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Development assistance and humanitarian action

Catherine Weaver, Josh Powell, and Heather Leson

Key points

- From the mid-2000s, organisations and individuals working in the field of development assistance and humanitarian action have identified significant gaps in the data sharing needed to support effective coordination of funding and operational work. Early adopters of open data, from 2008 onwards, have worked to fill these gaps and have continued to pioneer open data projects.

- Availability and accessibility of open data have increased substantially, often outstripping the capacity of organisations to reliably use this data, and more work is needed to ensure that data sharing reflects the principles of data protection.

- Greater investment is needed in joining up data and establishing common languages and standards for aid-related data. Open data approaches have a key role in breaking down silos between aid, budget, and demographic data.

- Research must now move beyond qualitative case studies to rigorous testing of theories of change through quantitative longitudinal studies.

Introduction

Bureaucracies like to "hug" data[1] for many diverse reasons, and international development aid and humanitarian agencies are no exception. For decades, the complex aid regime has been plagued by information silos and technical, political, and cultural barriers to data sharing. This legacy presents a distinct challenge to effective global assistance in an era of unprecedented humanitarian crises and persistent poverty, especially in conflict-ridden states. Doing no harm and ensuring protection are key principles in development assistance and humanitarian action; therefore, ensuring data protection must also be a principle. Sharing data requires a delicate

balance of effective coordination and protection of the most vulnerable. Organisations involved in aid and humanitarian action have limited funding allocated to upskilling staff and developing infrastructure. Gaps in technology and digital literacy are often barriers to building open data processes within the complex aid delivery structures.

According to the international transparency movement's theory of change, open data is the key to unlocking the potential of international aid. Opening data related to development assistance and humanitarian action will improve donor coordination, improve the efficiency of humanitarian action, facilitate a faster response regarding relief assistance and development spending, better inform resource planning and management, and empower stakeholders and communities to push for greater participation.[2,3,4,5,6,7,8,9] Open data, simply put, will make development aid and humanitarian action more accountable and effective. But how far have we come in realising this potential?

This chapter will provide a brief overview of the state of open data in the development and humanitarian space, focusing on data collected and published by development agencies, private philanthropic organisations, and humanitarian relief organisations. It will also supply a critical assessment of the progress and pitfalls in the global transparency movement. We find that there have been significant achievements in building consensus, standards, and technical platforms around open aid data. Yet, the supply of open data has not always matched the demand, nor has the open data revolution incited the expanded use of data in the area of international aid that may have been expected.

The key challenges lingering today involve the need to improve the quality and consistency of available data. This is difficult insofar as the data models, infrastructure, training, and business risk analysis/workflow for open data in aid and humanitarian action are often insufficiently funded. At the same time, we need to build broader awareness and expand the use of open data with the objective of building data literacy and improving (and proving) the impact of open data on decisions and outcomes. Likewise, we need to make open data accessible and useful to all stakeholders, while also addressing difficult issues, such as data privacy, protection, and responsible use. Finally, to sustain the momentum behind this data revolution, we need to garner greater evidence of impact to demonstrate the benefits of open data in the field of development and humanitarian assistance.

Background

In the context of development assistance, the open data agenda has grown out of larger debates on aid accountability and effectiveness. Since the Second and Third High Level Forums on Aid Effectiveness in Paris in 2005 and Accra in 2008, several definitions and standards on aid transparency and open data have emerged, as well as numerous efforts to construct monitoring and verification systems around compliance with international agreements and transparency guarantees. At the Fourth High Level Forum on Aid Effectiveness in Busan, South Korea, in November 2011, most major donor countries and agencies, including many from the Global South, committed to reporting their aid information according to a common standard that combined three complementary systems: the Organisation for Economic Co-operation and

Development (OECD) Development Assistance Committee (DAC) Creditor Reporting System (CRS++),[10] the OECD DAC Forward Spending Survey (FSS),[11] and the International Aid Transparency Initiative (IATI).[12]

The open data movement in international development has seen the development of a rich set of supranational initiatives,[13] national-level policies, and international non-governmental organisations (NGOs), and networks devoted specifically to the advocacy and production of transparent and open aid data. Today, the principals and goals of open data are embedded in the United Nations (UN) 2030 Sustainable Development Goals (SDGs). In 2014, the UN's Independent Expert Advisory Group (IEAG) published *A world that counts: Mobilising the data revolution for sustainable development.*[14] The report called for investments in new technologies and capacity building to improve the quantity and quality of data to address the inequalities in data access between countries and for donors to promote the use of data in decision-making, participation, and accountability.[15] Similar commitments were made in the 2015 African Data Consensus,[16] the 2016 G8 Open Data Charter,[17] the Grand Bargain for the Global Humanitarian Agenda,[18] and, more recently, the March 2018 UN Statistical Commission's 49th Session on "Better Data, Better Lives".[19] The open data movement as it pertains to international development and humanitarian aid has shared a similar trajectory in terms of the evolution of influential policies and activities.

The growth and support of open data as applied to humanitarian action is often tied to large-scale humanitarian crisis events. This work often starts with determining workflows and best practices for sharing data that will not do harm, and the first data that needs to be shared is most often geospatial data. The Global Facility for Disaster Reduction and Recovery (GFDRR), created in 2006,[20] has been instrumental in advocating and piloting open data for both resilience and disaster recovery, primarily through its OpenDRI initiative established in 2011.[21] The GFDRR has connected key humanitarian actors with technical communities. Open data, including OpenStreetMap (OSM),[22] has become more central for humanitarian action after its use during the response to the 2010 Haiti earthquake. By engaging volunteers, the global OSM community can quickly contribute essential geospatial data, such as location data on buildings and roads. Having the most up-to-date data can provide those involved in delivering humanitarian aid with the information needed to make strategic decisions. The UN Foundation sponsored *Disaster relief 2.0* report outlined the potential impact of this kind of information sharing. The GFDRR, the World Bank, the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), and government agencies collaborated with the open data community during this response.[23]

Many other emergency response activities have included organised efforts of global open data advocates within the humanitarian network or within digital humanitarian networks like the Digital Humanitarian Network or CrisisMappers.[24] The Humanitarian OpenStreetMap Team (HOT),[25] founded in 2010, has worked to coordinate technology communities, mappers, and humanitarians to deliver geospatial data for both international aid and humanitarian action. Missing Maps, founded in 2014 by the American Red Cross, British Red Cross, Medicine Sans Frontiers/Doctors Without Borders UK (United Kingdom), and HOT, promotes the use of open map data for humanitarian action from disaster responses to health programming.[26] The UN OCHA's establishment of the Humanitarian Data Exchange in 2014 builds on years of effort by

multiple humanitarian groups to open data.[27] UN Global Pulse, the United Nations International Children's Emergency Fund (UNICEF), the World Food Programme, the United Nations High Commissioner for Refugees (UNHCR), and other UN agencies all work with open data. In the humanitarian space, the CrisisMappers Conference and the State of the Map events[28] have convened businesses, technologists, researchers, open data enthusiasts, funders, and governments. Burgeoning support for open data has also been reinforced by the proliferation of work by civil society organisations (CSOs), NGOs, technologists, businesses, and researchers, much of which has been initiated as a result of global and regional events, including the annual International Open Data Conference,[29] Open Data Day,[30] and the Data for Development Festival.[31]

The International Aid Transparency Initiative (IATI)

IATI was launched in Accra, Ghana in 2008 at the Third High Level Forum on Aid Effectiveness. IATI is a multi-stakeholder, voluntary initiative created to better capture timely, detailed, comparable information on aid from traditional multilateral and bilateral donors, new and emerging donors (such as the BRICS countries, Brazil, Russia, India, China, and South Africa), NGOs, and foundations.

IATI offers a common standard for reporting and promoting the principles of open aid by making all data publicly accessible, machine-readable, and downloadable for replication and integration with other datasets. It also makes a variety of aid information available, including data on forward spending and subnational activity locations. IATI is supported by a governing board, a technical secretariat, and a Members Assembly, and currently has over 600 publishers. In 2009, Publish What You Fund (PWYF) was created to monitor donor compliance with IATI and other aid transparency commitments through an annual Aid Transparency Index (see Figure 1).
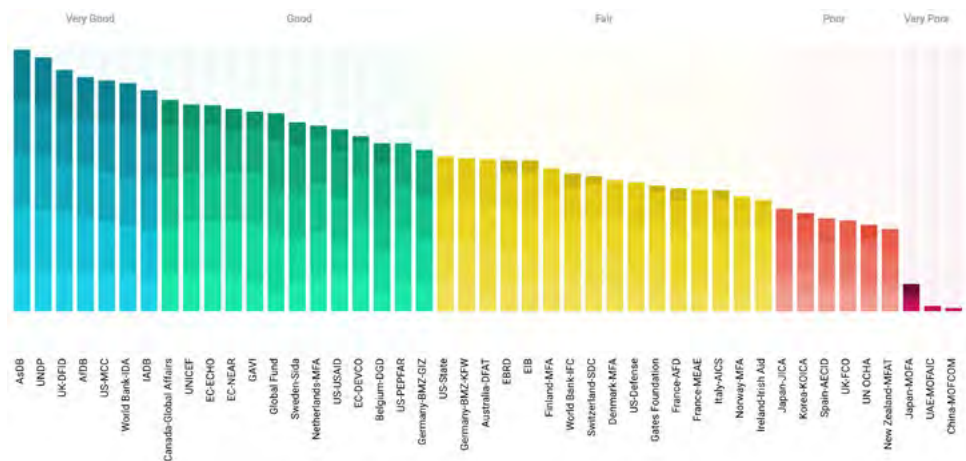

Figure 1:   Overview of the 2018 Aid Transparency Index
Source: http://www.publishwhatyoufund.org/the-index/2018

In the development aid space, key leaders in the open data movement include the Members' Assembly of IATI, PWYF, Development Initiatives, the World Bank Open Aid Partnership and Mapping for Results team, Development Gateway, AidData, the International Development Research Centre, the Transparency and Accountability Initiative, Interaction, and the Open Data Research Network. These actors have been central to establishing the broad momentum for open aid and establishing the methodologies and platforms needed to provide open aid data within developing and emerging market economies (through country-owned aid information management systems, such as Development Gateway's Aid Management Platforms),[32] bilateral and multilateral aid donor dashboards,[33] and international datasets (including the IATI registry, Development Initiatives' Development Data Hub, and AidData's project-level aid datasets).[34]

Progress

As discussed above, one clear success in the open aid data movement is the emergence of a clear consensus on the need to open data and to establish robust policies to ensure the provision of standardised aid data by development and humanitarian organisations, national governments, and supranational institutions. There has been considerable progress in developing the infrastructure, in particular the systems and standards needed to collect, store, and publish open data, such as the IATI XML standard and the Humanitarian Data Exchange.[35] To reinforce the transparency movement, monitoring and rating systems have been established to oversee aid donor performance, including one aid-specific index, PWYF's Aid Transparency Index, and others with a broader focus on open data, such as Open Data Watch's Open Data Inventory, Open Knowledge Foundation's Government Open Data Index, and the World Wide Web Foundation's Open Data Barometer.

The Centre for Humanitarian Data and HDX

The UN OCHA's Humanitarian Data Exchange (HDX) is an open data platform for sharing data across organisations and crises. Early HDX iterations included support from technology communities at hackathons leading up to the official HDX launch in 2014. HDX has a series of features, including organisation pages, country pages, and crisis pages. HDX also includes tools for automated charting based on the Humanitarian Exchange Language (HXL), a data standard based on using hashtags in spreadsheets.

HDX provides step-by-step guidance for sharing data while adhering to strict practices of organisational and individual accountability. All datasets are reviewed to ensure they do not include personal identifiable data. As of March 2018, there are over 6 500 datasets and hundreds of participating organisations sharing a wide range of open data, including assessments, geospatial, population, and more.

There are HDX Labs in Dakar, Senegal and Nairobi, Kenya, and, building on its success to date, the UN OCHA launched the Centre for Humanitarian Data in The Hague, Netherlands, in late 2017 with a focus on four areas: data policy, data literacy, data services, and network engagement.

More recently, the open aid data movement has introduced innovations to improve access to data in forms useful to stakeholders and decision-makers. This has produced platforms that enable interactive use and easily downloadable data. Perhaps, more critically, the collection of data has taken on more inclusive approaches. From mapathons to hackathons, the entire data lifecycle has changed with new mobile and community engagement programmes. This improves the timeliness and usefulness of data and increases awareness and community buy-in. Simultaneously, there is growing attention to the need to "join up" open data across sectors (e.g. open aid data with open budget data) to increase its usefulness to key stakeholders.

Gaps

Despite the progress described above, there remain numerous challenges to realising the promise of open data in international development and humanitarian action. There are four main issues: persistent problems in providing consistent, standardised data across a proliferating number of sites; concerns about privacy and data protection; a lack of organisational investment in technology; and the lack of clear evidence of the cost benefits and impact of open aid data.

(In)Consistencies in the supply of open data

One challenge facing open aid data is widespread inconsistency in how multilateral organisations report their data.[36] While the IATI registry has been increasingly used by development agencies, reporting has been uneven across organisations and across key data points, especially disbursement and procurement data. Some multilateral organisations, such as the World Bank Group, provide more financial information on their websites, although not necessarily as open data. Other organisations, such as the OECD, United Nations Environment Programme (UNEP), International Organisation for Migration (IOM), and the International Monetary Fund (IMF), have been slow to release open financial data.

Likewise, there is often conflicting data across different open data systems. For example, in collecting and attempting to code data on aid projects in Nepal and Bangladesh, the Complex Emergencies and Political Stability in South Asia (CEPSA) team at the University of Texas collated all project documents, financial information, and geolocation data from Nepal's Aid Management Platform, Bangladesh's Ministry of Finance, IATI, AidData, OECD CRS++, and the websites of numerous donors, including the World Bank, Asian Development Bank, Japan, the United States (US), and the United Kingdom (UK). The CEPSA team found dramatically different totals on the number of projects and surprising gaps in the availability of activity-level data across the different sources, including project titles, funding amounts, and project data. The CEPSA team even found significant inconsistencies in the data coming from individual donor countries. For example, in attempting to assess patterns in US development assistance in Nepal and Bangladesh, there were discrepancies in the data provided by the US Congressional Greenbook, OECD CRS++, USAID Foreign Aid Tracker, and the US State Department Foreign Aid Dashboard.[37]

A root cause of these inconsistencies may be the lack of common data sharing protocols. One key exception is in the health sector, where there are data sharing protocols for pandemic and

epidemic emergencies available via the World Health Organization (WHO). There are also informal informational working groups in the humanitarian sector, as well as country-level donor sector working groups and donor coordinated forums in the development sector. However, efforts to "join up" data on a global level are nascent, including initiatives such as the Joined-Up Data Standards (JUDS) Project (closed in 2017)[38,39] and the Global Partnership for Sustainable Development Data (GPSDD)[40] working group on SDG Data Interoperability. Nonetheless, the irony is that the open data movement may be moving too fast as many data sources have yet to converge upon a common standard (with common fields) for collecting and reporting data.

Data privacy, protection, and responsible use

Concerns about data privacy, protection, and responsible use are valid and persuasive reasons why some organisations have been reluctant to open and share data. Choosing which data to share, and for what purpose, is very complex for humanitarian organisations. Any discussion of data sharing needs to start with ensuring the protection of the most vulnerable communities. Coordination is key for delivering effective humanitarian responses guided by international humanitarian law and standards like Sphere.[41] Information managers need to collaborate to determine data sharing workflows that adhere to data protection guidance and responsible data use while still improving coordination. This is complicated by the lack of business analysis of workflows that would better support incorporating open data practices into processes, procedures, and tools. Similarly, there needs to be more effort to reconcile open data with domestic and international privacy laws and protections (e.g. the European Union's General Data Protection Regulation), and, therefore, a need for open data advocates to understand that humanitarians may not be able to share all data given the sensitive situations in which they work.

Addressing all of these issues requires a wholesale change in how development practitioners and humanitarians work, as well as the development and adoption of data protection and responsible use policies. The International Committee of the Red Cross (ICRC) has sought to develop such protocols in their *Professional standards for protection work*[42] and *Handbook on data protection*.[43] The United States Agency for International Development (USAID) has created guidance for its implementing partners under ADS Chapter 508[44] and has implemented a research programme on responsible data, although results are not yet public.[45] The *Responsible data handbook* also lays out principles for handling data privacy in development projects.[46]

Technology and data literacy

Sharing and opening data requires tools, knowledge, and established workflows. International humanitarian and development organisations have funding structures focused on either rapid response or programmatic delivery. There is rarely sufficient investment in upgrading technology infrastructure and business workflows to prepare for all the potential changes noted in the *Fourth industrial revolution*.[47] A data revolution needs a technology revolution first. Improved data opening and sharing is also related to upskilling organisations and individuals in these sectors. Data literacy is essential for improving advocacy and the use of open data everywhere and critically important in the area of development and humanitarian assistance. Investment in data

literacy, operational changes, technology innovation, and back office workflows are rarely the priority given the pressing humanitarian needs.[48] This funding gap inhibits the critical changes required to properly implement tools and workflows to better support open data.

Data culture

While innovation in open data has been a top priority of many development agencies at the headquarters level, these innovations often fail to appeal to country office staff, limiting impact and implementation at local levels. For example, while publishing and using IATI has been a top priority of many agencies, country staff are often unaware of IATI and are occasionally resistant to its use, creating inconsistencies between data published locally and that published internationally. More broadly, research has shown that agency staff at the country level often rely more heavily on interpersonal relationships rather than openly accessible data.[49] These misalignments suggest a combination of factors:

- International open data publishers often do not understand the needs of local users, leading to a top-down push for data use that results in country office fatigue and resistance.

- Data published internationally often does not reflect local realities or it lacks the attributes (e.g. subnational locations and results data) needed to answer key questions on aid efficacy.

- Country-level agency staff are often sceptical of the value of data generally, as local conversations and negotiations are seen as more effective means for gathering information.

- Fostering data literacy requires a data culture of learning and sharing, meaning new approaches to leadership, sharing, and trust building with local stakeholders. Current systems and processes for knowledge exchange are often outdated.

- Theories of change around open data still need to grapple with the necessary cultural change for data producers and data consumers. Work to advance open data should recognise that trust in, and the use of, open data can vary greatly across countries and sectors where data may be highly politicised and contested, and where the practice of evidence-based decision-making is not yet ingrained in policy-making.

An increased focus on enhancing the partnership between headquarters and country offices with the aim of tackling local challenges and improving the effective dissemination and uptake of open aid data is necessary. Examples of this include UNICEF's partnership with Development Gateway, Development Initiatives' work with partner governments and country offices to localise IATI data to solve priority challenges,[50] and the Netherlands' and the Department for International Development's (DFID) engagement with suppliers and country offices to encourage disaggregated publication and use of IATI data.

Evidence

There are a number of new studies that attempt to provide evidence on the impact of open data (see box, Building the evidence base: Studies of open aid data use and impact). Each of these studies seeks to fill the gap on what we know about the extent to which key stakeholders are actually aware of open data, as well as their willingness and ability to access and use these systems. Ultimately, with the realisation that an "if we build it, they will come" approach is simply not enough, attention has shifted from developing to testing the open aid data theory of change.

Building the evidence base: Studies of open aid data use and impact

While evidence of the longer-term impact remains sparse, there are several recent studies that have attempted to directly measure the levels of awareness, use, and outputs related to open aid data.

Studies by USAID (2015: *Aid transparency country pilot assessment*),[51] Development Gateway (2016: *Use of IATI in country systems*),[52] and Development Initiatives (2017: *Reaching the potential of IATI data*)[53] have studied the awareness and use of IATI data globally and within specific countries, such as Zambia, Ghana, and Bangladesh. Similar studies have examined awareness and use of in-country aid information management systems, including in Nepal (with a 2014 study by Freedom Forum),[54] in Sierra Leone (in a 2017 Oxfam study),[55] and in Timor Leste, Senegal, and Honduras (in a 2017 report from AidData).[56]

Fewer studies have attempted to measure the actual impact of open aid data on other variables, such as accounting in development finances, donor coordination, citizen empowerment, and development outcomes (with the exception of PWYF's 2017 work in Benin and Tanzania,[57] papers by GovLab in 2017,[58] and Kotsadam et al. in 2018 in Nigeria[59]).

To date, evaluations related to open aid data have been largely qualitative and limited to non-generalisable case studies. In many instances, these case studies reveal little awareness of open aid data systems and engagement with that data. As a step prior to measuring impact, research must first better understand the conditions that enable or constrain data awareness and use. Such conditions often boil down to simple capacity issues with respect to accessing and analysing data, which often require higher bandwidth, sufficient server capacity, and the availability of computers and smartphones. Access and use also require sufficient expertise to navigate data that is supplied in foreign languages (especially English) or complex programs (ArcGIS, XML formats, and dense CSV files). To understand awareness and use, research must also address the complex political economy around data ecosystems. This includes developing a sensitivity to the cultures of data production and sharing, the politics behind resource allocation, the delegation of authority for open data systems, the role of the media and data journalists in serving as intermediaries, and the historical relationships between governments, donors, and civil society groups.[60]

Conclusions and recommendations

The past decade of the application of open data to development assistance and humanitarian action has provided critical lessons for moving forward. We offer four key recommendations to the international open data community on how to address the key challenges faced in making open data work in the delivery of development assistance and humanitarian action.

1. The release and use of open data faces organisational hurdles. This may include a lack of resources and infrastructure needed to ensure quality and timely data collection or a lack of a data culture that encourages data use. Data is only useful if it is seen by end users as central to information products, evidence, decisions, and knowledge sharing. Open data advocates need to ensure that the mechanisms designed to supply open data are informed by, and integrated into, organisational structures in ways that are consistent with local data cultures and existing capacities. A common language is needed to develop an understanding between data consumers and data producers. The key to success is understanding the culture and context, then building capacity and usage with early adopters. The talking points about "why open data matters" need to incorporate and acknowledge the barriers and aim for opportunities that show true impact.

2. More investment is needed to support joined-up data initiatives. The evidence we have to date suggests strongly that stakeholders want open data around aid and humanitarian assistance, but would find it more useful if such data was more effectively integrated across sectors, especially with respect to domestic budgets and essential demographic information. We need to break down silos and manage open data with a comprehensive, holistic approach.

3. Successfully addressing data privacy, protection, and responsible use will continue to be critical to the success of the open data movement. Setting minimum data standards is the starting point for data sharing. Improving education on the impact and value of data sharing while still adhering to data protection and responsible data use will require a constant balance. Open data and data sharing can occur if data-driven projects are built with privacy protection by design. Data controllers, data producers, and data consumers will need to plan and manage risks and benefits by incorporating proven practices into standard operating procedures.

4. The open data community, and the broader community of donors engaged in international development and humanitarian action, need to invest more in basic research on awareness, use, and impact. Investment in technology and business analysis will also aid the implementation of open data practices. To sustain momentum for open data, we need to rigorously test the theory of change and hypothesised effects on outcomes, such as aid accountability, effectiveness, donor coordination, improved budget management, and timely and inclusive decision-making in the allocation of scarce resources.[61] These studies need to go beyond static, qualitative case studies to include more longitudinal studies that are capable of capturing the larger societal costs and benefits and the long-term impacts of open data.

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About the authors

Catherine Weaver is an Associate Professor and Associate Dean of Students at the University of Texas at Austin (LBJ School of Public Affairs), and Co-Director of Innovations for Peace and Development (IPD). Learn more about IPD at https://www.ipdutexas.org. Follow Kate at https://www.twitter.com/kateweaverUT.

Josh Powell is the Deputy CEO at Development Gateway and has been involved with the International Aid Transparency Initiative (IATI) and open data since 2010. Follow Josh at https://www.twitter.com/joshuacpowell and learn more about Development Gateway at https://www.developmentgateway.org.

Heather Leson is Data Literacy Lead at the International Federation of Red Cross Red Crescent Societies (IFRC), is on the board of the OpenStreetMap Foundation, and is a member of the Humanitarian OpenStreetMap Team. Follow Heather at https://www.twitter.com/heatherleson and learn more about her work at https://www.ifrc.org.

How to cite this chapter

Weaver, C., Powell, J., & Leson, H. (2019). Open data and development assistance and humanitarian aid. In T. Davies, S. Walker, M. Rubinstein, & F. Perini (Eds.), *The state of open data: Histories and horizons* (pp. 77–90). Cape Town and Ottawa: African Minds and International Development Research Centre. http://stateofopendata.od4d.net

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