

Estimating financial flows for research and innovation in the humanitarian system from 2017 to  
2021

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**Abstract**

Estimating financial flows for research and innovation in the humanitarian system from 2017 to 2021

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*Background*

Humanitarian crises affect millions of people worldwide – in 2020 alone, approximately 243.8 million people required humanitarian aid.<sup>1</sup> However, there are chronic issues of underfunding in this sector, rooted in the structure of aid itself (mostly reactive to disasters, rather than proactive)<sup>2</sup>, as well as the conflicting goals of the donors, agencies, and governments responsible for carrying out humanitarian assistance.<sup>2</sup>

In order to improve outcomes for the people affected by these disasters, it is important to invest in both research and innovation work aimed at understanding and improving outcomes for humanitarian crises.<sup>3</sup> However, there is limited knowledge of the volume of research and innovation for humanitarian assistance funding currently provided at a global scale.<sup>4</sup>

*Methods*

In this report, I quantify the “humanitarian research and innovation” commitments and disbursements reported to three financial databases between 2017 and 2021: the Organisation for Economic Co-operation and Development’s Creditor Reporting System, the United Nations Office for the Coordination of Humanitarian Affairs’ Financial Tracking Service, and the

International Aid Transparency Initiative's database.<sup>5-7</sup> I analyze this data using keyword searches to identify the humanitarian sectors, events, and populations targeted by research and innovation projects. I also examine the funding sources, channels, and recipient agencies and countries involved, and provide context on the largest players in this field.

### *Findings*

Between 2017 and 2021, disbursements for humanitarian projects with research or innovation components totaled \$630.2 million. The largest funding source was the UK government, with \$268.4 million in funding across the 4 years. The largest channel, or disbursing organization, was the UN, in particular UNICEF, which handled \$130.5 million in funding. Most funding (45.8%) went to global projects without a specific country destination. Projects focusing on children and teenagers accounted for 34.7% of total spending. 59.4% of all disbursements went to human conflict and non-conflict events. 48.0% of humanitarian research and innovation funding went to research-only projects, 33.0% to innovation projects, and 18.1% to combination projects. Overall, research and innovation funding made up 0.3% of the global envelope for humanitarian aid in 2020.

### *Interpretation*

The years 2020 and 2021 saw the most people affected by humanitarian crises in recent years, as COVID-19 disrupted and worsened existing crises, and created new ones. However, research and innovation in the field of humanitarian assistance makes up a small proportion of the overall funding for humanitarian aid. Funding structures need to be improved in order for the world to respond more effectively to humanitarian disasters.

## Introduction

Globally, there is limited funding for humanitarian aid to respond to crises;<sup>1</sup> humanitarian crises require investment in research and innovation in order to improve outcomes for the people that live through these disasters. However, we know very little about the scale of the investments made for humanitarian research and innovation.

We can define “humanitarian research and innovation” as research and innovative techniques and technologies which can address humanitarian crises. There are a wide range of topics which this work can focus on, including communicable diseases, nutrition, non-communicable diseases, and WaSH (water, sanitation and hygiene), as well as non-health interventions, such as education, camp management, logistics, and legal aid, among others.<sup>8</sup> Understanding how research and innovation investments are spent, where the financing comes from, and the actors involved, are all crucial to improving this work, creating new policies and programs, and advocating for more funding.

Elrha, a UK-based charity organization, has made it its core mission to “find solutions to complex humanitarian problems through research and innovation”.<sup>3</sup> In their 2017 *Global Prioritisation Exercise (GPE)*, they summarized the funders of humanitarian research and innovation, and the types of investments being made, but not the scale of the investment. They identified governments as the “dominant type of funder”, with research being more donor-dependent than innovation. They did not capture actual spending, but instead quantified the frequency of projects from specific donors to build a picture of the funding landscape on this topic. One of their key takeaways from that report was that “we’re missing knowledge of how much is spent on which areas of research and innovation”.<sup>4</sup>

For this year’s GPE report, Elrha contracted with the Global Humanitarian Mapping Consortium (GHMC) to produce a component of the report called the 2021 Global Mapping Report. In this report, GHMC seeks to better quantify the research and innovation spending in the humanitarian sector. This thesis focuses on a portion of the 2021 Global Mapping Exercise, creating a quantifiable funding/financial flow analysis of three humanitarian and development funding databases for the first time.

The logic model in figure 1 describes the place this project occupies between the key players in the humanitarian field, including multilateral and bilateral agencies, NGOs, and governments, and the humanitarian aid provided following humanitarian crises. By better understanding the funding for research and innovation in this field, key players can make more-informed decisions about future investments and new projects.

## Definitions

**Humanitarian assistance/response/aid:** “Critical, lifesaving programming to meet and reduce risk and vulnerability.<sup>9</sup> Aid that seeks to save lives and alleviate suffering of a crisis-affected population, as well as activities to prevent and strengthen preparedness for crises and disasters.” (Cite inception)

**Humanitarian crisis:** “An event or series of events that represent a critical threat to the health, safety, security or wellbeing of a community or other large group of people, usually over a wide area. These include man-made crises (e.g. wars and armed conflicts), natural disasters (including geophysical, hydrological, climatological, meteorological and biological) and complex emergencies.”<sup>10</sup>

**Research:** “A systematic set of activities that are planned, organized and have a described methodology, and aim to answer specific questions or describe and address specific issues and to develop new applications of existing and available knowledge.”<sup>11</sup> Any project which uses a derivative of the word “research” is included (See Appendix Table 1).

**Innovation:** “A means of adaptation and improvement through finding and scaling solutions to problems, in the form of paradigms, products, processes, learnings or wider business models.”<sup>12</sup> From the inception report for the 2021 Global Mapping Report, “To avoid a narrow focus on technological developments and innovations, we will adopt a very broad definition of innovation, and will seek to identify and characterise influential innovative practices or research in areas that may not be considered under a traditional, narrow definition of innovation.” Any project which uses a derivative of the word “innovation” is included (See Appendix Table 1)

**Source:** The origin of funding, such as a donor organization, government, or private donations.<sup>13</sup>

**Channels:** Intermediary organizations, including bilateral or multilateral aid agencies, non-governmental organizations (NGOs), UN agencies, and foundations, through which source money is distributed to the implementing institution.<sup>13</sup>

**Implementing institutions:** Institutions which ultimately spends funding, and may include governments, NGOs, or other organizations.<sup>13</sup>

**Event Type:** Human-caused events include “war and conflict” and “Human-induced non-conflict”. “Natural Hazards” are natural disasters or crises.<sup>4</sup>

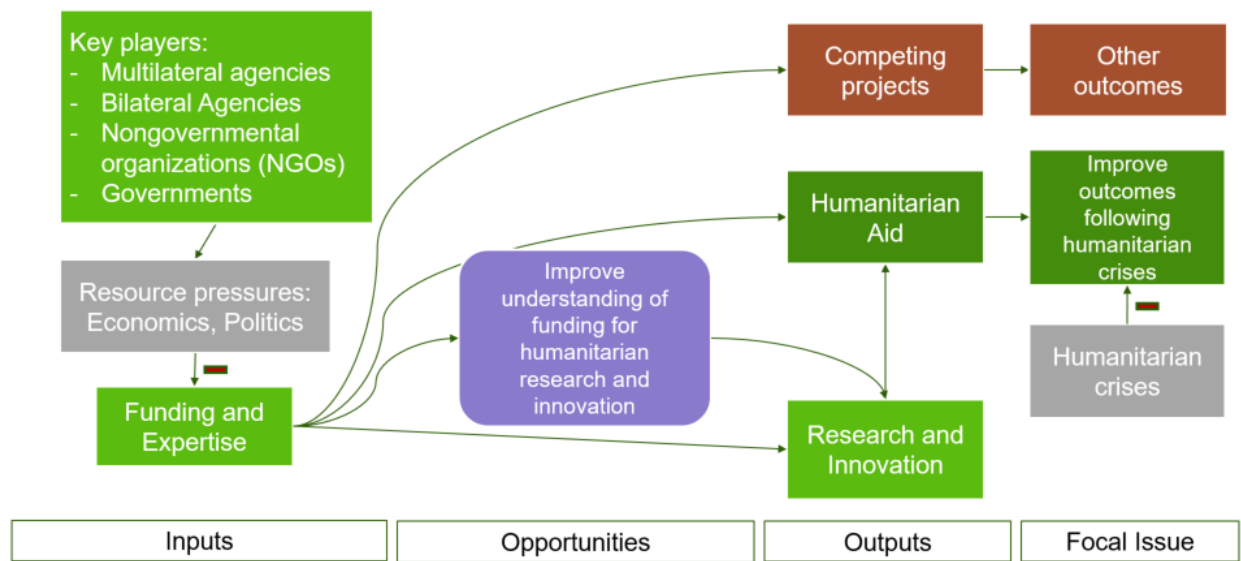
**Sector:** Topics of focus for research and innovation. They include “Camp management and coordination”, “Education”, “Early recovery”, “Food security”, “Health”, “Logistics”, “Emergency shelter/non-food items”, “Emergency telecommunications”, “Nutrition”, “Water, access, sanitation, and hygiene (WASH)”, “Protection”, “Emergency energy”, and “Legal aid”.<sup>14</sup>

**Population focus:** The specific population that a project focuses on. They include “Teenagers”, “Children”, “Healthcare workers”, “Health practitioners”, “Host communities in countries housing refugees”, “Internally-displaced people (IDPs)”, “Journalists”, “Military combatants”, “Disabled people”, “Older persons”, “Refugees”, and “Sedentees/crisis-affected populations who are not displaced”.

**GBD Super-region:** Seven regions defined in the Institute of Health Metrics and Evaluation’s Global Burden of Disease (GBD) report, which encompass 204 countries; “GBD High-income”, “Central Europe, Eastern Europe, Central Asia”, “Latin America and Caribbean”, “North Africa and Middle East”, “Southeast Asia, East Asia, and Oceania”, “South Asia”, and “Sub-Saharan Africa.”<sup>13</sup> See Appendix figure 1.

Figure 1. Logic model defining the role of this thesis in the humanitarian aid landscape.

## Logic Model



## Methods

**Thesis Question:** How much funding has been spent globally on research and innovation for humanitarian aid between 2017 and 2021, who are the funders and recipients of this money, and what kinds of activities are being financed?

## Data sources

In order to quantify the global funding for humanitarian research and innovation, I conducted a secondary analysis of existing datasets. Relying on an accounting strategy, I analyzed a subset of data from three existing databases, and used the statistical software language R in order to complete that analysis.

Project-level funding data comes from three key databases: the Organisation for Economic Co-operation and Development (OECD), which is made up of 38 member countries. OECD maintains the Creditor Reporting System (CRS), which provides data on aid activities across all Development Assistance Committee (DAC) countries, as well as non-DAC countries,

multilaterals, and private donors.<sup>5</sup> The International Aid Transparency Initiative (IATI) is an initiative to “improve the transparency of development and humanitarian resources”, and it maintains a database of self-reported “development activities and budgets” from a variety of organizations, including governments, donors, and multilateral agencies. It is continuously updated and was started in 2008.<sup>15</sup> Finally, the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) maintains the Financial Tracking Service (FTS), which reports on humanitarian funding flows from UN agencies, governments and NGOs. It is continuously updated and was established in 1992.<sup>7</sup> These three databases capture much, but not all, spending on humanitarian aid. The GHMC also examined other research databases, innovation databases, and peer-reviewed papers to capture additional spending. This analysis is therefore only a portion of the humanitarian research and innovation landscape.

Each database was downloaded from the organization’s website. For the FTS, data was downloaded for 2017-2021. In the case of the CRS, which is only available through 2020, data was downloaded for 2017-2020. For IATI, a webscraper was developed and used in order to download more detailed metadata for each project, and data was downloaded for 2017-2021.

Each database reports funding both in terms of commitments and disbursements. Where “funding” is mentioned in this paper, it refers to disbursement estimates.

## **Keyword searches**

Once these data were downloaded, I created a keyword search which analyzes each project’s written description in order to determine if it should be included as funding for “humanitarian research and innovation”. This was done by applying a string search to each project description, using the words "umanitar|umanitair” for “humanitarian” and "research|innovat|recherch|nnovac” for “research and innovation”. Other synonyms were tested, but ultimately excluded because they were insufficiently specific. Donor names, donor countries, disbursing agencies, recipient agencies, and recipient country names were all cleaned in order to make them comparable across databases.

These databases overlap, so I also examined the final selected projects and subset them to a unique set of projects. Additionally, double-counting needed to be accounted for. This is where two different projects capture the same money at different stages of disbursement. For example, if Canada reports providing funding to UNICEF, and UNICEF then reports providing that money to UNFPA, it is important to adjust the Canada-UNICEF funding downward so that this money is only “counted” once.

## Research Focus Areas

Table 1. Research focus areas example

**Evidence synthesis and case study analysis of effective RMNCAH & nutrition:**

“to improve service delivery and programming for maternal, newborn, child and adolescent health and nutrition in humanitarian crisis settings by reviewing existing evidence and guidelines and recommending new research priorities and guidance”

Once these steps were complete, a set of secondary keyword searches were used to categorize the projects based on “research focus areas”: the humanitarian sector, population focus, and humanitarian event type related to each project. For each of these, I manually evaluated about 500 project descriptions in order to select appropriate keywords related to each topic area. Those keywords were then applied to all the projects in the dataset in order to categorize them.

Funding is then split proportionally to the frequency of words tagged in the keyword search. From Table 1, the “Population focus” keyword search tagged “newborn” and “child” as “Children” twice, and “adolescent” as “Teenagers” once. 66% of funding is therefore assigned to “Children”, and 33% is assigned to “Teenagers”.

I define “Humanitarian sectors” as topics of focus for research and innovation.<sup>14</sup> They include “Camp management and coordination”, “Emergency shelter/non-food items”, “Education”, “Health”, “Water, access, sanitation, and hygiene (WASH)”, “Food security”, “Nutrition”, “Early recovery”, “Logistics”, “Protection and resilience”, “Emergency energy”, “Emergency telecommunications”, “Legal services”, “Unspecified sector”, and “Unknown”.<sup>14</sup>

“Population focus” is the specific population that a research or innovation project focuses on. They include “Teenagers”, “Children”, “Older persons”, “People living with disabilities”, “Healthcare workers”, “Humanitarian practitioners”, “Journalists”, “Soldiers/military combatants”, “Refugees”, “Sedentees/crisis-affected populations who are not displaced”, “Internally-displaced people (IDPs)”, “Host communities in countries housing refugees”, “General population”, and “Unknown”.

“Humanitarian event types” are categorized into three broad categories: “War and conflict”, “Human-induced non-conflict”, and “Natural hazards”, as well as “Unspecified event” and “Unknown”.<sup>4</sup>

For all categories, “general” or “unspecified” refers to projects which do not specifically focus on a particular sector, population, or event. “Unknown” refers to projects with insufficient detail to determine sector, population, or event.

I report all commitments and disbursements in 2020 inflation-adjusted US dollars (USD).

## Analysis of major stakeholders

The secondary portion of the study is a critical analysis of the major stakeholders involved in funding and implementing humanitarian research and innovation. This involves exploring and understanding the donors, channels, and recipients of this funding, where most funding is going, and how these patterns align with humanitarian need.

## Results

From the CRS database, 679 projects were selected from 1,013,142 downloaded projects. From the FTS database, 62 projects were selected from 62,308. Finally, from the IATI database, 2,817 projects were selected from 75,116 projects. The selected projects represent 4.9% of all the humanitarian projects in the three databases (Table 1).

*Table 1. Number of projects selected from each database*

Project type	CRS	FTS	IATI
All downloaded projects	1,013,142	62,308	75,116
Humanitarian	21,750	10,509	40,058
<b>Research and innovation (% of Humanitarian)</b>	<b>679 (3.1%)</b>	<b>62 (0.6%)</b>	<b>2,817 (7.0%)</b>

Both commitment and disbursement data was available for projects from all three databases. After removing duplicate projects and double-counting, the highest amount of commitments and disbursements were captured by the CRS database, totaling about \$336.6 million in commitments and \$385.7 million in disbursements. The FTS database captured the smallest amount of funding, at just \$32.0 million in commitments and \$14.4 million in disbursements. Finally, the IATI database captured about \$248.5 million in commitments and \$230.1 million in disbursements (Figures 2 and 3). The total funding for humanitarian research and innovation between 2017-2021 totals about \$617.1 million in commitments and \$630.2 million in disbursements.

Of the \$630.2 million in disbursements, the majority (66.7%) was donated by European countries, especially the United Kingdom (42.6%), with small amounts of money (0.4%) coming from private donations.

In terms of channels, 38.2%, or \$241.0 million, passes through UN agencies, particularly UNICEF. The single largest disbursing organization is the UK government, which distributed about \$268.4 million in funds from 2017 to 2021. The third largest disbursing organization is NGOs and other private foundations.

North Africa and Middle East and Sub-Saharan Africa are the two regions receiving the largest amount of funding (\$121.7 million and \$120.4 million, respectively). However, nearly half of the money (45.8%) goes to projects without a specific target country or region. Much of

this funding goes to projects at international agencies, with reach in multiple countries globally (Figure 4).

The majority of funding which can be allocated to a humanitarian event type goes to human non-conflict crises (39.3%), followed by war and conflict events (20.1%). In terms of population focus, the overwhelming plurality of allocable funding (34.7%) go to projects focused on teenagers and children, primarily through UNICEF and other UN agencies (Figures 5 and 6).

Finally, the largest sector to receive humanitarian research and innovation is the sector type “protection and resilience”, which includes protection, resilience, risk management, and demining projects (Figure 7). It received \$141.5 million in disbursements, while combined, all health, WaSH, food security and nutrition projects receive \$149.3 million.

Figure 2. Commitments by database and super region, 2017-2021

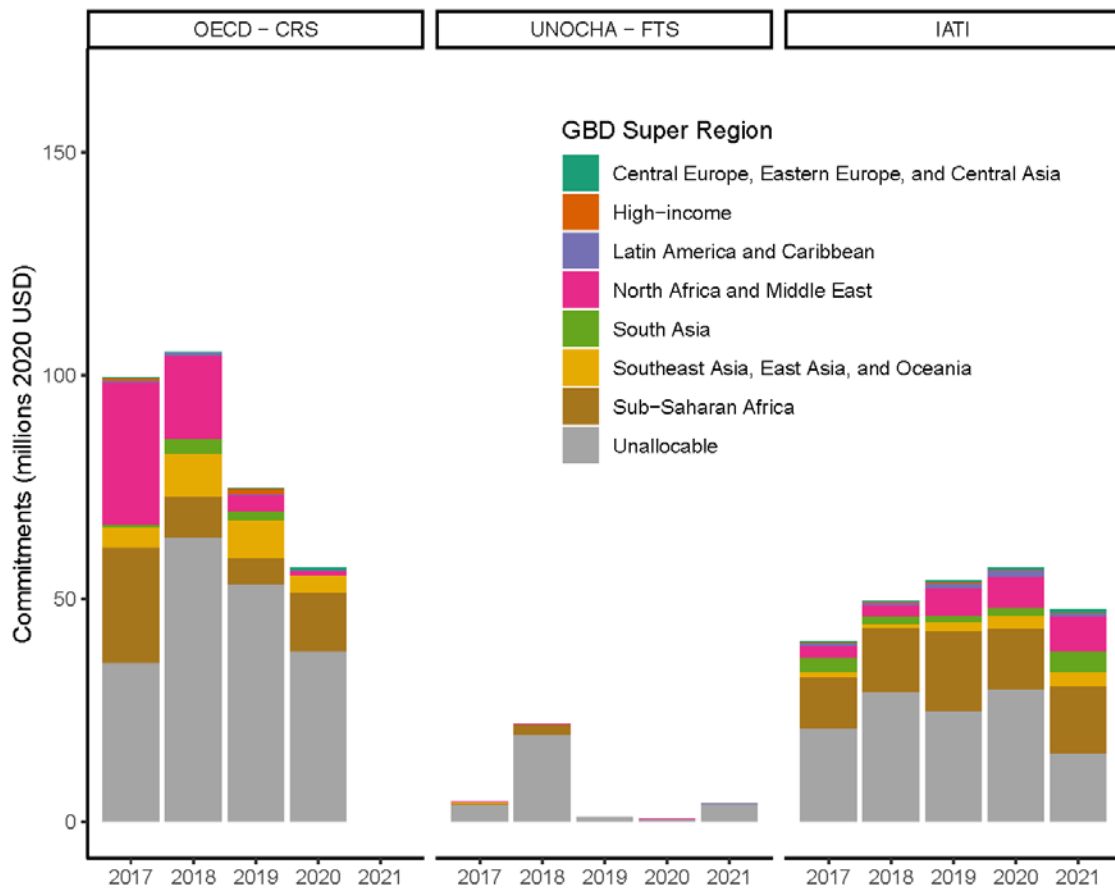


Figure 3. Disbursements by database and super region, 2017-2021

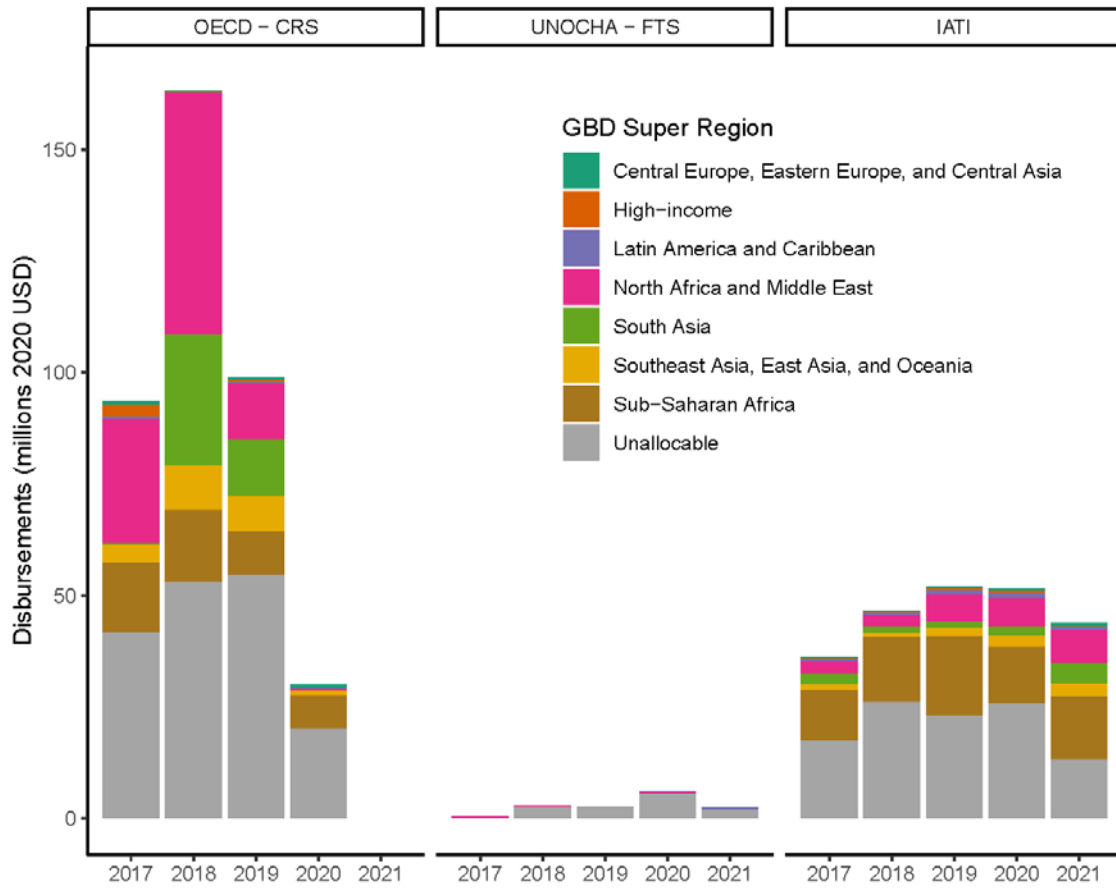


Figure 4. Disbursements for humanitarian research and innovation by source, channel, and recipient region, 2017-2021

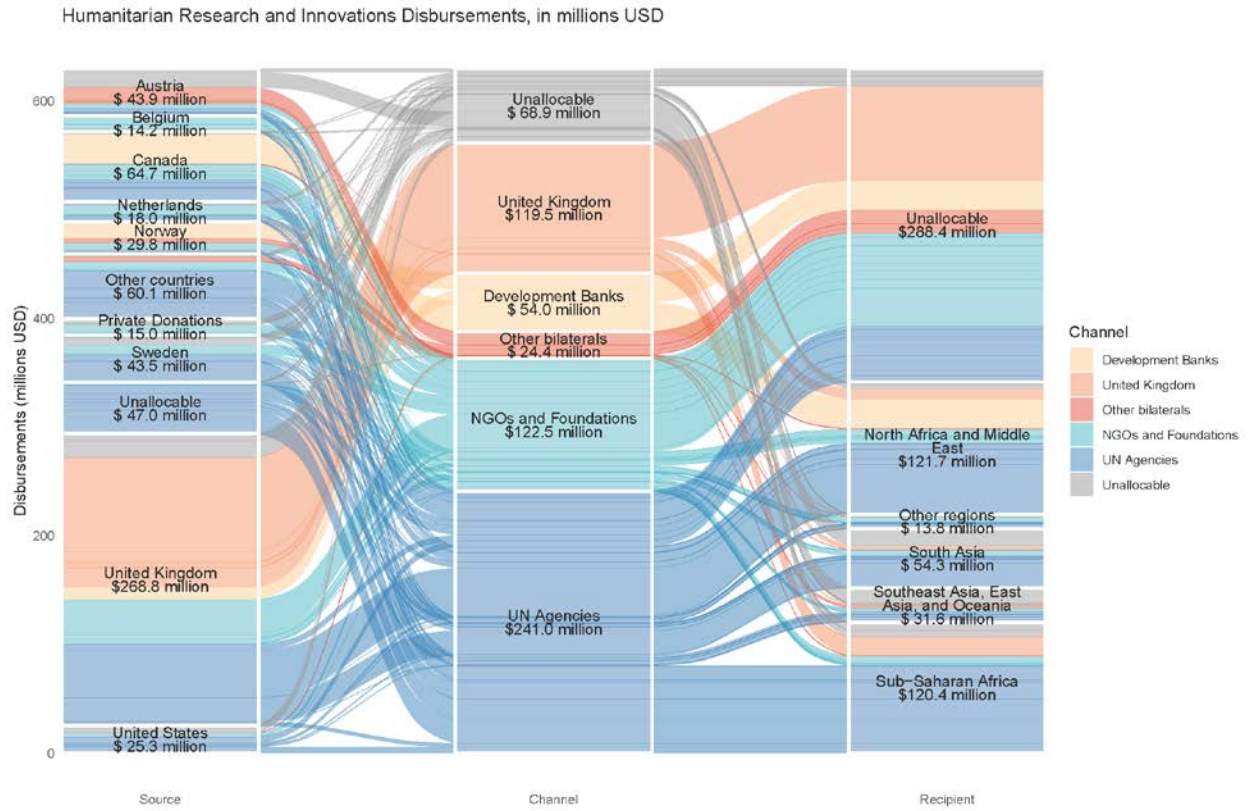


Figure 5. Humanitarian research and innovation by event type and super-region, 2017-2021

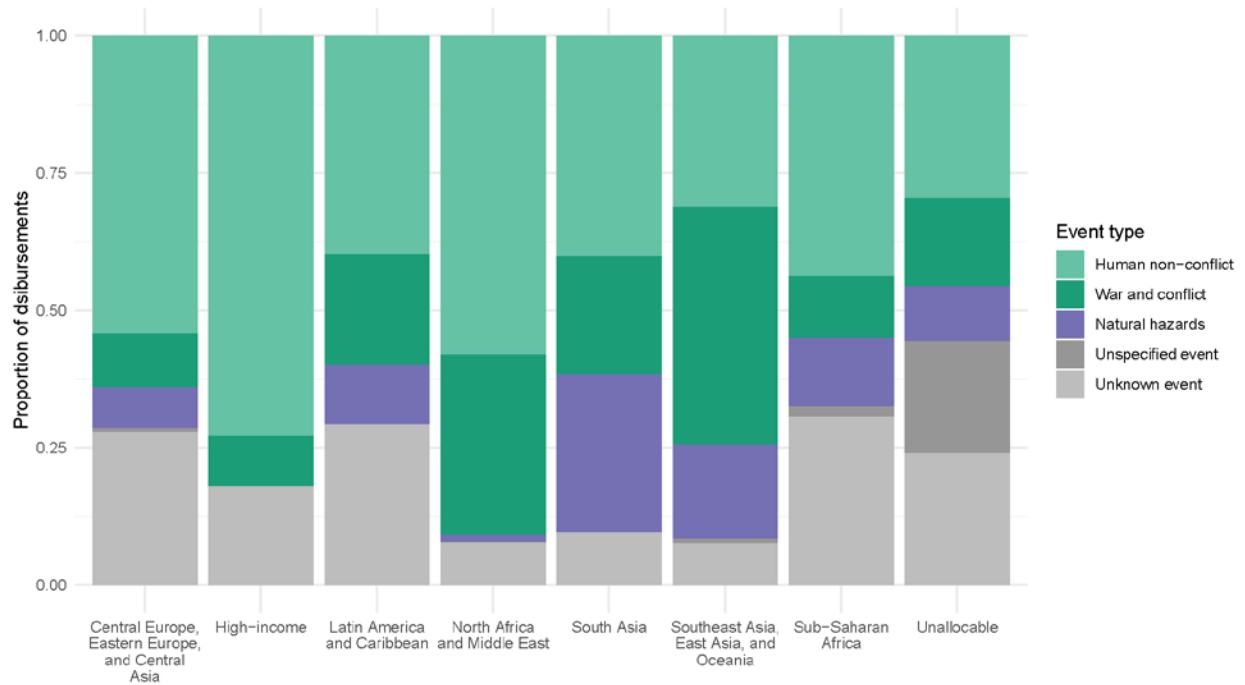


Figure 6. Humanitarian research and innovation funding by population focus and super-region, 2017-2021.

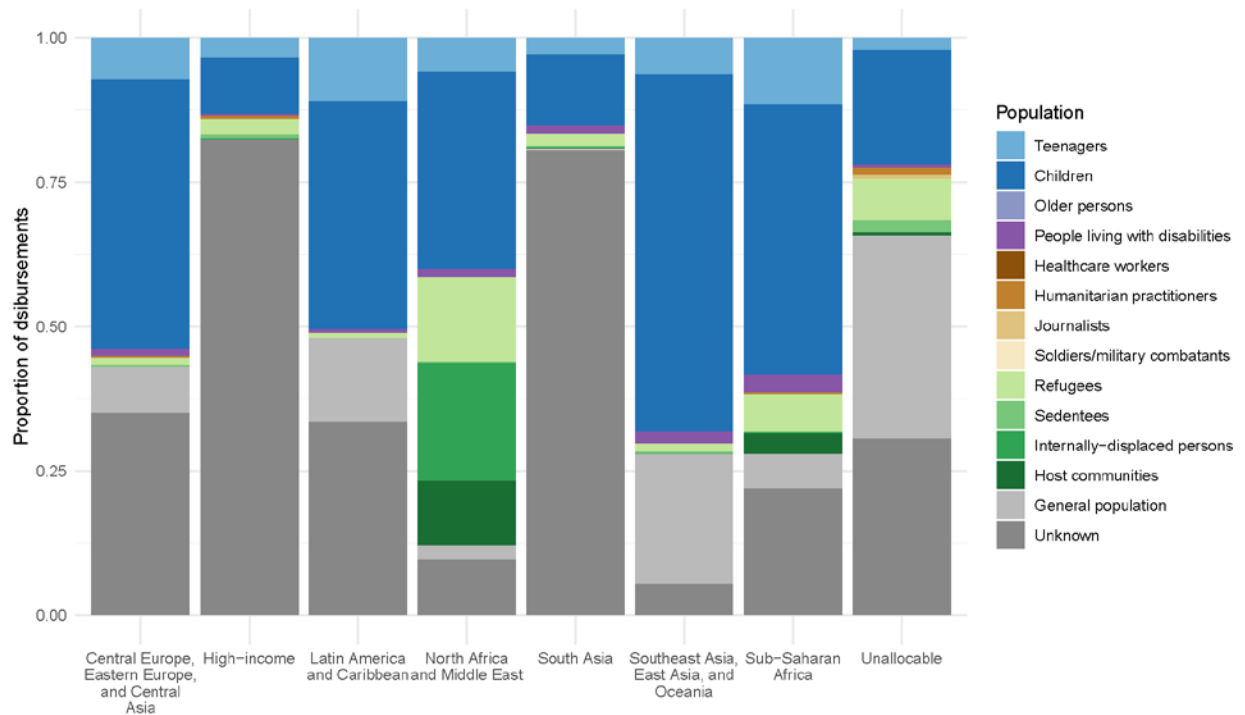
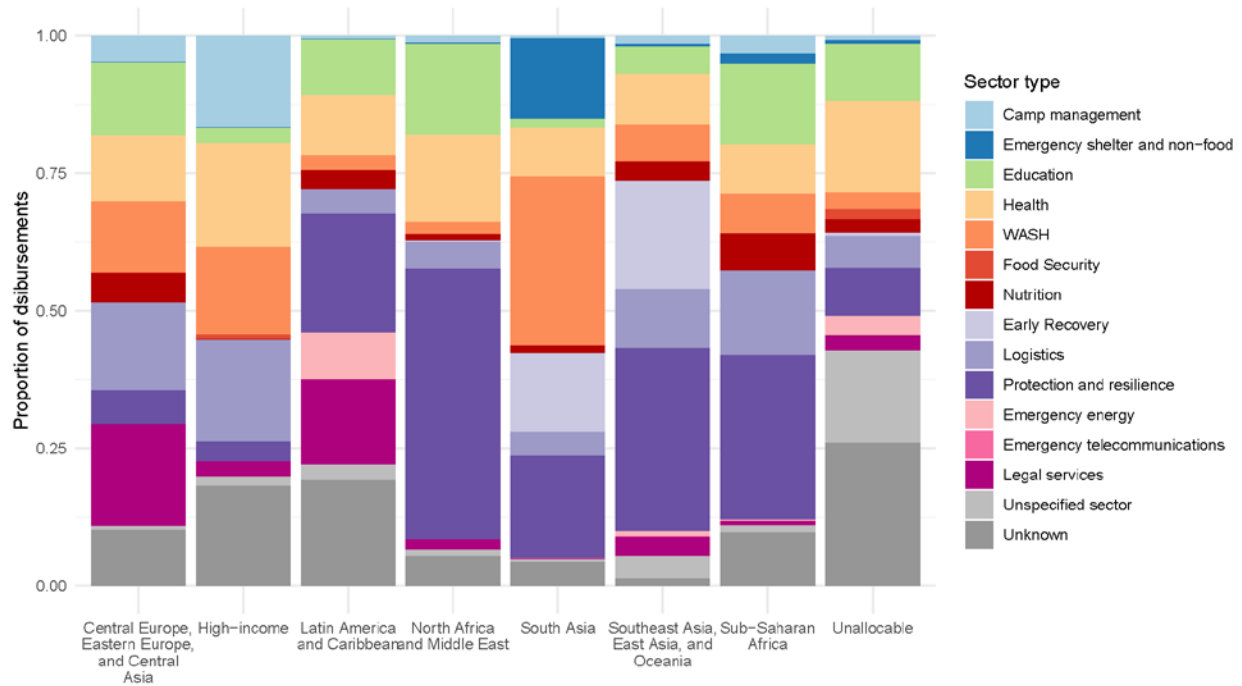


Figure 7. Humanitarian research and innovation funding by humanitarian sector and super-region, 2017-2021.



## Conclusion

Funding was about \$157.5 million a year from 2017-2021, peaking in 2018 at \$212.7 million. The largest donor was the government of the United Kingdom, supplying 42.6% of that funding. The Foreign, Commonwealth, and Development Office, a UK government agency, gave more than \$85.1 million over the four years. 57.4% of the funding passed through UN agencies, non-governmental organizations, or other foundations (Figure 4). Spending focus areas varied by region, but were primarily for human-induced non-conflict and conflict events, with children and teens being key populations of focus (Figure 5 and 6). Health, protection and resilience were each major sectors that received funding (Figure 7).

In 2020, there was approximately \$30.9 billion for humanitarian aid to respond to crises;<sup>1</sup> a small fraction of that, \$87.5 million, or 0.3%, is invested in research or innovation in this field. One of the key reasons for this is “the humanitarian sector is generally risk-averse as the consequences of failure are high. Lives are at stake, and emergencies tend to be high-profile and political.”<sup>16</sup>

The Active Learning Network for Accountability for Performance in Humanitarian Action (ALNAP) defines innovation as “an iterative process that identifies, adjusts, and diffuses ideas for improving humanitarian action”.<sup>17</sup> In order to address the lack of funding for humanitarian innovation, ALNAP hosted an “Innovations Fair” in 2009; the UK Department for International Development (DFID) invested \$3 million in innovation the same year.<sup>12</sup> Elrha

established the Humanitarian Innovation Fund in 2011.<sup>18</sup> The last decade has seen increased attention on humanitarian innovation as a result of these efforts.<sup>16</sup>

COVID-19 has strained the humanitarian system, worsening existing crises and creating new ones. Humanitarian needs are higher than they have ever been before, with the Global Humanitarian Assistance Report estimating that 243.8 million people experienced humanitarian crises in 2020, with \$30.9 billion in funding. They estimate a gap of \$18.8 billion that year.<sup>1</sup> According to the United Nations, COVID-19 has increased humanitarian needs among some populations by 40%.<sup>19</sup>

In the broader humanitarian system, the US was the largest donor in 2020, with \$8.9 billion in general humanitarian assistance. Turkey was the second largest donor, at \$8.0 billion, primarily for Syrian refugees residing within its borders.<sup>1</sup>

The United Kingdom was the fifth largest donor (\$2.1 billion) for general humanitarian assistance, with substantial cuts from 2017 to 2021.<sup>1</sup> It is the largest donor by far for humanitarian research and innovation, but spending fell for this work as well; the UK disbursed \$114.9 million for research and development in 2018, but only \$29.8 million in 2020.

The top recipient countries of general humanitarian aid were Syria, Yemen, Lebanon, South Sudan, and the Democratic Republic of Congo.<sup>1</sup> In comparison, the top recipients of research and innovation funding were Iraq, Pakistan, and Jordan.

This is not to say research and innovation funding is necessarily misaligned with need. Many projects of this nature have potential to improve situations across borders; this is reflected in the majority of research and innovation funding going to global organizations rather than specific recipient countries.

Research and innovation funding in the humanitarian sector is low. It is also unpredictable, and often not set up to encourage the improvements it seeks to make; funding becomes available in the face of new disasters, and can disappear quite quickly once a disaster is no longer novel.<sup>2</sup> Some organizations, such as Elrha, have made improving this field their specific mission;<sup>3</sup> additional efforts are needed to dedicate specific resources to research and innovation, since the funding needs for these projects do not follow the same patterns as those for acute crisis management.<sup>2</sup> Donors should be looking at ways to increase long-term funding, for projects of at least five years.<sup>16</sup>

With additional, more stable funding, humanitarian research and innovation can make more progress at creating new, more efficient, and more effective solutions to humanitarian crises. Organizations dedicate significant resources to creating new drugs and treatments for diseases influencing hundreds of millions of people; the same rigor and scientific application can and should be applied to these other global problems as well.

Elrha's mission is to "find solutions to complex humanitarian problems through research and innovation".<sup>3</sup> This analysis can help aid in that goal by improving the understanding of the scale of humanitarian research and innovation funding and better identifying where funding is most needed. Additional research on funding flows for humanitarian research and innovation

could also examine the relationship between funding for research and innovation, and funding for humanitarian response.

## **Limitations**

There are several key limitations to this study, the first of which is that only funding captured by the three databases is included in this analysis. Additional money is spent on humanitarian research and innovation; the Global Humanitarian Mapping Consortium reviewed additional databases, as well as scientific literature for additional projects; that exploration was outside the bounds of this thesis.

Secondly, in the CRS and FTS databases, I had no project-level information about the detailed funding breakdown for projects. Some projects have multiple focuses – both “research and innovation” and implementation spending, for example – but I was unable to identify non-research and innovation funding within projects. Therefore, these estimates are likely conservative, overestimates of the true research and innovation spending in this field.

Keyword search analyses have a few intrinsic limitations. They require a close understanding of the languages included, and so I was only able to include English, and a few Spanish and French terms, in the keyword searches I created. Projects reported in other languages are therefore excluded. Secondly, keyword searches are highly dependent on the text available in project descriptions. The words chosen by the reporting organizations heavily influence how projects are eventually categorized. If project descriptions, which are written at the inception of projects, deviate from what was actually done, money can be miscategorized compared to reality. Additionally, the length of project descriptions also influences the keyword search. For several projects in this study, the only description available was the word “Innovation”; in other cases, more than 1,100 words were available for analysis.

Despite these limitations, the analysis presented here provides a high-level summary of the scope of funding available for humanitarian research and innovation. The COVID-19 pandemic significantly disrupted and worsened humanitarian crises, highlighting the intense need for investment not only in the humanitarian sector, but also in research and innovation in this field. In order to respond efficiently and effectively to humanitarian disasters, funding structures for research and innovation need to be improved.

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**Appendix Table 1. Keywords for keyword search**

<b>Topic</b>		<b>Keywords</b>
Any Humanitarian Research and Innovation funding	Humanitarian AND	umanitar umanitair*
	Research OR	research recherch *
	Innovation	innovat innovac*
Humanitarian event type	Human-induced non-conflict	food agriculture sustainable development development legal abortion venezuela gender based violence gbv
	War and conflict	war conflict disarmament terror israeli occupation israeli occupation israeli human rights criminal torture armed syria syrian refugee rohingya
	Natural hazards	earthquake fire hurricane cyclone tornado flood tsunami natural ebola tuberculosis malaria hiv immunization disaster risk management epidemic disease drought
	General – unspecified event	<i>Projects which do not focus on a specific event type.</i>
	Unknown – insufficient information	<i>Projects with descriptions without enough detail to determine event type</i>
Humanitarian population focus	Teenagers	adolescent teen youth
	Children	child kid girl boy youth infant baby babies neonatal
	Healthcare workers	healthcare worker
	Health practitioners	practitioner
	Host communities in countries housing refugees	host communit
	Internally-displaced people (IDPs)	idp internally displaced
	Journalists	journalis
	Military combatants	military combatant soldier
	People living with a disability	disable disabilit consanguineous
	Older persons	older person elder senior citizen
	Refugees	refugee rakhine displacement
	Sedentees/crisis-affected populations who are not displaced	sedentee rakhine crisis-affected populations crisis affected populations crisisaffected populations

	General population	“ordinary people” OR <i>Projects which do not focus on a specific population</i>
	Unknown – insufficient information	<i>Projects with descriptions without enough detail to determine population focus</i>
Humanitarian sector	Camp management and coordination	camp
	Education	educat school
	Early recovery	early recovery post disaster
	Food security	food security hunger food ration food parcel
	Health	health disease epidemic hiv malaria tb tuberculosis
	Logistics	logistic delivery  organizational capacity procurement
	Emergency shelter/non-food items	emergency shelter non-food cash transfer
	Emergency telecommunications	emergency telecommunications communications early warning systems real-time monitoring
	Nutrition	nutri
	Water, access, sanitation, and hygiene (WASH)	wash water sanit hygiene desalination toilet
	Protection	protection defence defense resilien demining risk manage
	Emergency energy <sup>^</sup>	solar energy
	Legal aid <sup>^</sup>	legal aid lawyer international justice human rights humanitarian law criminal court international law
	General aid	<i>Projects which do not focus on a specific sector</i>
Unknown	<i>Projects with descriptions without enough detail to determine sector</i>	

\*alternative spellings capture French and Spanish-language project descriptions.

<sup>^</sup>I created these categories in addition to ones suggested by Elrha because of their substantial presence in the data.

Appendix Figure 1. Global Burden of Disease super-regions and regions<sup>20</sup>

