

Quantifying climate change-relevant humanitarian programming and spending across five countries with high vulnerability to disaster

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Climate change is increasing the severity and the frequency of natural hazards and associated disasters worldwide, yet there is little data tracking how and whether it is being addressed by humanitarian assistance initiatives. Drawing on publicly available United Nations programme data and vulnerability indexes, this study pilots a novel approach to identifying and quantifying the prevalence of climate change-related humanitarian programmes from 2016–18 in five disaster-affected countries. The funding levels of proposed and undertaken interventions were analysed within specific programmatic sub-areas and across clusters. The study found that 1.8 per cent (99 of 5,558) of projects included in humanitarian proposals reviewed during the research have a climate change-related component. Of 1,361 funded projects, 40 of these were climate change-related and received funding. The methodologies tested here to assess and classify climate change-related humanitarian programmes could be expanded to support further tracking of humanitarian responses to climate change across operational contexts.

Keywords: adaptation, climate change, finance, funding appeals, humanitarian, mitigation, text analysis

Introduction

Mounting quantitative and qualitative evidence demonstrates that climate change is affecting the frequency and severity of disasters around the world, including those pertaining to armed conflict (Gleick, 2014) and those triggered by natural hazards (NASA, 2019). Currently, however, there is an absence of data on how, and to what extent, humanitarian assistance programmes are seeking to address climate change as part of international and domestic responses to disasters. In contrast, related sectors, such as international development, have collected information and analysed programmatic trends associated with climate change over several years, notably through the development of metrics and taxonomies (Hsu et al., 2019). Linked to the examination of programmatic climate change in this sector, areas requiring further study and understanding have also been identified (Tompkins et al., 2018).

This study seeks to address the absence of climate project tracking and expenditure monitoring from humanitarian assistance programmes by prototyping a method for classifying spending practices *related to climate change* based on programmatic data and

vulnerability indexes compiled by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). As a leading global entity responsible for the coordination of humanitarian responses to disasters, OCHA can be viewed as a proxy for the contemporary state of disaster engagement. This paper, therefore, assumes that programmes that fall under its purview largely reflect contemporary forms of engagement across the humanitarian sector. A total of 5,558 proposed humanitarian projects from five selected countries (hereafter, ‘study countries’)—Iraq, Pakistan, Somalia, South Sudan, and Syria—during the time frame of 2016–18 were evaluated.

Ninety-nine (1.8 per cent) of the 5,558 projects were found to be climate-change related. Of these, 40 received funding, amounting to a total of USD 184.0 million over three years. This constitutes 3.2 per cent of total project funding (USD 5.7 billion) provided to these five countries by donors between 2016 and 2018.

Although limited to representation in five countries, the review of the programme proposals illustrated a lack of common terminology or specific phrases to indicate whether a given project was climate change-related (CCR). Such projects in the study countries were limited in number and were most predominant within livelihood support initiatives and/or the preparation phase of disaster management.

This study proposes an initial framework to quantify donor expenditure, locate the projects within the humanitarian cluster system, and determine which phase of the disaster management cycle (DMC) they facilitate. Its methodologies can be expanded to additional countries and may be used to understand how humanitarian climate change efforts evolve over time. Given that increasing frequency and severity of disasters are anticipated consequences of climate change in decades to come, tracking, measuring, and comprehending how humanitarian programming is affected by these trends over time may help to improve responses to these events.

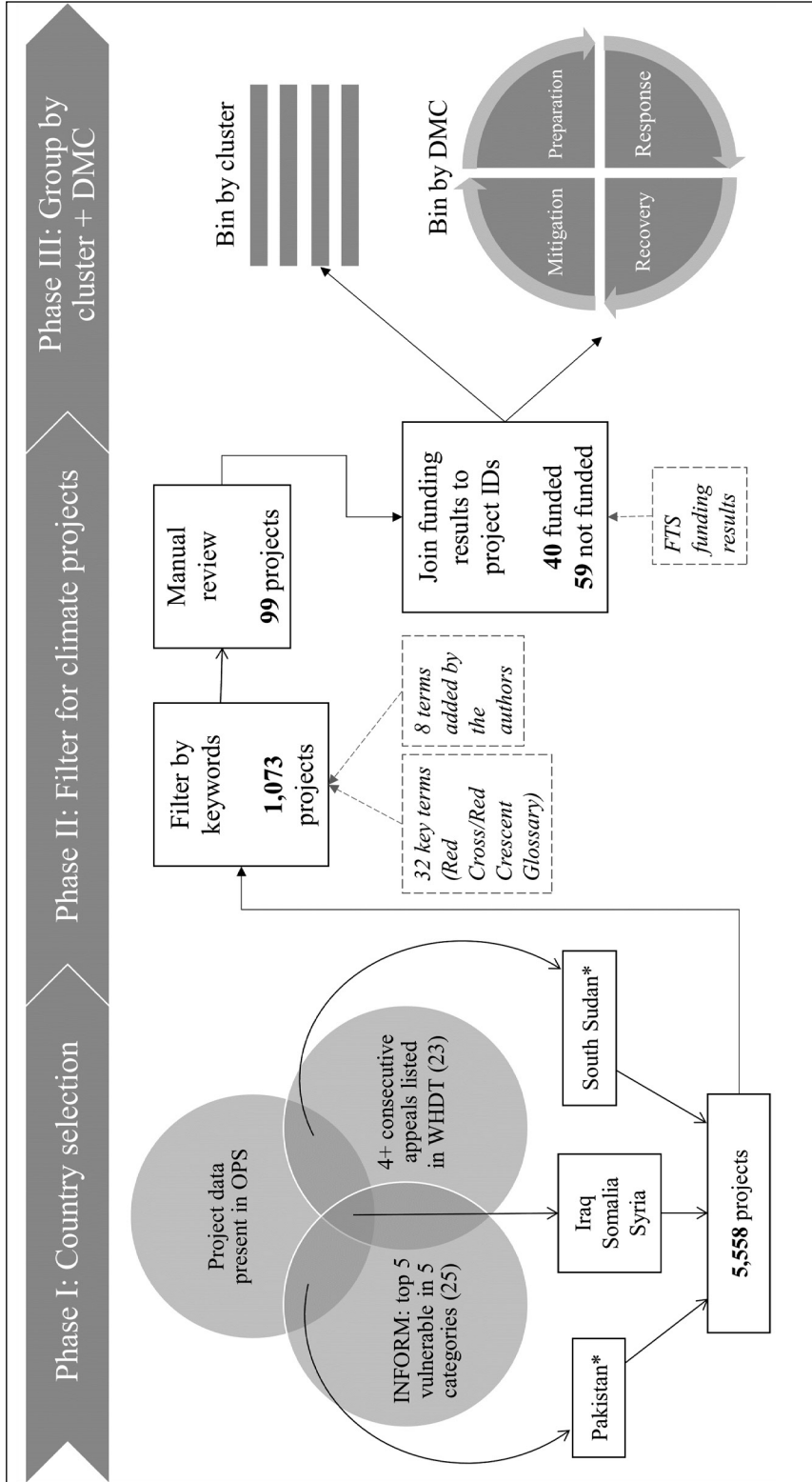
Study terminology

For the purposes of this study, the following valuations and terms are employed. USD inflation unadjusted figures are used for monetary values, and a CCR project refers to a proposed plan of action that recognises and addresses the effect of climate change on disaster response work, identified through the review process detailed in the next section. Not all proposed projects attracted donor funding or pledges; projects that received any amount of money are referred to as ‘funded projects’. Summary statistics discussed here refer only to projects in the study countries from 2016–18.

Methodology

The methodology process flow is shown in Figure 1. To understand the prevalence of CCR characteristics within projects funded by the international donor community, this pilot study focused on reviewing project data for five selected countries within OCHA’s Online Project System (OPS).² The OPS database includes all projects of United Nations (UN) agencies, such as the World Food Programme, along with those by non-governmental organisations such as Save the Children. Data were sourced from

Figure 1. Schematic illustrating the methods employed in this study



Notes: OPS=Online Project System; INFORM=Index for Risk Management; WHDT=World Humanitarian Data and Trends; and FTS=financial tracking system.

Source: authors.

publicly available domains and limited to the last three available years (2016–18) to capture recent trends. Country selection was capped at five because of the limited availability of data and the feasibility of initial application of pilot programme analysis. Climate change themes within project descriptions were identified using a two-step analysis: first by filtering project descriptions for CCR keywords; and later by manually reviewing those projects found to have climate change-components to correct for false positives. The resulting CCR projects were then categorised in a DMC phase and assessed to pinpoint the amounts of funding awarded and the number of people targeted.

Data sources

OCHA is the UN-mandated coordination focal point for governmental and non-governmental humanitarian actors responding to global, regional, and certain national disasters (OCHA, 2012b). The data collected and generated by the organisation thus represent an otherwise unavailable source of information for studying global disaster-related spending trends. In 2018, for instance, approximately USD 15 billion of funding was dispersed across 30 countries by donor governments and other entities for disaster-related projects (FTS, 2018).

Every year, aid organisations in particularly vulnerable countries work with governments to develop response plans to disasters or emergencies as part of the annual Consolidated Appeals Process. Appeals contain detailed project proposals and resource requirements. Donors provide funding directly to organisations managing projects (OCHA, 2012a). OCHA maintains the OPS that contains detailed project descriptions, budgets, and counts of people targeted. Data on the amount of funding actually received by projects is tracked in the Financial Tracking Service (FTS) database (FTS, 2016, 2017, 2018). Detailed project descriptions in the OPS enable the identification of climate projects, and pledge data in the FTS allows for analysis of which projects received funding—not all proposed projects get donor funding, and those that do often do not obtain their full budgeted amount.

A CCR project is defined in this study as an explicit written claim in the body of an OPS project proposal that it will either:

- mitigate or prevent the future direct effect of an impact or event perceived to be related to climate change;
- respond to the recently incurred effects of a climate change-induced impact or event; and/or
- support adaptation and resiliency measures for communities anticipated to experience disasters related to conflict or natural hazards that are exacerbated by the effects of climate change.

A review of current humanitarian and disaster response literature revealed no consistent terminology to describe projects containing these claims and no consistent definitions of terms such as ‘climate change’ or ‘disaster’. In line with broader climate change discourse, this study included mitigation, adaptation, and resilience-building efforts under its CCR designation (IPCC, 2012).

Country selection

A country selection methodology was designed for this project based on three criteria: four consecutive requests for humanitarian aid between 2015 and 2018; vulnerability to climate-related disasters; and data availability for proposed projects.

Consecutive funding requests were collated using four editions of *World Humanitarian Data and Trends* (OCHA PDSB, 2015, 2016, 2017, 2018), vulnerability rankings from four versions of the *Index for Risk Management* (INFORM) (EC JRC, 2016, 2017, 2018, 2019), and project-level data from the OPS.

The list of countries (23) with recurring requests in *World Humanitarian Data and Trends 2018* (OCHA PDSB, 2018) was then matched with the INFORM database. The former is OCHA's annual flagship publication and highlights key *trends* in humanitarian crises, their underlying factors, and the actors engaged in prevention, response, and recovery, whereas INFORM is a joint project between the UN and European Union partners that draws on a multitude of indicators to evaluate the vulnerability of countries to a wide range of disasters. The index provided the means of quantifying the level of risk faced by countries across three dimensions: hazards and exposure; vulnerability; and a lack of coping capacity.

For each year (2016–19), the top five countries were selected from each of the index's natural, conflict/human, flood, drought, and tropical cyclone categories, resulting in a list of 25 countries per year. These categories were selected owing to their perceived correlation to climate-related disasters. Intra-year country repetitions were omitted, and countries consistently present in these four years were emphasised. In total, there were eight countries that made consistent funding requests from 2015–18 and which appeared in the annual INFORM reports.

Of these eight potential target countries, only three had project-level data available in the OPS from 2016–18: Iraq; Somalia; and Syria. To supplement these selections, countries were examined that had data available within the OPS and that came as close as possible to meeting the INFORM database and consecutive requests criteria. South Sudan satisfied the greatest number of conditions, with consecutive requests in 2015–18 that were included in INFORM report selections for 2017–19. Pakistan, meanwhile, was consistently present in INFORM report selections for 2016–19 yet had just one request, in 2017.

Despite the data availability limitations, these five countries represent the states most vulnerable to climate-related disasters according to INFORM metrics, and they are among the top funding priorities of the humanitarian aid sector. They had a cumulative total of 5,558 OPS projects, with counts varying for each, as shown in Table 1. Funding data were downloaded from the FTS and joined with the project dataset using each project's unique identification code.³

Study country backgrounds, 2016–18

South Sudan has the third largest refugee crisis in the world, behind Syria and Afghanistan. An influx of refugees from the conflict in neighbouring Darfur, in addition to 1.9 million internally displaced persons (IDPs) (Mercy Corps, 2019) from

a civil war that has continued since 2013, have created an ongoing disaster (Council on Foreign Relations, n.d.). The country experiences the continual challenge of water scarcity, contributing to food insecurity. Inadequate precipitation in 2018 meant that only 52 per cent of cereal production needs were met in that growing season. Food insecurity is expected to be exacerbated by climate change, as rainfall amounts decrease and temperatures increase, making ‘normal’ years even drier (Ministry of Foreign Affairs of the Netherlands, 2019b). South Sudan is one of the most food-insecure nations on the planet, with approximately seven million people severely food insecure and around 21,000 experiencing severe famine. An estimated 860,000 children were thought to suffer acute malnutrition in 2019 (Ryan, 2019). South Sudan experienced a famine in 2017 and is being actively evaluated for another in 2019.

Somalia has been in a state of complex disaster for many years owing in part to continual destabilising conflicts, coupled with intense food security concerns. The unpredictability of the Gu rainy season (April–June) has been a driver of food insecurity. These rains have been below average since 2015, with the exception of 2018. Climate change is expected to make weather more extreme, both in terms of the delayed onset of rains and the increased risk of flooding owing to intense rain events. The country also faces the challenges of deforestation, desertification, overgrazing, and soil erosion, each of which will be augmented by climate change (UNDP, n.d.). In turn, this may intensify conflict as resources become scarcer and disputes result (Kuele and Miola, 2017). As of 2019, there are 2.6 million IDPs in Somalia, with 4.2 million people in need and 3.4 million targeted for assistance, and an estimated one million children are expected to suffer acute malnutrition in 2019 (OCHA Somalia Humanitarian Country Team, 2019).

Syria has been embroiled in a devastating civil war since 2011, generating one of the world’s largest refugee crises. There are 6.7 million IDPs, and an estimated 90 per cent of them are unable to find shelter in camps (UNHCR, n.d.). This war is driven in part by climate variability and the scarcity of water resources. It began after a prolonged five-year drought (2006–11) that caused crop failure and economic dislocation, and which drove poor farmers to urban centres. The Food and Agriculture Organization of the United Nations (FAO) reported in 2012 that three million people were in ‘urgent need’ of food assistance because of ‘unsustainable’ agricultural water use (Gleick, 2014).

Pakistan experiences recurrent weather-related disasters and is regarded as one of the most food insecure countries across the globe, resulting in it contending with continued issues of chronic malnutrition. There are an estimated 2.7 million refugees from Afghanistan in Pakistan who are also in need of humanitarian aid (ECHO, 2019). In 2019, it was listed as the seventh most vulnerable country to climate change due to its exposure to extreme weather, producing massive floods and droughts (Hussain, 2019). Karachi suffered a heat wave in 2015 that was so severe it claimed the lives of approximately 1,300 people. Low-lying agricultural areas are also vulnerable to sea-level rise, saltwater intrusion, and cyclones (Nazar, 2016).

Iraq has witnessed intense bouts of conflict in recent years, exemplified by the war with the Islamic State of Iraq and the Levant (ISIL) from 2013–17. The impact has

been severe: there are 1.8 million IDPs and 6.7 million people requiring humanitarian assistance (OCHA Iraq Humanitarian Country Team, 2018). Iraq is dependent on the Tigris and Euphrates Rivers for its water security and agriculture irrigation, both of which originate in Turkey and over whose headwaters Iraq has no control. Upstream developments on these waterways that limit or diminish flow, in addition to increasing drought, decreased rainfall, rising temperatures, and sand and dust storms, are expected to compound existing conflict and governance challenges in the country (Ministry of Foreign Affairs of the Netherlands, 2018a).

Review of proposed and funded projects in the five study countries

Project descriptions were analysed for a count of CCR keywords to identify relevant projects within the total data set. Projects with two or more keywords were reviewed by the authors to confirm whether they were CCR. The list of keywords used to pinpoint CCR projects is sourced largely from the *Red Cross/Red Crescent Climate Guide* (IFRC, 2007), which defines 38 terms relating to climate change.⁴

An additional eight climate-related terms were identified and added after project review: climactic; drought; environmental; famine; flood; seasonal; sustainable; and weather. These were not included in the *Red Cross/Red Crescent Climate Guide* (IFRC, 2007), yet they describe the potential impacts of climate change. A simple binary logic was used for the keyword analysis, indicating ‘true’ if a given keyword appeared in a project description at least once, and ‘false’ if not.

The initial keyword search indicated that 1,073 of the 5,558 projects included at least two keywords (see Table 1). As the use of each term is context-specific, the authors manually reviewed each of these 1,073 projects to determine if they truly related to environmental conditions (as opposed to the ‘investment environment’, for instance), and to distinguish between climate versus weather responses. Weather refers to short-term atmospheric conditions, such as rain, snow, or wind, whereas climate is the long-term average of these conditions; the weather generally expected over time (NASA, 2019).

In this paper, projects were considered to be CCR only if they made explicit reference to climate change, mentioned an expected deterioration in climatic conditions, or referred to more frequent extreme weather events. One project⁵ notes in its outcomes that ‘[a]t least 80% [of beneficiaries] receive sensitization on modern agricultural practices, land rights, . . . *climate change/disaster risk reduction strategies*, peace & reconciliation etc.’ (UNOPS, n.d., emphasis added). Another⁶ underscores the objective of ‘[r]educed *flood and drought impacts* through the use of FAO early warning information’ (UNOPS, n.d., emphasis added).

The humanitarian literature lacks consensus on what a CCR project entails. Marin and Naess (2017, p. 20) offer a suggestion that aligns with the authors’ definition of CCR: projects ‘integrating climate change impacts on hazard frequency’ or projects responding to ‘[d]isasters more often seen as linked to climate change’ indicate the growing convergence of disaster risk reduction (DRR) and climate change. By contrast, the Joint Climate Change Program, a coalition of 40 NGOs in the Netherlands

including Oxfam and the World Wildlife Federation, operates under a broader definition of ‘climate change related’. Its project portfolio includes river dams, solar panels, hiking and cycling routes in the Netherlands, and energy-efficient light bulbs (IFRC Climate Centre, n.d.).

Donor data from the FTS system were analysed to understand how many proposed projects received funding. Funding data were compared to planned budgets from the FTS to determine what proportion of total funding was allocated to CCR (versus non-CCR) projects, and to evaluate how much funding each individual project received relative to its planned budget. Forty of the 99 projects with a CCR component received funding, but 93 per cent of them received less than their budgeted amounts—a point discussed further in the ‘Project funding proportions relative to budget’ subsection below.

The 99 CCR projects were each categorised by the authors in one or more phases of the DMC. The DMC classifies emergency actions chronologically relative to the hazards they manage. Mitigation and Preparedness are anticipatory actions taken to diffuse concerns about an event, whereas Response and Recovery are actions taken in response to an event. Projects are not grouped in a DMC phase in their original proposed format. Through a qualitative review, the authors coded projects into the categories listed in Table 5, based on DMC criteria as established by OCHA (OCHA ROAP, 2018).

Findings

The evaluation of the project data revealed that CCR programmes were not highly represented in proposals, which were mostly in the livelihood cluster, centring on the Mitigation and Preparedness phases of the DMC. Additional findings resulted, *inter alia*, in insights into the level of funding allocated to CCR programmes in the five study countries, estimates of the number of people to be targeted by the projects, and the identification of frequent keywords used in the project descriptions of proposed CCR activities.

The first subsection below discusses the number of CCR projects across each of the five countries. The second subsection includes project budgets and funding totals, for both CCR and non-CCR projects. The third subsection analyses projects based on the proportion of the proposed budget actually received in funding. The fourth subsection reviews the number of people targeted by proposed and funded projects. The fifth and sixth subsections consider the distribution of funded CCR projects by cluster and DMC phase, respectively. The seventh subsection presents the frequency of CCR keywords, in total and by country.

In summary, 1.8 per cent of proposed projects (99 of 5,558) were confirmed as being CCR within the parameters of the study methodology. These projects made up three per cent of the proposed budget, USD 658.3 million of USD 22.3 billion, targeting up to 35.6 million people. Somalia had the most CCR projects in its 2016–18 proposals among the five study countries, 48 in total, whereas Iraq had the fewest, just two.

Only USD 5.7 billion in funding was received by the five study countries for 2016–18, as compared with their combined funding request of USD 22.3 billion. Only 1,361 of 5,558 proposed projects received any funding. This figure includes 40 of 99 proposed CCR projects, meaning that 40.4 per cent of CCR projects were funded versus just 24.5 per cent of projects overall. CCR projects comprised 3.2 per cent of project funding, targeting up to 24.5 million people.

The number of CCR projects

Table 1 (below) shows the number of CCR projects. Of the total number of proposed projects, 1,073 of 5,558 (19.3 per cent) had two or more climate change keywords in their descriptions. Upon review by the authors, 974 of these were excluded, however, as their project descriptions did not target climate change. This left 99 confirmed CCR projects, 1.8 per cent of the total (5,558).

As noted above, only 40.4 per cent of CCR projects (40 of 99) received any funding, as compared with the 24.5 per cent (1,361 of 5,558) of projects funded overall in the study countries. The data suggest that containing CCR language may correlate with a higher likelihood of a project receiving funding. For instance, while just three of Pakistan's total proposed projects in 2017 were CCR (2.0 per cent), these three projects comprised 16.7 per cent of Pakistan's funded projects for the year (3 of 18). Further analysis of a larger sample size, using statistical techniques, would be required to support this hypothesis. Projects are considered to be funded if they received any funding at all, regardless of the amount.

Somalia in 2017 had the highest number of proposed CCR projects: 22 of 462 (4.8 per cent). By contrast, Iraq in 2016 and 2018 did not propose any CCR projects. In total, Somalia had the most CCR projects found in proposals during the study period, 48 of 99.

Within the 1,361 funded projects, the majority of CCR projects (22 of 40) were in Somalia, followed by 13 in South Sudan; Iraq had just two. The 'Project funding proportions relative to budget' subsection below considers why so few CCR projects may have been present.

CCR projects budget and funding totals

Table 2 (below) shows the distribution of the budgetary allocation. The combined funding request of the study countries between 2016 and 2018 was USD 22.3 billion, of which the 99 CCR projects constituted 3.0 per cent of the total, USD 658.3 million.

The proportion of overall proposals for CCR projects varies significantly over time. CCR projects made up 2.3 per cent of the total proposed in 2016, whereas the proportion fell slightly in 2017 to 1.8 per cent. The percentage increased to 4.8 in 2018 owing to a USD 144 million FAO livelihood support project responding to the Somali drought of 2016–17.

The study countries received USD 14.2 billion in funding between 2016 and 2018, amounting to 63.9 per cent of their proposed budgets of USD 22 billion over three

Table 1. Number of CCR projects

Total	Total proposed		Total projects	Climate change upon review	Total projects (%)	Projects funded (full or partial)	Total funded projects	Climate change funded upon review	Total funded projects (%)
	2018	2017							
Total	5,558	1,957	99	1.8	1,361	40	2.9		
Total (by year)	1,925	1,676	30	1.5	399	16	4.0		
	823	641	44	2.3	461	17	3.7		
Syria	25	3	25	1.5	501	7	1.4		
	1	1	3	0.4	160	1	0.6		
	1	1	1	0.2	135	–	–		
	1	1	1	0.2	170	1	0.6		
Somalia	458	462	9	2.0	60	7	12		
	17	351	22	4.8	99	10	10		
	17	387	17	4.8	73	5	6.8		
South Sudan	327	268	16	4.4	101	8	7.9		
	4	327	16	4.9	123	4	3.3		
	–	219	4	1.5	138	1	0.7		
Iraq	343	242	–	0.0	70	–	–		
	2	70	2	0.6	86	–	–		
	–	152	–	0.0	120	–	–		
Pakistan	1	313	1	1.4	8	–	–		
	3	313	3	2.0	18	3	16.7		
	3	313	3	1.0	N/A	N/A	N/A		

Note: N/A=not applicable

Source: authors.

Table 2. CCR project budget and funding totals

		Total budget (USD million)	CCR budget (USD million)	Total budget (%)	Total budget		Total project funding (USD million)	Total untied funding (USD million)	CCR funding (USD million)	Total funding (%)
Total		22,271	658	3.0		Projects funded	5,686	8,535	184	3.20
Total (by year)	2018	7,309	352	4.8			2,132	2,736	68	3.20
	2017	7,827	144	1.8			1,640	3,520	96	5.90
	2016	7,134	162	2.3			1,913	2,279	20	1.00
Syria	2018	3,385	40	1.20			1,014	1,169	7	0.60
	2017	3,351	5	0.20			523	1,376	0	0.00
	2016	3,194	0	0.00			607	1,139	1	0.10
Somalia	2018	1,515	251	16.60			243	665	49	20.30
	2017	1,507	106	7.00			313	725	86	27.50
	2016	891	143	16.10			231	267	19	8.20
South Sudan	2018	1,718	60	3.50			575	600	13	2.20
	2017	1,640	21	1.30			336	830	3	0.90
	2016	1,280	3	0.20			539	649	0	0.00
Iraq	2018	569	0	0.00			287	237	0	0.00
	2017	989	4	0.40			429	503	0	0.00
	2016	861	0	0.00			536	222	0	0.00
Pakistan	2018	123	2	1.60			13	64	0	0.00
	2017	339	8	2.30			40	86	7	17.50
	2016	909	15	1.70			N/A	N/A	N/A	N/A

Note: N/A=not applicable.

Source: authors.

years. Of this, USD 5.7 billion was tied directly to FTS projects, whereas USD 8.5 billion was given to organisations and not specific projects. Of the USD 5.7 billion of FTS project funding, USD 184.0 million (3.2 per cent) was allocated directly to CCR projects.

Somalia received 83.2 per cent of all CCR project funding (USD 154.1 million of USD 184.0 million), comprising 19.6 per cent of total funding connected to projects in the country in the study period (USD 154.1 million of USD 786.9 million). South Sudan received USD 15.8 million in CCR project funding, Syria USD 7.1 million, and Pakistan USD 7.0 million. Iraq had no CCR projects, and thus received no funding.

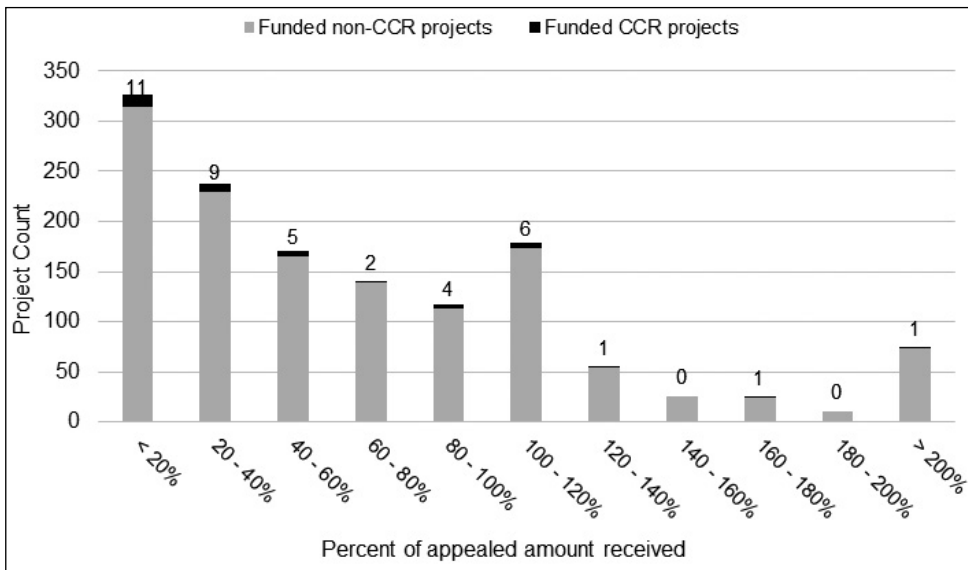
Project funding proportions relative to budget

Figure 2 shows the distribution of projects according to the proportion of the budget received in funding. Of the 40 CCR projects identified in total, 11 (27.5 per cent) received less than 20 per cent of their proposed amount. Nine of the 40 received 100 per cent or more of their proposed budget. Overall, the proportion of CCR projects remains consistently low across funding levels: CCR projects make up 3.4 per cent of projects receiving 0–20 per cent of requested funding (11 of 326), versus 1.4 per cent of projects receiving 60–80 per cent of their funding (2 of 141).

Number of people targeted by proposed and funded projects

Table 3 (below) shows the proportion of people targeted by projects according to the OPS. Proposed CCR projects in all five countries targeted as many as 35.6 million people from 2016–18. Of these, 27.3 million were in Somalia, including 13.0 million

Figure 2. Level of funding across the study countries, 2016–18



Source: authors.

Table 3. The number of people targeted by CCR projects

Total	Million people targeted – totals from budget proposals		People targeted	People targeted by climate CCR projects	Total (%)	Million people targeted – totals from funded projects	People targeted	People targeted by CCR projects	Total (%)
	2018	2017							
Total	3,523	35.6	1.00	735	24.5	3			
Total (by year)	906.8	11.6	1.30	229.1	10.9	5			
	1,335	17.8	1.30	245.6	8	3			
	1,282	6.1	0.50	260.2	5.5	2			
Syria	181.7	0.3	0.20	116.9	0.1	0			
	204.1	0.09	0.00	136.9	–	–			
	233.5	0.005	0.00	134.9	0.005	0			
Somalia	87.3	8.4	9.60	56	8.4	15			
	73.4	13	18	37.8	7.8	21			
	61.6	6	9.70	34.7	5.5	16			
South Sudan	62.5	2.8	4.50	34.4	2.5	7			
	54.6	0.7	1.20	36.4	0.2	1			
	57.9	0.06	0.10	38.3	0.03	0			
Iraq	568.7	–	–	18.4	–	–			
	989.4	4	0.40	29.2	–	–			
	860.5	–	–	52.3	–	–			
Pakistan	6.5	0.05	0.70	3.5	–	–			
	13.2	0.06	0.50	5.3	0.06	1			
	68.1	0.1	0.20	N/A	N/A	N/A			

Note: N/A=not applicable.

Source: authors.

in 2017 proposals alone, 17.7 per cent of the total of 73.3 million targeted in Somalia in 2017 proposals. The number of people targeted across all countries and years declines to 24.5 million (down from 35.6 million) when only considering projects that received any funding.

Distribution of funded CCR projects by cluster

Table 4 (below) shows the distribution of funded CCR projects by cluster, which group humanitarian aid projects together according to programmatic areas of focus. This ensures that organisations running similar projects are coordinated by the clusters' lead agency(s). For instance, the World Food Programme and the FAO are the lead agencies in the Food Security and Livelihoods (FSL) cluster, guaranteeing that all related projects work together (OCHA, n.d.).

Analysing the data by cluster designations provides further insight into the type of CCR projects being executed, and which programmatic areas are targeting and aiding recipients in a given country. Sixty per cent of funded CCR projects in the study countries target FSL (24 of 40). These include climate-sensitive agricultural training or input support, as well as environmental conservation education.

A higher proportion of CCR projects have a FSL designation relative to the population of total projects. In Somalia, for instance, only 20 per cent of all funded projects were in the FSL category. However, 59 per cent of Somalia's 22 funded CCR projects had an FSL classification, indicating that the effects of climate change are being felt most acutely in areas of the country centred on food production.

Distribution of funded CCR projects by DMC phase

Table 5 (below) shows project frequency in terms of DMC phase. The DMC is an internationally accepted framework that is used to categorise projects relative to the initial crisis to which there is a response. As noted earlier, it is composed of four phases:

- Preparedness—this involves preparing responses for expected disasters in the future, such as prepositioning food and other supplies.
- Mitigation—this entails the improvement of areas to prevent a disaster from occurring again, such as building levees to reduce flooding.
- Response—this is the initial response to an event, including food or cash distribution, initial clean-up, or supporting IDPs.
- Recovery—this comprises rebuilding homes or damaged infrastructure, or resettling people.

Of the 40 funded CCR projects, 17 were determined to intervene via Mitigation, Preparedness, or a combination of these two phases. A further nine were coded as Recovery/Mitigation or Recovery/Preparedness. This suggests that most humanitarian CCR projects, funded or not, target 'long-term' recovery or mitigation rather than immediate response to an emergency.

Table 5. CCR project frequency by DMC phase (funded projects)

	DMC phase	Response	Recovery	Mitigation	Preparedness	Response/Recovery	Response/Mitigation	Recovery/Mitigation	Recovery/Preparedness	Mitigation/Preparedness	Response/Recovery/Mitigation	Response/Recovery/Preparedness
Total (by year)	2018	–	–	–	–	5	–	1	3	6	–	1
	2017	1	2	3	1	3	–	–	3	3	1	–
	2016	1	–	2	–	–	–	2	–	2	–	–
Syria	2018	–	–	–	–	–	–	–	1	–	–	–
	2017	–	–	–	–	–	–	–	–	–	–	–
	2016	–	–	–	–	–	–	–	–	1	–	–
Somalia	2018	–	–	–	–	1	–	–	2	3	–	1
	2017	–	–	1	1	3	–	–	2	3	–	–
	2016	1	–	2	–	–	–	2	–	–	–	–
South Sudan	2018	–	–	–	–	4	–	1	–	3	–	–
	2017	–	1	2	–	–	–	–	–	–	1	–
	2016	–	–	–	–	–	–	–	–	1	–	–
Iraq	2018	–	–	–	–	–	–	–	–	–	–	–
	2017	–	–	–	–	–	–	–	–	–	–	–
	2016	–	–	–	–	–	–	–	–	–	–	–
Pakistan	2018	–	–	–	–	–	–	–	–	–	–	–
	2017	1	1	–	–	–	–	–	1	–	–	–
	2016	–	–	–	–	–	–	–	–	–	–	–

Source: authors.

Frequency of CCR keywords in funded projects

Table 6 (below) shows the frequency of specific keywords in relation to the number of funded CCR projects in which they appear. Drought, flood, and disaster appear most often in project descriptions, indicating that Somalia and South Sudan face frequent floods, droughts, or other unspecified disasters. The full phrase ‘climate change’⁸ is the fourth most common keyword, appearing in only 17 of the 40 total projects, suggesting that countries confronting the effects of climate change do not necessarily describe it as such.

Table 6. Keyword frequency by country (funded projects)

		Flood	Drought	Disaster	Sustainable	Vulnerability	Seasonal	Climate change	Climate	Recovery	Climatic	Environmental	Famine	Early warning	Natural hazards	Mitigation
Total (by year)	2018	6	9	8	8	7	6	7	5	4	6	3	5	4	–	1
	2017	10	10	11	5	3	7	6	4	8	4	4	4	4	1	–
	2016	6	4	2	1	2	3	4	3	1	–	1	1	2	–	–
Syria	2018	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–
	2017	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2016	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–
Somalia	2018	4	7	4	6	3	2	4	3	3	1	2	4	4	–	–
	2017	5	7	4	3	3	5	4	3	4	4	4	3	2	–	–
	2016	5	4	2	–	1	2	3	2	1	–	1	1	2	–	–
South Sudan	2018	2	2	4	2	3	4	3	1	1	5	1	1	–	–	1
	2017	3	3	4	2	–	–	–	–	1	–	–	1	2	1	–
	2016	1	–	–	1	–	1	–	1	–	–	–	–	–	–	–
Iraq	2018	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2017	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2016	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pakistan	2018	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2017	2	–	3	–	–	2	2	1	3	–	–	–	–	–	–
	2016	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Source: authors.

Limitations

Several limitations arose during the development of this study. A major hindrance to compiling data was the lack of access through publicly available domains. Incomplete and inconsistent UN and aid sector data on funding levels and in-country project information were present across databases. For instance, the Consolidated Appeals Process encompasses many, but not all, humanitarian projects in a given country.

In addition, the structure of OPS data does not easily allow for disaggregation and analysis of CCR projects by agency. Agency names differ by dataset (such as World Food Programme versus WFP), and it is not clear which projects may have been run jointly.

There were some limitations related to tracking project funding. Sixty per cent of organisational funding in the FTS was not tied to a specific project, meaning that

additional projects may have received money beyond donor project-specific grants. Furthermore, a small fraction of FTS funding flows to projects not included in the OPS database, such as USD 7.2 million to six projects in South Sudan in 2016 (0.6 per cent of the total), suggesting that there may be a handful of other projects run in these five countries from 2016–18 not captured by this study. Lastly, the number of individuals who actually received aid was not available in the FTS or the OPS, only those targeted.

The study encountered areas of possible taxonomic subjectivity and variance, given that there is no universally agreed-upon language for climate change interventions in the humanitarian sector. In some cases, therefore, terms in project descriptions were subjectively interpreted to be relevant and may be limited by potential qualitative bias. For example, the term ‘sustainable’ may be frequently used in project descriptions across clusters, but distinguishing usage among environmental, economic, and/or social contexts can be difficult when data mining. The study may also have excluded projects that were not captured by the taxonomic approaches applied to the keywords used in some proposals.

The lack of semantic agreement across proposals on what constitutes a CCR project led to a high false positive rate in the initial keyword analysis. As a result, the authors were required to read closely the project proposals to pinpoint and clarify terminology utilised to ensure that it was in keeping with standards for determining a CCR project. The keyword taxonomy counting method identified 1,073 projects with two or more keywords, of which only 99 were deemed to be CCR. Less than one-tenth of the projects initially identified by the process resulted in a positive identification.

Moreover, this study elected to use OCHA’s definition of the DMC, thereby characterising projects according to the four phases of its system. This expedited the evaluation process, but the authors acknowledge that some agencies believe the DMC to have more than four components (UN-SPIDER, 2014).

Another limitation of the study lies in the small sample size and the short time scale of the analysis. The project sample size was limited to five countries over three years in order to create an initial pilot of the methodology employed herein. While this allowed for a comprehensive evaluation of recent trends in the targeted countries, it may have excluded other countries that have more or less CCR proposed projects. The present study aimed to select countries with adequate data availability, funding needs, and explicit climate-related vulnerabilities. However, the findings may not be holistically representative of total proposals within the humanitarian aid sector given the small number of study countries.

Discussion

Understanding the climate change ‘tracking gap’ in humanitarian response

The evolution of humanitarian response has been historically defined, in part, by the adoption of monitoring and evaluation (M&E) tools to track how programmes are designed and how funds are spent in order to help determine the impact of activities

(Davey, Borton, and Foley, 2013). No standard approaches exist, though, to track funding tied to climate change within OPS programming. There is also no standard method for evaluating the impact of humanitarian programmatic responses related to climate change. This CCR programme ‘tracking gap’ is a key reason for this study.

Other adjacent sectors, such as economic development, have recognised the need for methodologies that track climate change funding. A growing corpus of available data may help to identify the potential effects of climate change on economic development investments and priorities (Hsu et al., 2019), including data collected via the Sendai Framework Monitor online tool developed by the United Nations Office for Disaster Risk Reduction and launched in 2018. These mark substantial developments in the understanding and implementation of DRR in the field. Yet, the vast majority of OCHA programming remains directed towards ‘sudden onset’ or recurrent disasters. This paper attempts to comprehend the prevalence of projects attending to longer time frames and, in so doing, seeks to highlight the lack of longitudinal thinking regarding climate change engagement in short-term response.

The delay in developing a similar, contextually appropriate methodology of CCR finance tracking for humanitarian actors is likely due to factors specific to the humanitarian sector. These may include: a lack of awareness among humanitarian actors that crisis response activities have the potential to include climate change mitigation components or be labelled as such; no clear consensus on what constitutes climate change components; an absence of a standardised taxonomy for coding the characteristics of these projects across agencies and platforms; and the unmet need for an underlying theoretical and evidentiary basis for informing how humanitarian climate change programming should be designed and deployed.

Continued delay in establishing a shared methodology for tracking and evaluating the allocation of climate change funding in humanitarian responses has several potential consequences, including stymying coordination between development and humanitarian actors engaged in similar, potentially overlapping projects within the same communities. The lack of common and interconnected tracking mechanisms may also impede the stated goal of the World Humanitarian Summit, which took place in Istanbul, Turkey on 23–24 May 2016, of encouraging a ‘humanitarian–development nexus’ (OCHA, 2016).

The methodology piloted in this study is an initial attempt to address these lacunae. The subsections that follow explore how this effort can be built upon, improved, and expanded.

Addressing the structural challenges that the study encountered

This study encountered four key structural challenges. First, it was not possible for the authors to validate whether a funded project was actually implemented, even in cases where the data indicated that the project had received funding. Furthermore, even if a project was implemented, there is no data readily available on its impact—the extent to which it met its declared objective or supported the projected number

of people. The establishment of more robust measures for evaluating the long-term effectiveness of a project, as well as assessing the intended and unintended consequences of a project intervention, is required if best practices in humanitarian-led CCR programming are to be identified and assessed.

Second, acquiring relevant sources of data was a core challenge. The OPS was the primary source of data, yet it was limited in scope and largely unstructured for the purposes of this study. Several countries identified as initial candidates for the study (from cross-referencing the proposal data with the INFORM database) could not be used owing to a lack of country-specific data. For instance, Afghanistan did not have data available from the relevant years and thus needed to be replaced with a different country.

Third, the development of a common approach to coding proposal data would have facilitated more effective, faster aggregation and assessment of climate change-specific programming. A project's location in the DMC cycle was determined subjectively upon a review based on the activities and keywords used in its description. This critical analysis could be accomplished more easily and accurately through the inclusion of a required keyword tag in future project proposals.

Fourth, there is currently neither operational nor scientific consensus on what constitutes accepted criteria for designating a project as CCR. The study authors created a stopgap keyword analysis measure to undertake the research. While the results of this prototype methodology for semantic determination of CCR projects yielded results of potential value, it remains a less favourable option as compared to coding proposals before their submission with an agreed CCR-specific identifier.

Key questions posed by the findings

The data generated by the study raise multiple questions that require further investigation, and which cannot be answered using currently available information. First, 24 of 40 CCR proposals are within the FSL cluster, which may indicate that, in the countries evaluated, the cluster's work correlates with a higher likelihood of engagement in CCR projects. Further study of this cluster, as well as the operational and geographic contexts of FSL in the study countries, to determine why it appears to be the primary locus for CCR projects is needed if this correlation is to be better understood.

In addition, a plurality of funded CCR proposals (17 of 40) appeared within both the Mitigation and Preparedness phases of the DMC. These projects are more aligned with the development sector than the humanitarian response sector, given that they are further removed from acute response. More research is necessary across a larger sample to ascertain if this trend is unique to the countries in this study or if it is a broader trend globally.

The study also reveals that CCR projects in the countries evaluated were more likely to receive initial funding than non-CCR projects. However, there was no significant difference between CCR and non-CCR projects in terms of the amount of funding received as a proportion of each project's budget. This study cannot explain

why these funding rates appear to change consistently for CCR projects. An evaluation of changes in CCR project funding levels, along with the introduction of more metrics and standardised taxonomies in proposal templates, may be able to provide further insights into funding strategies related to climate change.

A key finding of this study is the relatively low count of CCR proposals submitted for funding in the countries reviewed. The low number of proposed and successfully funded CCR projects is probably a result of the scale of acute crises and armed conflict in the study countries. As humanitarian aid projects focus on immediate lifesaving measures, such as food, cash transfers, and shelter, these urgent actions were probably prioritised above longer-term climate projects. This is likely the case in countries experiencing active internal conflicts during the period of analysis, such as Iraq and Syria, where the focus is on immediate lifesaving interventions. South Sudan was an anomaly in this regard, given its relatively large number of CCR projects. Future analysis of data from fully implemented projects in areas with active and ongoing armed conflict—as compared to data from nations with negligible armed conflict—may illuminate how conflict severity may or may not affect CCR programming decisions.

An additional, more tentative explanation of the low CCR project count may lie in a country's economic structure. A smaller proportion of the workforces in Iraq (two CCR projects) and Syria (five CCR projects) are involved in agriculture, 19 and 26 per cent, respectively (FAO, 2017), as compared with South Sudan (65 per cent), Somalia (86 per cent), and Pakistan (42 per cent) (Roser, 2013). Given that the plurality of CCR projects focused on FSL, a lower rate of agricultural employment may mean that there are fewer people whose livelihoods would be compromised by a climactic shock such as a drought.

Conclusion

A mounting body of evidence indicates that the humanitarian sector will need to contend with the effects of climate change as a standard component of disaster prevention and response planning going forward in the twenty-first century. A recent report by the International Federation of Red Cross and Red Crescent Societies, *The Cost of Doing Nothing*, projects that the number of people affected by disasters could double by 2050 (IFRC, 2019). This study, and others, shows that this area of inquiry is an emerging field that is increasingly relevant to current humanitarian practice.

Like this study, the IFRC research relies on the same OCHA funding and proposal data for its methodology. As stated above, more granular and effective tracking of current CCR programming trends within the sector, as well as conducting more accurate projections of future programmatic needs, has been inhibited by limitations in data sources relevant to CCR activities and a lack of common schemas for coding this information.

As discussed, the development of common, sector-wide criteria to determine what constitutes a CCR activity will be an important component of future research related

to humanitarian programming trends focused on climate change. One immediate step may be the creation of standardised terminology for CCR activities through the OCHA Humanitarian Exchange Language (HXL) used within the Humanitarian Data Exchange (HXL Working Group, 2017). The establishment of HXL keywords may facilitate more effective identification of CCR projects by scholars and practitioners in the future.

Political pressure by donor governments opposed to addressing climate change is also an emerging problem in this area of study. In 2019, the International Organization for Migration allegedly removed data on climate change from its public reporting under private pressure from the Administration of United States President Donald Trump through the Department of States' Bureau of Population, Refugees, and Migration (Stoakes, 2019). In light of the increased politicisation of issues related to climate change, independent, scientific assessments of the humanitarian sector's responses to climate change become increasingly critical.

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- ² See <https://ops.unocha.org/Home.aspx> (last accessed on 15 April 2021).
- ³ Funding data were unavailable for Pakistan in 2016.
- ⁴ The analysis of these terms included cognates of each, such as climate and climatic. Certain terms were excluded because they were either too general, such as 'risk', or because they were included in the text of another term.

- ⁵ Project 103680 by Action for Development in South Sudan in 2017.
- ⁶ Project 119619 by the Food and Agriculture Organization of the United Nations (FAO) in Somalia in 2018.
- ⁷ Cluster name as used in OCHA (2021).
- ⁸ The totals shown for the keyword 'climate' exclude cases where the full phrase 'climate change' appeared.

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