander, D. (2016) *Recovery from disaster*. Abingdon: Routledge
- Drabek, T. and McEntire, D. (2003) 'Emergent phenomena and the sociology of disaster: lessons, trends and opportunities from the research literature', *Disaster Prevention and Management* 12(3): 97–112
- EM-DAT (2018) The International Disaster Database, Centre for Research on the Epidemiology of Disasters (CRED). <http://www.emdat.be>, accessed January 2018
- Ferdinand, I., O'Brien, G., O'Keefe, P. and Jayawickrama, J. (2012) 'The double bind of poverty and community disaster risk reduction: A case study from the Caribbean', *International Journal of Disaster Risk Reduction* 2: 84–94
- GFDRR (2015) *Small Island States Resilience Initiative*. Washington, DC: Global Facility for Disaster Reduction and Recovery
- Ievers, J. and Bhatia, S. (2011) *Recovery as a catalyst for reducing risk: Report for UNISDR Global Assessment Report 2011*. Kobe: International Recovery Programme
- Knutson, T.R., Sirutis, J.J., Zhao, M., Tuleya, R.E., Bender, M., Vecchi, G.A., Villarini, G. and Chavas, D. (2015) 'Global projections of intense tropical cyclone activity for the late twenty-first century from dynamical downscaling of CMIP5/RCP4.5 scenarios', *Journal of Climate* 28: 7,203–7,224
- Munich Re (2017) NatCatSERVICE Tropical cyclone events in the Caribbean 1990–2016. Munich: Münchener Rückversicherungs-Gesellschaft, Geo Risks Research (<http://natcatservice.munichre.com/topten/4?filter=eyJ5ZWFyRnJybSI6MTk5MCwieWVhclRvIjoyMDE2LCJmb2N1c0FuYWx5c2lzSWQwOjMsImZvY3VzQW5hbHlzaXNBcmVhS1WQwQjE4fQ%3D%3D&type=1>), accessed January 2018
- Munich Re (2018a) NatCatSERVICE Natural catastrophes in 2017. Munich: Münchener Rückversicherungs-Gesellschaft, Geo Risks Research
- Munich Re (2018b) Hurricane Maria: More damage with each passing day. Munich: Münchener Rückversicherungs-Gesellschaft, Geo Risks Research. <https://www.munichre.com/topics-online/en/2017/12/hurricane-maria>
- Munich Re (2018c) Hurricane Irma: A close shave for Florida. Munich: Münchener Rückversicherungs-Gesellschaft, Geo Risks Research. <https://www.munichre.com/topics-online/en/2017/12/hurrikan-irma>
- Munich Re (2018d) The five largest natural catastrophes in 2017. Munich: Münchener Rückversicherungs-Gesellschaft,

- 
- Geo Risks Research. [https://www.munichre.com/site/corporate/get/params\\_E-65374147\\_Dattachment/1627347/MunichRe-NatCat-2017-Top5\\_en.pdf](https://www.munichre.com/site/corporate/get/params_E-65374147_Dattachment/1627347/MunichRe-NatCat-2017-Top5_en.pdf)
- Osei, P. (2007) 'Policy responses, institutional networks management and post-Hurricane Ivan reconstruction in Jamaica', *Disaster Prevention and Management: An International Journal* 16(2): 217–234
- Peters, E. and McDonald, C. (2010) 'The contributions and performances of Grenadian main NGOs after a natural disaster', *International NGO Journal* 6(3): 62–70
- Phillips, B.D. (2009) *Disaster recovery*. Boca Raton, FL: CRC Press
- Sou, G. and Aponte-González, F. (2017) *Making it count after Irma and María: Household relief and recovery in Puerto Rico*. University of Manchester Policy Brief
- Sword-Daniels, V., Twigg, J., Rossetto, T. and Johnston, D. (2016) 'Unpacking long-term disaster recovery processes: a case study of the healthcare system in Montserrat, West Indies', *International Journal of Mass Emergencies and Disasters* 34 (10): 113–142
- Tierney, K. and Oliver Smith, A. (2012) 'Social dimensions of disaster recovery', *International Journal of Mass Emergencies and Disasters* 30(2): 123–146
- Twigg, J., Lovell, E., Schofield, H., Miranda Morel, L., Flinn, B., Sargeant, S., Finlayson, A., Dijkstra, T., Stephenson, V., Albuérne, A., Rossetto, T. and D'Ayala, D. (2017) *Self-recovery from disasters: an interdisciplinary perspective*. London: Overseas Development Institute
- UNISDR (2015a) *Sendai Framework for Disaster Risk Reduction 2015–2030*. Geneva: United Nations International Strategy for Disaster Reduction
- UNISDR (2015b) 'Reconstructing after disasters: Build back better', Ministerial Roundtable, UN World Conference on Disaster Risk Reduction, Sendai, Japan, 14–18 March
- UNOCHA (2017) *Dominica: Hurricane Maria*. Situation Report Number 13, 14 December
- Wilkinson, E., Lovell, E., Carby, B., Barclay, J. and Robertson, R.E.A. (2016) 'The dilemmas of risk-sensitive development on a small volcanic island', *Resources* 5(2): 1–21
- Wilkinson, E., Barclay, J., White, C., Shelton, C., Lorenzoni, I., Woolhouse, G., Few, R., Forster, J., Stone, H. and Jowitt, C. (forthcoming) 'The historical drivers of disaster risk in Dominica'
- World Bank Latin America and the Caribbean Hazard Risk Management Unit (2005) *Grenada: a nation rebuilding. An assessment of reconstruction and economic recovery one year after Hurricane Ivan*. Washington, DC: The World Bank



**Overseas Development Institute**  
203 Blackfriars Road  
London SE1 8NJ

Tel: +44 (0) 20 7922 0300  
Fax: +44 (0) 20 7922 0399  
Email: [info@odi.org.uk](mailto:info@odi.org.uk)

[www.odi.org](http://www.odi.org)  
[www.odi.org/facebook](http://www.odi.org/facebook)  
[www.odi.org/twitter](http://www.odi.org/twitter)

**ODI is the UK's leading independent think tank on international development and humanitarian issues.**

Readers are encouraged to reproduce material for their own publications, as long as they are not being sold commercially. As copyright holder, ODI requests due acknowledgement and a copy of the publication. For online use, we ask readers to link to the original resource on the ODI website. The views presented in this paper are those of the author(s) and do not necessarily represent the views of ODI or our partners. This work is licensed under a Creative Commons Attribution-NonCommercial Licence (CC BY-NC 4.0).

© Overseas Development Institute 2018.