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The value of secondary use of data generated by non-governmental organisations for disaster risk management research: evidence from the Caribbean

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Abstract

For hazard prone regions such as the Caribbean, Non-Governmental Organisations (NGOs) that engage in Disaster Risk Management (DRM) generate data can be used to inform DRM research which generates a deeper understanding of the nature of risk and appropriate responses. Increasingly, researchers are encouraged to develop research partnerships with other experts to expand the DRM knowledge base, understand stakeholder perspectives and achieve value for money from research funds. Research partnerships between these NGOs and academic researchers (NGO-Researcher partnerships) can be particularly useful in advancing this knowledge base as it taps into the DRM data generated by NGOs. Using a case study of DRM research in the Caribbean region, this paper seeks to demonstrate the value of NGO-Researcher partnerships based on secondary data generated by DRM NGOs. We used a mixed methods approach, combining a scoping review of peer-reviewed articles that utilise secondary data on hurricanes in the Caribbean region with semi-structured interviews with representatives of NGOs and academic institutions in the Caribbean region. Results of the scoping review indicate that the application of secondary analysis of NGO-generated data to existing DRM research is limited. Interviews identified a general willingness of NGOs to engage in NGO-Researcher partnerships, but also noted challenges, including limited NGO capacity to share data and the persistence of more extractive forms of NGO-Researcher partnerships. The findings emphasise the importance of creating or strengthening NGO-Researcher partnerships that are based on equitable distribution of costs and benefits of research partnerships. For example, the study highlights the importance of DRM research based on partnerships between academic researchers and smaller and local NGOs which can contribute towards generation of DRM knowledge and increasing DRM effectiveness. The paper further recommends a collaboratory model to DRM research that enables transnational and participatory research between diverse stakeholders from within the Caribbean region and globally.

Keywords

37 Disaster Risk Management; Research partnerships; Secondary data; Caribbean; NGOs

38

1 Introduction

Non-governmental organisations (NGOs) play an important role in addressing many development challenges (Lewis & Kanji, 2009), including disaster risk management (DRM) which contributes to the goals of the Sendai Framework (United Nations, 2015). NGOs working on DRM can potentially contribute to initiatives that target populations that are particularly vulnerable to different disaster risks (Kim & Jung, 2016; Sledge & Thomas, 2019). NGOs mobilise resources and generate, utilise, and manage knowledge and capacity in support of DRM (Delisle et al., 2005). They also implement and evaluate DRM solutions (Khan & Rahman, 2007; Walker et al., 2005). Data collected by NGOs as part of these activities are a potentially valuable resource for research that informs disaster management. However, the actual use of these existing data by researchers to advance understanding of DRM has been limited to date. This paper uses a case study of DRM research in the Caribbean region to understand the nature of partnerships between NGOs and research institutions—specifically those based on the secondary data—and their contribution towards DRM research in the Caribbean and globally. Partnerships are collaborations between organisations that are based on mutual trust and joint action towards achievement of shared goals (Coston, 1998).

The greater research use of data generated by NGOs from DRM activities aligns with the calls for greater synthesis, sharing and re-use of existing data for academic and policy research across disciplines (Donnelly et al., 2018; Johnston, 2017). For example, data sharing underpins the Sustainable Development Goal 17 on partnerships (Global Partnership for Sustainable Development Data, 2018; United Nations, 2020). Disaster finance donors including government departments such as the UK's former Department for International Development (DFID) (now FCDO), USAID, the Danish International Development Agency (DANIDA) and the Canadian International Development Agency (CIDA), specifically encourage partnerships between government, NGOs and academic institutions to support global disaster management efforts (Bradley, 2006, 2008; Koehn, 2012; Mawdsley, 2015). In this study, these are referred to as NGO-Researcher partnerships, where 'Researcher' includes international and national academic institutions and thinktanks.

NGO-Researcher partnerships can improve value for money and impact of development work more broadly (e.g. Skovdal and Cornish, 2015; Stevens et al., 2013; Thornton et al., 2017) through the 'application of research and evidence in development policy and practice [which] can help save lives, reduce poverty, and improve the quality of life' (Court & Young, 2006, p. 85). An assessment of the extent to which existing DRM research is based on secondary data collected or held by NGOs can potentially enhance an understanding of how NGO-Researcher partnerships can be used to advance DRM research. Data collected by NGOs have been identified as a 'vital tool for disaster response', due to their role in enabling effective DRM responses (IFRC, 2017). Data are defined here as primary or secondary information relating to the nature or impact of disasters on natural and socio-economic

systems. The analysis of these secondary data, defined as existing data which were originally collected for another purpose to answer novel research questions, can add value to existing research and inform policy by incorporating contextual information, increasing depth of understanding and introducing a comparative dimension (Irwin & Winterton, 2011).

However, NGO-Researcher partnerships also need to be equitable. Equitable research partnerships are characterised by co-creation of knowledge, co-generation of shared research agenda and co-decision making, e.g. see Brun and Lund (2010). These partnerships recognise and address all partners' diverse needs e.g. skills development, advocacy, training (Aniekwe et al., 2012), as opposed to favouring one partner's needs. Partners in an equitable partnership are also aware of potential cultural differences between them and strive to build trust between them (Harris & Lyon, 2013).

This paper explores the use of secondary data generated by NGOs in NGO-Researcher partnerships using a case study DRM research in the Caribbean region. The Caribbean is one of the most hazard prone regions of the world, with hurricanes and earthquakes being the primary disasters (Rao & McNaughton, 2019). The threat posed by disasters to key development sectors such as tourism makes disaster management a priority issue. (Seraphin, 2019). The region exhibits a strong commitment to regional collaboration in DRM. DRM is reflected as a key policy issue at different levels of government (Hollis, 2015; Kirton, 2013). However, gaps still exist at the regional and national levels in DRM, for example in developing pre-disaster recovery plans (Hori et al., 2020). DRM research and partnerships are proposed for addressing these policy gaps (Lacambra et al., 2015). Consequently, interest in partnership- and research-based DRM has increased. NGOs working in the Caribbean have also launched initiatives that leverage academic research capacity to advance DRM research (Few et al., 2015). This suggests that NGO-Researcher partnerships for DRM research are taking root in the region. This research combines data from a scoping study and interviews with representatives from NGOs and research institutions to understand the extent of use of secondary data generated by NGOs in DRM research in the region and how NGO-Researcher partnerships can be used to advance this type of research.

This study finds that most published studies use secondary data generated within a specific context rather than as an integral part of the analysis. The benefits of data sharing and the need for equitable research partnerships are acknowledged by academic researchers and NGOs in the Caribbean, but there are persistent barriers to the formation of these partnerships, especially relating to NGOs' willingness to share data. The research argues that opportunities for using secondary data generated by NGOs in support of DRM research in the Caribbean and globally include ensuring that NGOs, especially smaller and local NGOs, have capacity to generate, analyse, store and share good quality data and participate equitably in NGO-Researcher partnership. This would reduce the costs of disasters and DRM actions

by tapping into existing knowledge to further understand the nature of disasters, their impacts, and the effectiveness of DRM initiatives.

2 Methods

This research focused on DRM linked to hurricanes in the Caribbean region which is the area straddling the Caribbean Sea. Data on occurrence of disasters indicate that hurricanes are experienced by most countries in the region while the other hazards tend to be localised and experienced by fewer countries in the region (López-Marrero & Wisner, 2012). Consequently, fatalities and losses from hurricanes are found to be cumulatively higher (as compared to other disasters) for the region (López-Marrero & Wisner, 2012). Other disasters such as floods and landslides, even though equally or more severe and frequent are likely to be localised within countries within the region. Some disasters such as storms and flooding are also mostly reported after hurricanes (Rao & McNaughton, 2019). As a result of the links between hurricanes and other hazards such as storms and flooding, assessments of hurricane impact and disaster management approaches to hurricanes in the Caribbean cover these related hazards.

The research used data from a scoping review (Moher et al., 2009; Peters et al., 2015) which was supplemented by data from interviews with NGOs and research institutions in the Caribbean to gain a greater understanding of both the nature of NGO data use in DRM. For the scoping review, the research considered papers that used data collected or provided through NGOs and were recorded in research databases. Scoping studies enable a relatively rapid method of ‘mapping’ existing research and can be used to identify research gaps and make recommendations for future research, particularly in cases where the body of literature has not yet been reviewed (Arksey & O'Malley, 2005; Peters et al., 2015). The systematic search focused on papers published (in English) between January 2010 and December 2018 in the online databases Scopus and Web of Science. The list of terms used in the search are presented in Supplementary Material 1.

The interviews focused on partnerships between NGOs and research institutions in the Caribbean. Interviews were conducted with individuals representing NGOs and academic institutions involved in disaster management in the Caribbean region. Requests for interviews were sent to 15 organisations in the Caribbean sub-region. Nine individuals representing NGOs, academic institutions and donor agencies in the sub-region accepted the invitations and were interviewed (table 1). Interviews focused on the application of secondary data for research and the nature of NGO-Researcher partnerships that underpinned this research. Purposive sampling was used to identify NGOs and research institutions working on DRM in the region. Interviews were semi-structured around current state of use of secondary data to inform research and the nature of research partnerships underpinning them. Nine interviews were conducted with representatives of 8 organisations (table 1) between October 2018 and August 2019. The interviews were audio recorded and transcribed. Transcripts were analysed using

framework analysis. This is a form of thematic analysis and involves identifying, analysing, and reporting patterns (themes) within data, and the method is independent of theory and epistemology (Braun and Clarke, 2006).

Table 1: List of interviewees

ID	Name of organisation	Type of organisation	Size of organisation	Operation level
NGO1	The Caribbean Natural Resources Institute (CANARI)	Environmental	Large	Regional
NGO2	The International Federation of Red Cross and Red Crescent Societies (IFRC)	Humanitarian	Large	Regional
NGO3	Jamaica Environment Trust (JET)	Environmental	Small/medium	National
NGO4	Caribbean Coastal Area Management Foundation (C-CAM)	Environmental	Large	Regional
NGO5	The Nature Conservancy (TNC)	Environmental	Large	Regional
NGO6	The International Federation of Red Cross and Red Crescent Societies (IFRC)	Humanitarian	Large	Regional
DA1	Anonymous ^a	Donor agency	Large	International
URI	University of West Indies	Academic	Large	Regional
UR2	University of West Indies	Academic	Large	Regional

^a Preferred to remain anonymous

3 Results

3.1 Characteristics of published studies

A total of 393 articles were generated through searches in Web of Science and Scopus. The screening process (see Figure 1) generated 22 articles which focused on disaster management for hurricanes in the Caribbean. For geographical location, 55% of the studies (n=12) focused on North America, with 45% (n=10) studies in Central America & the Caribbean. One study focused on more than one region. The USA and Haiti were the most frequent focus countries in the studies, with 50% (n=11) of studies focusing on the USA, and 23% (n=05) concentrating on Haiti.

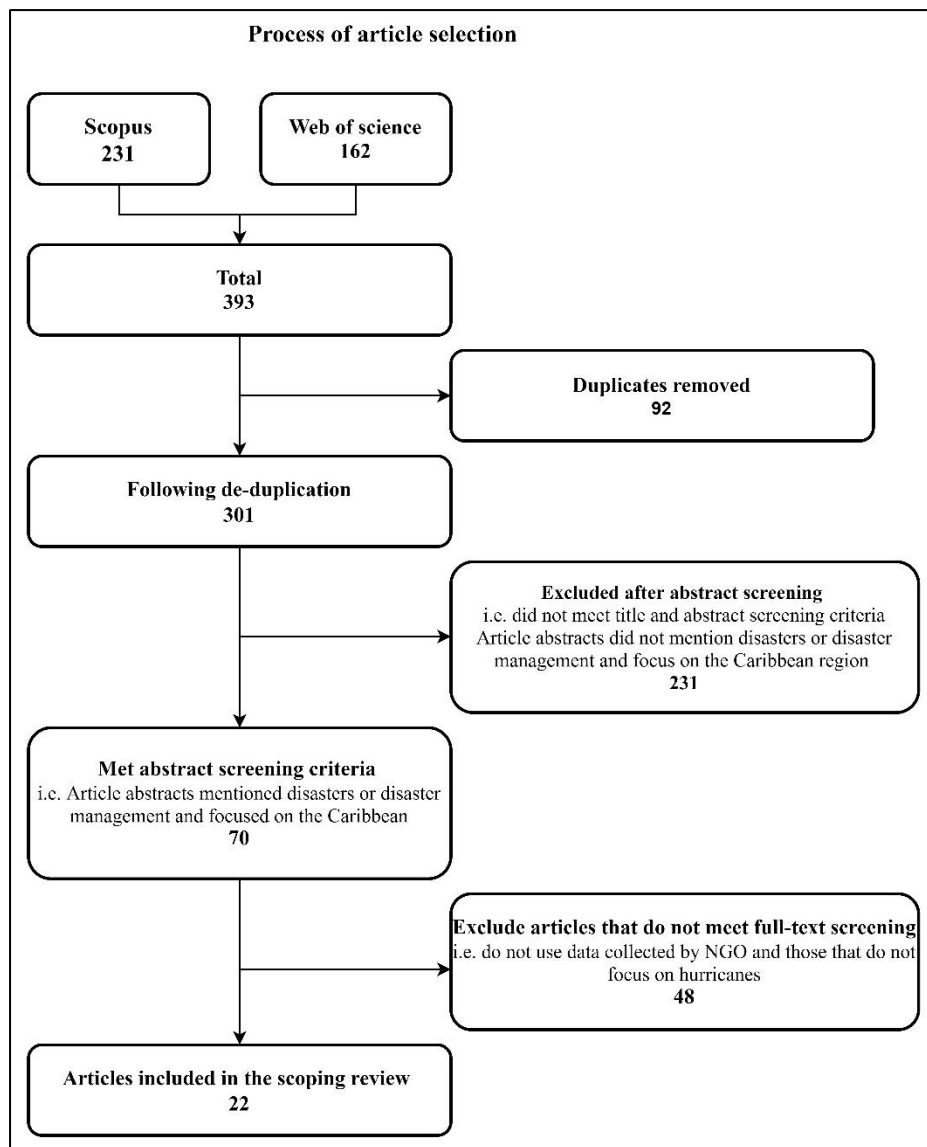


Figure 1: Flow diagram of the process of article selection. Adapted from Moher et al. (2009).

Over 86% of studies (n=19) addressed more than one type of disaster event, and the remaining three studies discussed hurricanes only. The other types of event included flooding, drought, storm, earthquake, tsunami, volcano, fire, landslide, and ‘disasters’. Of the 22 included studies, 77% (n=17) addressed the management of ‘disaster’ events in general, and these were categorised under the term ‘disasters’. Secondary data collected by the International Federation of Red Cross and Red Crescent Societies and/or Red Cross National Societies were used in 45% (n=10) of studies. Eight studies (36%) used data from more than one NGO.

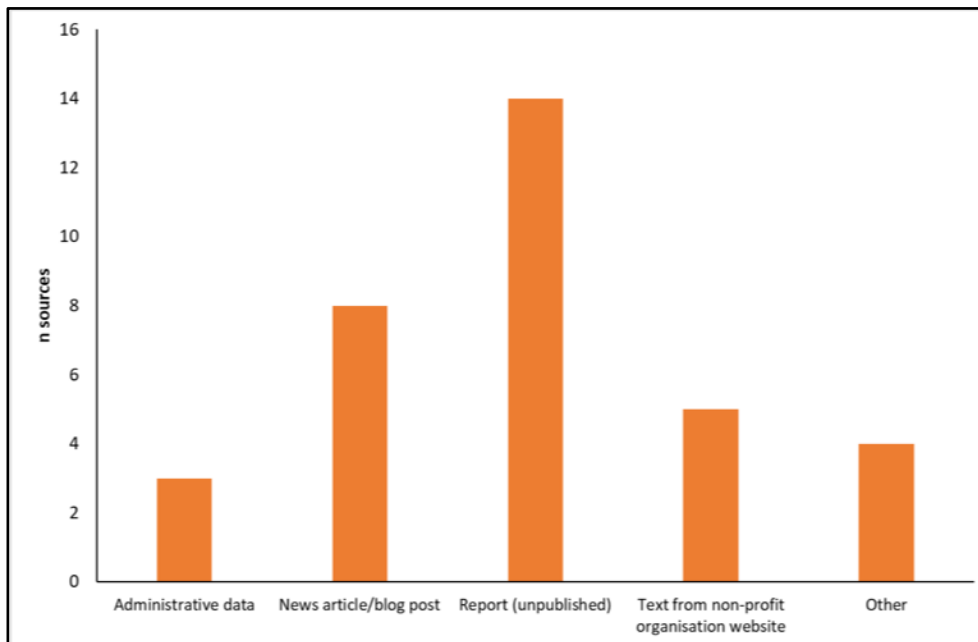


Figure 2: Type of data collected by NGOs used in the included articles (n=22). 10 studies used more than one source of data e.g. reports and website information.

The type of data were categorised into five categories: administrative data; news article/blog post; report (unpublished); text from NGO website; and other (Figure 2). Unpublished reports produced by NGOs provided a source of data in 64% (n=14) studies. The second most frequent type of data used were news articles/blog posts, followed by text from NGO websites, ‘other’ and administrative data. The category of administrative data included NGO-led statistics and databases. The ‘other’ types of data included books, interviews, and an online training course.

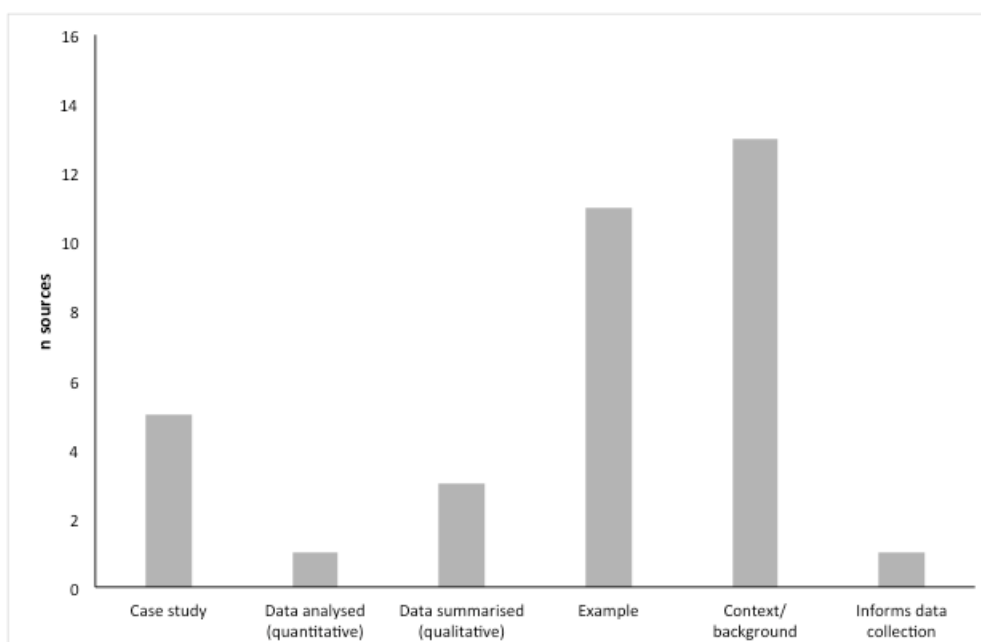


Figure 3: How secondary data collected by NGOs were used in the articles (n=22)

How the secondary data were used was categorised into six groups: case study; context/background; data analysed (quantitative); data summarised (qualitative); example; and informs data collection (Figure 3). Most frequently, NGO data were used as context/background information (38%; n=13) or examples (32%; n=11) in the academic papers included. Five studies used NGO data to inform case studies, and three studies summarised NGO data (qualitative). Only one study applied quantitative analysis of NGO data, and one study used NGO data to inform data collection.

3.2 Challenges of using NGO data in DRM research

Generally, both NGOs and academic researchers interviewed noted the importance of secondary DRM data to their work. Interviewees identified secondary data as important to their work, with UR2 and NGO3 indicating that most of the data used in their research was derived from secondary sources. NGOs and university researchers indicated that secondary data were used to inform further research. UR2 noted that these data were '*important in terms of knowing what has been done and preventing yourself from repeating work*'. This reflected the findings from the scoping review where secondary analyses were mostly used to inform context and provide examples of what had already been done by other organisations. As indicated by NGO3, secondary data analysis is also useful in understanding the basis for DRM decision making by different actors, for example in understanding the evidence used in government decision making. Three overarching themes were identified: (i) (un)willingness to share data and (lack of) awareness of existing data; (ii) quality and compatibility of secondary data; (iii) importance of partnerships for enhancing secondary data-based DRM research. The first two themes relate to challenges of using this secondary data generated by NGOs to inform DRM research while the third one relates to the role that NGO-Researcher partnerships could play in enhancing this research. These themes are discussed in the following sub-sections.

3.2.1 (Un)willingness to share data and (lack of) awareness of existing data

Qualitative data were mostly generated and shared by NGOs represented by the interviewees. Most interviewees indicated that they generated and used qualitative data even though they needed both qualitative and quantitative data for DRM research. NGOs' willingness to share data was discussed by many of the respondents. Most NGO respondents believed they were responsive to sharing their own data with peer organisations and academic institutions. NGO1 (CANARI) described an example of data sharing between different organisations involved in a regional network: '*all of that data gets put together...so we do share information*'. Interviews also indicated that NGOs were willing to share their data so that they could expand the impact of their work amongst their civil society peers. For example, NGO1 noted: '*We tend to share lessons from piloting then [synthesise them as] best practices [and] guidelines...We are promoting and advocating that civil society has a role and does good work*'. UR1 (University of West Indies) also indicated that data sharing was seen as an extension of data's usefulness

208 and prevented research from being 'extractive' by noting that 'it is important to share that data back
209 with the NGOs so they can use it for their own purposes'.

210 However, (un)willingness by NGOs and government actors in the Caribbean was pointed out as a barrier
211 to extended use of secondary data in analyses. NGO1 (CANARI) commented: 'We spend a lot of time
212 collecting and pulling together a lot of information. It's quite frustrating' adding that 'one of the main
213 things, culturally, a barrier in the Caribbean is that people do not share data', attributing this to the
214 perception that 'knowledge is power kind of thing...[It's the attitude that] because we collected it, that
215 gives us power'. NGO3 (JET) mentioned governments' unwillingness to share DRM data: 'We ask for
216 the data but we don't always get it'. This suggested that data was considered to generate leverage over
217 DRM knowledge. This sentiment was also echoed by NGO2 (IFRC) who noted that '[data] is not
218 always seen as something people should have access to...it's taken, controlled. It's locked [away] and
219 that's a big problem'. For example, UR1 and UR2 (both from the University of West Indies)
220 highlighted how some data had been commodified, mostly by government, with academic users having
221 to pay for it. URI noted that: 'There's certain data you have to pay for. Not that it's exorbitant...but it's
222 a barrier'.

223 Potential users' unawareness of the existence of secondary data and availability of data in shareable
224 formats also presented barriers to data access and use. NGO1 noted that their data were publicly
225 available on 'a platform linked to [their]...website...[which] allow[ed] discussion forums, blogging,
226 posting [and] posting of [new] data', adding that 'I don't think we do a great job of getting things out
227 there and generating enough visibility and awareness...(the data) exist[s] to be used'. NGO4 (C-CAM)
228 indicated that they were 'updating...[their] website and uploading some of...[their] reports' which
229 suggested that some of the reports were kept offline. NGO2 and URI indicated how non-digitised data
230 had been lost when disaster hit NGO and government offices respectively.

231 Online availability of data was a factor of NGOs' data analysis and storage capacity. The transformation
232 of raw data into products that could be shared in a suitable form for re-use requires the investment of
233 time and technical expertise, which are sometimes not available within NGOs. Donor requirements for
234 open data were pushing NGOs to explore options for quicker data digitisation, analysis, and storage.
235 NGO2 and URI noted that while they collected a substantial amount of data, some NGOs were limited
236 by their capacity to store and analyse data.. For example, NGO3 highlighted how availability of data in
237 online repositories was dependent on financial resource capacity. These capacity gaps prevented NGOs
238 from responding to requests for secondary data, which according to NGO6 were important especially
239 in disaster response when data was required in real time. However, NGO2 indicated that while it was
240 easier to use digital tools during data collection to enable quicker data digitisation, this risked alienating
241 the communities who were considered partners in the DRM process.

Inter-institutional/personal trust and pre-existing partnerships played a key role in determining whether requests for data sharing would be successful or not. UR1 indicated that *‘the main challenge is that if you don’t know people in the organisations who trust you then you’re less likely to get data’*. NGO3 also noted a *‘mistrust between agencies’*, further adding: *‘we don’t trust them either, they don’t trust us because they think we’re going to get these files and manipulate them in some way or present something to the public that may be inaccurate’*. Academics were thought to withhold their data for its publication value. NGO5 (TNC) detailed: *‘There’s universities that have their datasets but it’s sometimes hard to get those from the universities’* and explained that *‘it’s usually because it’s somebody’s research and they want to publish it’* whereas NGO workers *‘are not compensated by how much we publish’*. UR1 identified another reason for the general averseness to the sharing of data: *‘People keep certain data close. Vital data’*, further adding that *‘if you don’t know people in the organisations that trust you then you’re less likely to get the data’*. NGO3 highlighted an instance when governments preferentially responded to requests for data from some organisations while *‘withholding of information from...certain types of organisations’*.

Beyond willingness to share, ethical guidelines and donor regulations prevented NGOs from making raw data openly accessible. Speaking about a recent project with a UN agency, NGO1 noted an example of partnerships which involved the transfer of data’s Intellectual Property rights to the donors, with requirements that data would only be made open access and sharable *‘until it...[had] been approved [by the donor]’*. NGO1 and NGO4 indicated that in the absence of explicit consent from the research participants, raw data could not be shared with third parties. Instead, most publicly available data for secondary analysis were in the form of processed findings e.g. *‘case studies and reports, written material, [and] communication material’* (NGO1) as opposed to raw data.

However, NGOs indicated that they applied limited to no ethical guidelines during primary data collection, meaning that some data lacked consent from the communities about sharing of raw data. NGO1 noted: *‘[We] don’t necessarily get detailed consent [from the participants relating to the sharing of data]’*. NGO3 also indicated the absence of formal institutional policy on ethics of data collection but noted that they used *‘release...or waiver form[s]’* but that this was only applied to individual cases and depending on whether *‘donor[s] required lots of paperwork and pre-project planning’*. The tendency to overlook these ethical elements of data collection was linked to the urgency to initialise funded projects. UR1 stated that *‘in a lot of the projects we’ve worked on, there’s often an urgent deadline....so it’s a trade-off between maintaining the scientific integrity of the data you collect and also achieving your objectives’*. NGO2 indicated that they were developing ethical guideline policies to apply to ongoing data collection practices while DA1 indicated that they had already established ethical guidelines for their data collection procedures.

3.2.2 Quality and compatibility of secondary data

The perceived quality of data determined DRM researchers' willingness to use the data. NGO3 mentioned the low quality of *some* government data, citing its structure, depth, and lack of quality control. UR2 identified larger (and international) NGOs as likely to have better quality data adding that the choice to use NGO data (or not) therefore depended on whether users trusted the sources and methodologies used to generate the data. UR2 also pointed out the absence of metadata on ownership of data: *'To be honest I don't know who collects the data'*. According to DA1 (International donor), data validation for quality control required information of data sources. However, as indicated by NGO5, some institutions were likely to be excluded from acknowledgement for generation of primary data, especially when the data was collected through a partnership. When working with universities, NGO5 noted that *'The universities want to take a lot of the credit. So we are battling that. We want to get acknowledged for the work that we're doing so we're always trying to get credit for what we have done'*.

Quality of data was also influenced by the spatial and temporal compatibility of secondary data. According to UR2, spatial incompatibility emerged when dealing with national level data which was mostly available from government agencies and international NGOs. UR2 further added that secondary data on DRM at the community level was scarce or unavailable. The spatial incompatibility of secondary data led to researchers focusing on community level DRM often having to generate primary data. One of the reasons cited by UR2 for the absence of community level secondary data was the lack of digitisation of existing community level datasets and a lack of awareness about existing community level secondary datasets. Additionally, UR2 indicated that researchers collecting community level primary data rarely shared this data with the communities, which reduced the likelihood of researchers accessing secondary data through communities. NGO3 and UR1 highlighted temporal incompatibility of data as a limitation, which emerged when data were either too old or released too late to be useful.

3.2.3 Importance of partnerships for enhancing secondary data-based DRM research

Overall, greater collaboration in research was perceived by interviewees as a reflection of their ethos and a contribution to their institutional goals. NGO1 noted that they were striving to *'be a knowledge broker...[by ensuring] that information...[is] easily and freely available'*. NGO2 explained that they believed that *'the data collected has to feed back into the broader national and international system. It's not for us to use, it's to share'*. NGO3 and URI noted that collaboration between actors in use of secondary data analysis was necessary, with URI highlighting the need for *'greater participation or collaboration between the state and NGOs'*.

When asked about ways to overcome the challenges in use of secondary DRM data to inform DRM research, suggestions included: *'[Data] portals and clearing houses to consolidate information'*

(NGO1); and a *'national level programme where data, in all forms, are collected and that there is a process for managing the data to ensure that it is of a certain quality or in the formats that you want it to be in'* (UR1). UR2 recommended the development of a *'data hub'* that would enable the storage of data *'in a place that is easily accessible to the public or a researcher'*.

4 Discussion

One of the key goals of research partnerships is knowledge co-creation (Young & Freytag, 2020). Existing work has already raised a number of challenges for equitable and effective NGO-Researcher partnerships, e.g. power dynamics between NGOs and academic institutions (Buchy & Ahmed, 2007), ethics concerns relating to the re-use of data (McDermott et al., 2019) and the ability of these initiatives to achieve shared and locally relevant objectives (Sellers, 2017). However, Sellers (2017) explored NGO-Researcher partnerships from the vantage point of primary data collection. Here we consider such partnerships in relation to the use of secondary data. Although the re-use of data more generally has been extensively discussed in existing research (Bishop, 2007; Hammersley, 2010), we investigate the potential use of secondary data specifically held or generated by NGOs to support disaster management.

Our results from the scoping review and key informant interviews indicate that while academic researchers use secondary data held or produced by NGOs and perceive these data as potentially useful for informing DRM, evidence of the use of such data in academic literature is limited to informing contexts as opposed to explanatory research. NGOs and academic institutions also encounter various challenges in storing and analysing secondary data. The following sections will explore why this is so and discuss how NGO-Researcher partnerships can be used to advance the use of secondary data generated by NGOs to inform DRM research.

4.1 Nature of NGO-Researcher partnerships based on secondary data

The findings demonstrate the presence of hierarchies of secondary data in DRM research based on the type of data (qualitative or quantitative) and perceptions of the quality of data. The NGOs from which secondary data were obtained in the scoping review articles included a range of different organisations, ranging from international to national. The relatively higher frequency of studies using data collected by the IFRC and its national societies indicates their unique role in generation of data, but also the ability of these NGO platforms (e.g. the IFRC's Vulnerability and Capacity Assessment repository) to be reached by different research institutions. Data collected by other well-known international NGOs, including Oxfam and Habitat for Humanity, were also used in multiple studies. Quality of data is determined by the methodological rigor, ethical guidelines followed during data collection, data's spatial and temporal compatibility and the data analysis and storage tools used. NGO capacity to meet these data quality standards depends on the size of the organisation (Sledge and Thomas, 2019).

Secondary data that are perceived as questionable e.g. lacking sound methodological rigour or stored in non-online formats, are avoided by researchers. This favours the use of secondary data from larger and international NGOs such as IFRC, which are likely to have established ethical guidelines for primary data collection and be better resourced to support data analysis and storage.

The presence of data hierarchies suggests that researchers are likely to develop research partnerships with NGOs that they perceive as having higher credibility and quality. These NGOs are usually likely to be larger international NGOs, which means that smaller and local NGOs are less likely to be part of NGO-Researcher partnerships. In the backdrop of a shifting approach to international development that is driven by the desire for research-informed development (Gooding et al., 2018), this bias creates a negative feedback which affects smaller NGOs who experience higher competition for funding resources and are likely to exhibit capacity gaps (Sewordor et al., 2018). For example, NGOs that have fewer research outputs are less likely to acquire funding from certain types of donors and are also likely to have research capacity gaps. These data hierarchies correspond to knowledge hierarchies that exist within international development. Knowledge by NGOs and researchers perceived as local e.g. community level or knowledge from the Global South is less likely to be considered credible and therefore treated as lesser evidence (Newman et al., 2019). These hierarchies are created and sustained by power inequalities between researchers and institutions engaged in collaborative research (Landau, 2012; Zingerli, 2010).

Addressing the bias that generates these hierarchies is particularly important for the multi-stakeholder landscape of DRM in the Caribbean (Cooper & Cooper, 2015). Knowledge management has been highlighted as a critical tool for enabling the knowledge generated Research based on secondary data can contribute towards knowledge management through re-using existing knowledge to advance DRM in the region (McNaughton & Rao, 2017). Knowledge sharing makes disaster management more effective through standardisation of knowledge for a regional approach to disaster management in the Caribbean. This can further contribute towards reducing the costs of disasters by recognising and leveraging existing knowledge on disasters to generate lessons and insights about future disasters and DRM responses.

4.2 Expanding the application of secondary data in DRM research

The results from this study provide insights into the type of secondary data-based DRM research and the level of analyses that is conducted in the Caribbean. Use of secondary data can range from being descriptive to taking an explanatory approach (Figure 4). Descriptive DRM research involves the use of secondary data to provide context or establish a knowledge baseline (Irwin & Winterton, 2011), which requires little analytical rigour. Facts can be presented without necessarily acknowledging the source of data. The descriptive nature of the research means that there is limited engagement with the

process of data generation; that is, researchers conduct minimal data quality and validation checks. Explanatory DRM research uses secondary data as a core basis for analysis, where new research questions are applied to the secondary data and new themes emerge (Corti & Thompson, 2006). Concerns relating to the likelihood of misinterpretation of data and fulfilment of ethical guidelines for re-use are higher for this type of research (Sherif, 2018) and hence DRM researchers intending to use secondary data validate the quality of data and recognise the source of secondary data.

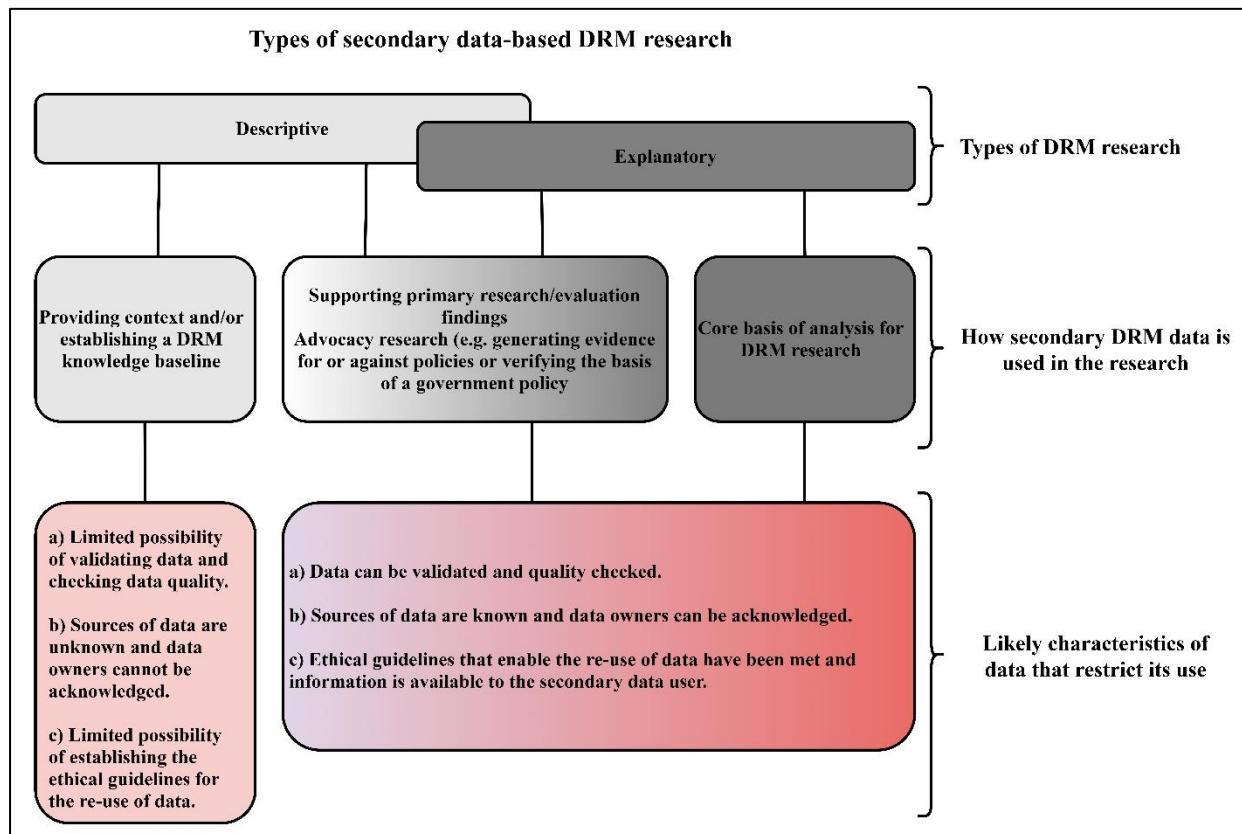


Figure 4: Types of secondary data-based DRM research

The scoping study and interviews indicate a higher preference for qualitative secondary data by researchers in the region and the limited application of analytical rigour in these analyses. Most secondary data-based DRM research is descriptive. Ensuring that existing secondary data are used to support explanatory research requires that the quality and ethical guidelines of data are met and made available to researchers. However, researchers also need to be sensitized on the potential use of these data, especially as government and NGOs in the region continue to make advancements towards a common framework for knowledge management which include development of databases to store data on DRM (Hori et al., 2020).

4.3 Creating and strengthening secondary analysis-based NGO-Researcher partnerships

The role of NGOs in global development is changing. Their role in development research is growing, through encouragement by funders to participate in the generation and application of knowledge (Delisle et al., 2005). Data generated by NGOs are now becoming more publicly available (Church, 2017). For example, development interventions funded by major donors like USAID and World Bank are required to make data available to the public (Linders, 2013). The findings of this research indicate that a desire for open data has spread amongst actors in the Caribbean region with increasing willingness amongst NGOs to make their data available to support DRM research. This research indicates the presence of informal and unequitable NGO-Researcher partnerships which are beset by challenges e.g. those linked to the generation and sharing of secondary data and lack of proper acknowledgement of NGOs' contribution towards research based on secondary data. Equitable NGO-Researcher partnerships, which ensure that NGOs benefit equally from DRM research, are therefore necessary.

For NGO-Researcher partnerships for DRM research based on secondary data, an entry point would be addressing existing capacity gaps within NGOs that support DRM in hazard prone regions such as the Caribbean. This involves improving the capacity of NGOs to generate, analyse and store secondary data, for example through strengthening NGOs' capacity to design robust data generation approaches to improve data quality. NGO-Researcher partnerships that are based on secondary data should respect the knowledge of NGOs, be driven by the desire to co-create knowledge (e.g. through setting shared research agendas) and support learning by NGOs that produce the data (Fransman, 2019). This means that NGO-Researcher partnerships in DRM research should not be viewed as an end goal, but as a process, i.e. enabling societies to manage disasters in a more informed and effective way.

One option suggested by NGO1 (CANARI), UR1 and UR2 (both from the University of West Indies) is the creation of central data repositories where DRM data from different levels can be deposited all DRM actors in the Caribbean region and which researchers can use as a starting point when looking for appropriate datasets. This would require the development of processes for data validation and quality control and would offer equal opportunities for smaller NGOs to build their capacities and enable them to engage in NGO-Researcher partnerships. This is especially important for Community Based Organisations (CBOs) in the Caribbean which are usually overlooked during DRM planning (Collodi et al., 2021). A repository with a framework for data access, sharing and use would also have clear guidelines on application of ethical principles in re-use of data and proper acknowledgement of NGOs roles in data generation and would contribute towards enabling equitable NGO-Researcher partnerships.

Facilitating and strengthening these NGO-Researcher partnerships requires that a diverse range of stakeholders, including academic institutions, NGOs and governments representing different countries

and regions. Collaboratory approaches can be used to accelerate this process. Collaboratory models leverage information technology to support collaborative research which is ‘more transnational and participatory ...[and] allows multiple stakeholders to work together to solve problems that require innovative solutions’ (Allen-Meares et al., 2005, p.29). Such collaboration systems and platforms should be sensitive to the needs of different types of researchers and NGOs (Camacho, 2011). This will reduce the risk of NGO-Researcher partnerships overlooking data from smaller and local NGOs due to the perceived lower hierarchy placed on knowledge generated by these organisations.

5 Conclusions

DRM research led by academic institutions is important in supporting DRM practices in hazard prone regions like the Caribbean. This paper set out to understand the value of secondary data collected by NGOs in DRM research in the Caribbean. Data were collected through a scoping review of academic DRM research conducted in the region to understand the extent to which secondary data have been used to inform this research and through interviews with representatives from NGOs and academic institutions in the Caribbean region. Use of secondary data has been mainly for descriptive purposes e.g. in providing context to other research, with limited use in explanatory research. The interviews indicated NGO and researcher willingness to develop research partnerships based on secondary data. However, challenges relating to sharing of data, such as NGOs’ limited data storage and analysis capacities, were identified. Large international NGOs were identified as more advantaged in addressing these capacity challenges, which therefore increases the likelihood of re-use of their data. Existing NGO-Researcher partnerships, especially those involving smaller NGOs, were likely to be characterised by data extraction and were hence inequitable. This paper suggests that strengthening NGO-Researcher partnerships is critical in enabling greater use of secondary data in DRM research but requires increased capacity of NGOs engaged in DRM, especially those in the global South to generate, store, analyse and share good quality data with academic researchers intending to re-use these data. It also highlights the opportunities that a collaboratory model to DRM research offers, through participatory and transnational collaborative research and practice.

Disaster management is complex (Asghar et al., 2006). It involves a variety of actors, all of whom must coordinate to enable efficiency in disaster management (Twigg & Steiner, 2002). Understanding disasters and ways to manage them requires interdisciplinary knowledge (Trim, 2004). This is particularly important for Caribbean DRM which can benefit from DRM research based on secondary data through knowledge sharing across locations which would in turn strengthen regional collaboration on DRM. Partnerships that link research evidence to policy and practice in the region accelerate this process. This research has found that NGO data on disaster management in the Caribbean is underused, meaning that the benefits for DRM from wider data sharing are not currently being realised.

The findings of this research necessitate a greater emphasis on Caribbean NGO capacities to generate, store and share DRM data with their peers and researchers. The multi-stakeholder Caribbean landscape could benefit from more efficient approaches to knowledge management, which would reduce the costs of disasters and DRM responses. As this study has demonstrated, the application of secondary data that is generated by NGOs can potentially enable the re-use of knowledge to advance DRM research. However, this requires that equitable partnerships between academic researchers and NGOs are built. These should particularly target smaller and local NGOs which would otherwise be overlooked due to the perceived low level these NGOs occupy in the hierarchy of knowledge. Their engagement in NGO-Researcher partnerships is also likely to be inequitable. Capacity development for these NGOs is also essential, which will enable them to generate, analyse, store and share DRM data that can form the basis for further DRM research based on secondary data. Further research on the use of collaboratory models in DRM is necessary, especially with respect to how these models can build on existing DRM regional collaboration platforms such as those that are present in the Caribbean region.

Supplementary materials

Supplementary material 1: Database search terms

Supplementary material 2: List of peer reviewed articles used in the scoping study

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