Reference Paper for the 70th Anniversary of the 1951 Refugee Convention

Developments and Lessons Learned in Humanitarian Innovation for Forced Displacement

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February 1st, 2021

Abstract:

This paper explores the development of humanitarian innovation in forced displacement and looks at the ways that UN agencies, NGOs, and local governments have addressed bridging access to information, housing, healthcare, communication, education, and employment with innovative solutions. For the millions fleeing violence and persecution, these services are essential for rebuilding their lives and integrating into host communities. How do we design products and services together with crisis-affected communities, and how can we apply the humanitarian principle of "do no harm" in innovation and technology? How to reimagine the humanitarian systems through a participatory approach, so that those forcibly displaced are involved in the projects and policies that shape their lives?

Introduction

2015 was a critical year for humanitarian innovation, when more than 1 million refugees and migrants fled violence and persecution to seek asylum in Europe. It was the year that journalists recorded the biggest movement of people across borders using refugees' social media posts, bringing the plight and appalling circumstances refugees and asylum-seekers go through to a large audience, beyond the reach of traditional media. These posts documented how thousands of refugees from war-torn countries like Syria, Afghanistan, and Iraq died while attempting to cross the Mediterranean in overcrowded rafts. One image, in particular, came to symbolize this massive tragedy for many of the West's news consumers: the photo of a drowned three-year-old Syrian boy, Alan Kurdi, on a beach in Turkey.

Europe has long been a destination for migrants and asylum-seekers, and 2015 was hardly different from any of the previous five years in terms of the number of asylum-seekers around the world. It marked a turning point because the tragedies affiliated with mass migrations of people desperately fleeing oppression were no longer happening far away and out of sight. These images inundated social media and shifted public discourse. They were impossible for Western leaders and citizens to ignore. People took advantage of this new spotlight, and the reach of social media, to share stories of the refugee crisis, campaign for better EU refugee safe passage policies, and organize community action locally.

Media coverage of the 2015 refugee crisis also focused heavily on something that perhaps should have been obvious all along, and what we don't often see in representations of refugees in media—that refugees rely on smartphones and other technologies for organizing their journey, managing risks and safety, getting alerts about border closings, sending and receiving money, and staying in touch with friends and family.

Many videos showed refugees on arrival on the Greek islands taking out selfie sticks to send a photo to loved ones as proof they arrived safely. A great number of articles and reports from this period describe how, instead of food, water, or medicine, the first things refugees asked for were Wi-Fi and charging services.

This changing image of refugees in the media and in the public eye inspired both the private and public sectors to develop innovative tools and services aimed at making refugees' journeys safer and improving their lives as a whole. Innovation teams, start-ups, and tech initiatives such as Techfugees[1], Refugee Info[2], and Refugees Welcome International[3] emerged, building tech or mobile-based solutions to help refugees with everything from finding accommodation and first aid to providing translation services.

For many who were following the horrific stories about capsized boats in the Mediterranean, this felt like an opportunity to save lives through community-led projects. Hackathons were organized across Europe, the Middle East, and North America aimed at developing tech solutions for refugees. So too were donation drives for smartphones and tablets. These were driven largely by people who weren't humanitarians by training, but wanted to contribute their skills and resources in creative ways to help those who had been forcibly displaced. One study found that a whopping 1,500 mobile applications for refugees were created in a 12 month period. These included the RefAid App[4], InfoAid[5], Refugees Welcome, the International Federation of Red Cross and Red Crescent's Virtual Volunteer app, and the Netherlands Red Cross's Refugee Buddy App.[6][7]

An enormous amount of work went into the design, prototyping, development, localization, and usability testing of these projects. Yet most of them never reached refugees fleeing to Europe, and those that did showed low adoption rates.[8][9] Refugees who had smartphones often reported that the apps didn't fit their needs, weren't available in their language, or that they had simply never heard of them. Most importantly, these apps weren't used because refugees with smartphones relied on the popular, more generalized apps they were already familiar with and knew how to use, such as WhatsApp, Facebook, and Google Maps.[10]

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[1] Techfugees is a nonprofit organization which coordinates efforts in the technology community to build solutions with displaced people and contribute to meet their needs in terms of access to rights, education, health, employment and social inclusion.

[2] RefugeeInfo is a project that provides refugees and asylum-seekers with clear information about conditions, legal procedures and rights, and integration in Greece, Bulgaria, Serbia, Hungary and Italy, working in English, Arabic, Farsi, Urdu, French and Tigrinya.

[3] Refugees Welcome International is a platform that was founded in 2015 in Berlin to connect refugees with locals who are willing to share their living space, which has been expanded to others

[4] RefAid is a mobile app for refugees and migrants that uses a map with a simple interface to find nearby services and aid.

[5] InfoAid – Information for refugees on the Balkan Route https://tech.hindustantimes.com/tech/news/infoaid-a-smartphone-app-that-helps-migrants-in-europe-story-5A3gD6enFvoIywb1DcfdEJ.html

[6] "World Refugee Day: Digital information platform for refugees and migrants launches in Italy". IFRC. Accessed August 12th, 2020 https://media.ifrc.org/ifrc/press-release/world-refugee-day-digital-information-platform-refugees-migrants-launches-italy/

[7] "Refugee Buddy app, Netherlands". IFRC. August 10th, 2020 https://media.ifrc.org/global-review-on-migration/smart-practice/refugee-buddy-app-netherlands/

[8] Madianou, Mirca. "Technocolonialism: Digital Innovation and Data Practices in the Humanitarian Response to Refugee Crises" Social Media and Society, Volume 5 Issue 3, July-September. July 26, 2019 Accessed July 28th, 2020 https://journals.sagepub.com/doi/full/10.1177/2056305119863146

[9] Drew, Katie. "Busting a Myth: There's very often not an app for that!" UNHCR Innovations Blog. 2018. https://www.unhcr.org/innovation/busting-myth-theres-often-not-app/

[10] UNHCR Skopje "fYR Macedonia, Information and Communication needs assessment at Tabanovce Refugee Aid Point" April 19th, 2019. https://data2.unhcr.org/en/documents/details/47354

These apps failed because of mistakes that are obvious to refugees. That so many of these apps failed in ways that most refugees could have predicted is not only a failure to meet technical best practices, it is an organizational workflow failure and, arguably, a moral failure to use resources transparently and well-enough to achieve a meaningful benefit.

At the time of writing, a record 79.5 million people are displaced across the world, and innovation focusing on providing better aid and services to those suffering from forced displacement is critical to address this growing challenge.[11] This paper explores the story of humanitarian innovation in forced displacement and looks at the ways that UN agencies, NGOs, and local governments have addressed access to information, housing, healthcare, communication, education, and employment in forced displacement. For those fleeing violence and persecution, these services are essential for rebuilding their lives and integrating into host communities. How do we design products and services together with crisis-affected communities, and how can we apply the humanitarian principle of "do no harm" in innovation and technology? How to reimagine the humanitarian systems through a participatory approach, so that those forcibly displaced are involved in the projects and policies that shape their lives?

History of Innovation in Humanitarian Assistance for Refugees

Innovation is not new in responding to forced displacement challenges, and it's certainly not new in the humanitarian sector, where it has played an increasingly transformative role over the past 10 years through partnerships and inter-agency working groups. Both refugees and those working in humanitarian assistance have long worked to develop more inclusive solutions, better adoption strategies, new frameworks, and a host of other new ideas dedicated to meeting the needs of people suffering from forced displacement.

While there is a tradition of developing new programmatic and operational responses in the humanitarian sector, recent years have seen the rise of "innovation as a strategic concern for organisations, and for the sector as a whole."[12] After the Active Learning Network for Accountability and Performance (ALNAP) published its key, 2009 study on innovation[13], a number of country donors created funds to support humanitarian innovation, which lead to a range of new initiatives, such as the Global Alliance for Humanitarian Innovation (GAHI) and the Humanitarian Innovation Fund (HIF):

> "Research and policy efforts have diagnosed many of the systemic barriers inhibiting innovation, and innovation units have been created in a number of agencies, including the World Food Programme (WFP), the International Committee of the Red Cross (ICRC) and the International Federation of Red Cross and Red Crescent Societies (IFRC). The UN High Commissioner for Refugees (UNHCR) and the UN Children's Fund (UNICEF) have built ambitious and externally

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[11] United Nations High Commissioner for Refugees (UNHCR). "Global trends: Forced displacement in 2019". Geneva. 20https://www.unhcr.org/statistics/unhcrstats/5ee200e37/unhcr-global-trends-2019.html

[12] Scriven, Kim. "Humanitarian innovation and the art of the possible" Humanitarian Practice Network. April 2016 https://odihpn.org/magazine/humanitarian-innovation-and-the-art-of-the-possible/

[13] The 2009 ALNAP report is the first major study of the humanitarian innovation landscape and emerging processes, drawing from case studies and interviews with practitioners across the sector. The report explores how some of the major challenges of humanitarian innovation are closely intertwined with weaknesses in humanitarian action like decentralized coordination, and sustainable funding is affected by the political movements from donor countries.

facing organisational units which play an important role in positioning their organisations as relevant and dynamic."[14]

There are now 27 UN organizations with innovation units, many of which are partnering with a growing number of NGOs, private sector actors, and donors, and are dedicated to improving humanitarian services and operations. These partnerships seek to seize the opportunities, and address the challenges, found in a world that is more connected and more globalized than ever.[15] These initiatives that aimed to utilize the latest technologies to solve some of the world's most challenging humanitarian problems through these partnerships have often lacked a clear mission and framework. The result has been too many false starts and growing pains.

Developing Innovation in Humanitarian Settings

Today's ever-quickening pace of technological innovation presents opportunities and challenges for refugees, humanitarians, and host communities. For those fleeing violence and persecution, each day brings new uncertainties, and with them, a need to adjust direction and plans. For this reason, mobile technology has been a focus of innovation projects for refugees to navigate their journeys safely. Without easy access to vital information about changing conditions, refugees are often forced to trust random strangers and smugglers, leaving them vulnerable to abuse, exploitation, or worse.

While innovation is increasingly central to the humanitarian response to forced displacement crises, there are often misleading assumptions about what innovation is, how it will affect organizational workflows, and who gets to participate in it. In the humanitarian sector, the term innovation is often equated with applying new technological solutions to old humanitarian challenges, which can make it seem to be the exclusive domain of engineers and developers, and intimidating for others to approach such projects.

There have been two significant shifts in this space in recent years, in building innovation with affected communities, from the bottom up, and moving away from strictly product-driven innovation–this comes after of approaching innovation as looking for a way to use new and buzzworthy technologies in humanitarian response like drones, blockchain, satellites, machine learning, solar-powered laptops, and even high-altitude balloons used for aerial wireless networks. This approach, commonly known as *technosolutionism*, is seen often in private sector and top-down humanitarian innovation through trial-and-error projects, and is defined in this context as the idea that technology can solve a range of different kinds of problems and challenges for refugees.[16]

There is no set process to teach or prepare for incorporating humanitarian innovation in an organization, though there are plenty of lessons learned shared through a growing trend of publishing and sharing so-

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[14] Ibid

[15] Earney, C & Krishnan, A. "The Art of Values-Based Innovation for Humanitarian Action" Stanford Social Innovation Review. September 18th, 2019. Accessed July 28th, 2020:
https://ssir.org/articles/entry/the_art_of_values_based_innovation_for_humanitarian_action

[16] Warnes, John. "What does Innovation ≠ Technology mean?" UNHCR Innovations Blog, 2028.
https://www.unhcr.org/innovation/innovation-does-not-equal-technology/

called tech project post-mortems that explain the factors that led the project to fail.[17] In the context of refugees and forced displacement, a handful of actors like UNHCR's Innovation Service and The Refugee Studies Centre at University of Oxford have played a critical role in changing the culture of innovation in the sector towards more open and collaborative design, and applying the humanitarian principle of "do no harm" in innovation, instead of partaking in the race to adopt the newest and most cutting-edge technology available, which can quite often end up looking like a race to the bottom.

Bottom-up Innovation

One of the greatest challenges in humanitarian innovation has been engaging refugees and other crisis-affected communities in addressing the opportunities and challenges through a more dignified, participatory approach. Through a number of trial-and-error projects with private sector partners, we've slowly learned that public-sector innovation requires a rather different set of skills and processes. One of those is the importance of involving the end-users in the design and development of these projects to address usability, accessibility, and security issues that might affect their communities. Over the past decade there has been a clear shift towards bottom-up innovation within UN agencies, NGOs, academia, private sector actors, and host communities.[18]

Unlike top-down innovation, which is driven by organizational leadership and funders, bottom-up innovation is led by the affected population, beneficiaries, partners, and organizational staff.[19] In the context of forced displacement it can be defined as the way in which crisis-affected communities engage in creative problem-solving, adapting products and processes to address challenges and create opportunities.[20]

Many initiatives over the past decade have shifted emphasis on tailoring their approach to local needs through the bottom-up approach. One such initiative is the Swedish project Entry Hub, which addresses local barriers to inclusion by bringing together refugees, employers, community leaders, and local officials. Entry Hub is seen as a success story in this context because it's driven locally, and the kinds of challenges it aims to solve might not be visible to national or regional stakeholders, so the projects couldn't be adapted or scaled down from an innovation project at a large organization. One of the project successes was a restructuring of the recruitment process at the Swedish postal service, after identifying that the formal interview process was excluding refugees by design.[21]

Refugee communities have contributed to a number of other bottom-up innovation projects, addressing a spectrum of challenges from early warning and rapid response, to issues in cases of protracted

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[17] O'Carroll, Tanya. "Panic Button: Lessons For The Tech For Good Sector" Engine Room Blog. September 1st, 2017. https://www.theengineroom.org/panic-button-lessons-learned/

[18] Betts et al. "Refugee Innovation: Humanitarian innovation that starts with communities". Refugee Studies Centre, Oxford Department of International Development. 2015. https://www.rsc.ox.ac.uk/files/files-1/refugee-innovation-web-5-3mb.pdf

[19] Munnecke et al. "Bottom-up strategies in consumer-led markets". Conference paper, 2nd International Seville Seminar on Future-Oriented Technology Analysis: Impact of FTA Approaches on Policy and Decision-Making. 2006. Accessed: August 9th, 2020: https://www.researchgate.net/publication/252422172_bottom-up_strategies_in_consumer-led_market

[20] Betts et al. "Refugee Innovation: Humanitarian innovation that starts with communities". Refugee Studies Centre, Oxford Department of International Development. 2015. https://www.rsc.ox.ac.uk/files/files-1/refugee-innovation-web-5-3mb.pdf

[21] We Link Sweden, 'Entry Hub', accessed 15 August 2020, www.welinksweden.se/entryhub.

displacement.[22] However, while there is a lot of potential to address diverse humanitarian challenges, contributions in innovation from crisis-affected communities have often gone unrecognized. While there have been a handful of successful efforts to meaningfully engage the capacities of refugee communities, like the vast majority of innovation projects at larger organizations have been centered around redesigning organizational systems, and improving operations and response.[23]

The Role of Social Innovation

Social services like healthcare, education, and welfare programs in host countries are often ill-equipped to respond to a large number of arrivals, and can be over-whelmed by the considerable and specific needs of refugees in their community. There are clear limitations of technology and product innovation when it comes to social issues like facilitating inclusion of large numbers of refugees in host communities, leading many to explore new ways of addressing these challenges through social innovation approaches.

Social innovation can be defined as the process of developing solutions for social and environmental issues in support of social progress that require active collaboration from different stakeholders to meet needs in a better way than the existing solutions.[24] While UN agencies and NGOs work to provide refugees with goods, services, and protection, protracted displacement has often placed a strain on public services and economic stability in host countries. Over the past decade there has been a growing number of social innovation initiatives focusing on improving access to education, employment, community development, and financial inclusion for both refugees and the host communities.[25]

Social innovation has enabled civil society to meet these needs through new approaches to integration, which better meet the needs of refugees, host communities, and other stakeholders. Refugees themselves have initiated or are involved in many of these innovations. Two examples of community-run social innovation projects that address employment needs are the Magdas Hotel in Vienna[26] that's run by refugees, and the Cucula Company for Arts and Design[27], where refugees are hired to design, prototype, and manufacture furniture and interior decor. While these are primarily examples of ways to create jobs for refugees, there is a wider impact on integration, community building, and normalizing an approach that empowers and protects dignity.[28]

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[22] Bloom, Louise. "5 ways to better engage with bottom-up innovation by refugees". UNHCR Innovation Service blog post. 2016. Accessed August 5h, 2020: https://www.unhcr.org/innovation/5-ways-to-better-engage-with-bottom-up-innovations-by-refugees/

[23] Betts et al. "Refugee Innovation: Humanitarian innovation that starts with communities". Refugee Studies Centre, Oxford Department of International Development. 2015.
https://www.rsc.ox.ac.uk/files/files-1/refugee-innovation-web-5-3mb.pdf

[24] "Defining Social Innovation". Stanford Graduate School of Business. Center for Social Innovation. Accessed July 2nd, 2020:
https://www.gsb.stanford.edu/faculty-research/centers-initiatives/csi/defining-social-innovation

[25] Schreiner, Kendra. "Social Innovation and Entrepreneurship for Refugees in MENA" Social Innovation Exchange. July 2nd, 2018. Accessed July 2nd, 2020 https://socialinnovationexchange.org/insights/social-innovation-and-entrepreneurship-refugees-mena

[26] Magdas Hotel Vienna. Accessed on August 3rd, 2020: https://www.magdas-hotel.at/en/

[27] Cucula Company for Art and Design. Accessed on August 3rd, 2020: https://www.cucula.org/en/story/

[28] Social Innovation for Refugees. European Social Fund, March 2nd, 2017. Accessed on August 3rd, 2020:
https://ec.europa.eu/esf/transnationality/content/social-innovation-refugees

These social innovation initiatives also give the host community an active role and contribute to positive perceptions towards refugees in society and media. Flüchtlinge Willkommen, or Refugees Welcome International, is a Berlin-based organization which connects refugees with locals who sign up with the organization to share their homes, and has been credited with changing attitudes by sharing stories about their work through social media and in print:

> "[Refugees Welcome] had been overwhelmed by offers of support, with plans in the works for similar schemes in other European countries... More than 780 Germans have signed up to the Refugees Welcome website and 26 people have been placed in private homes so far. Two of the site's founders live with a refugee from Mali, whom they are helping with German classes while he waits for a work permit. Martin Patzelt, an MP from chancellor Angela Merkel's CDU party, temporarily housed two Eritrean refugees in his home in Brandenburg. Patzelt said he was contacted by many other Germans offering their homes too, but had also received death threats. 'I didn't want any refugees in my life, but they came. And I took the challenge.'"[29]

While this approach has a lot to offer in terms of holistic experimentation and rethinking of social services, outside of the context of forced displacement the social innovation field as a whole has much opportunity for improvement. While the goal of these initiatives has been to address urgent unmet needs and improve social ties for refugees within the host communities, they naturally lead to greater ambitions of scaling improvement for access to housing and employment regionally. Small social innovation initiatives aren't able or intended to address these systemic problems since they are rooted deeply in older systems and bureaucracy which small social innovation initiatives aren't meant to or able to address.[30]

In addition to limited scaling, sustainability also poses a challenge for the growing number of social innovation projects, as many often fail to identify sustainable funding models for small-scale projects.[31] As a non-profit organization, the core team at Refugees Welcome International is financed through small donations and grants, and sustainable funding has been an issue for the organization from the beginning. Both the donations and people's willingness to share their spare rooms with refugees is inconsistent because it's heavily dependent on public opinion and presence of stories about refugees in the media "For example, after the terrorist attacks in Paris in late 2015, donations and the number of volunteers saw a sudden and sharp decline. The project is thus reliant on visibility and positive news coverage."[32]

The use of social innovation to reimagine and improve systems and services for refugees has grown over the past decade, and has garnered more attention in the media and from funders, which used to focus on technology-driven innovation. The projects have often struggled with scalability and would benefit from better documentation and research to understand the factors that lead to any successful social innovation project. Ultimately, however, successful social innovation projects can work only when there is a political

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[29] Elgot, Jessica. "Airbnb for refugees' group overwhelmed by offers of help". The Guardian. September 1st, 2015. Accessed on July 22nd, 2020 https://www.theguardian.com/world/2015/sep/01/berlin-group-behind-airbnb-for-refugees-overwhelmed-by-offers-of-help

[30] Social Innovation for Refugees. European Social Fund, March 2nd, 2017. Accessed on August 3rd, 2020: https://ec.europa.eu/esf/transnationality/content/social-innovation-refugees

[31] Patuzzi et al. "Social Innovation for Refugee Inclusion: From bright spots to system change" Migration Policy Institute, June 2019

[32] Digital Social Innovation. "Case Study: Flüchtlinge Willkommen" June 2018. Accessed on August 2nd, 2020. https://digitalsocial.eu/case-study/42/fl-chtlinge-willkommen

and systemic willingness to make long-term changes to accommodate needs of refugees and host communities.

Key Issues in Humanitarian Innovation for Refugees

While humanitarian innovation is still a developing field there are several key issues and lessons learned in the context of forced displacement in the design approach, funding, partnerships, and organizational change. There has been a steep learning curve in this sector, for both startup organizations and the innovation teams within older humanitarian systems, facing similar challenges in adoption, scaling, sustainability, and organizational politics.

The shape of the humanitarian ecosystem continues to change in order to meet the needs of those forcibly displaced, and there is a growing number of organizations engaging in humanitarian innovation whose principal function is not humanitarian response, such as businesses, academia, and host governments, and these partnerships have been critical in adopting and funding new systems and technologies. Innovation in forced displacement response encompasses a large scope, and the next section overviews some of the key issues faced by diverse stakeholders: international organizations, NGOs, government agencies, private sector, and academic institutions, using a variety of case studies to explore these issues further.

Public-Private Partnerships in Humanitarian Innovation

Responding to forced displacement emergencies is often a complex and turbulent environment with high staff turnover rates and uncertainty of needs and resources available, making inter-organizational cooperation and logistics key to addressing unmet needs quickly. Humanitarian organizations have a long history of working closely with private sector actors on a range of different projects like procuring and delivering goods and services, restructuring supply chains, and improving early warning systems. With growing resource constraints and a need for emerging technologies and services not available in the humanitarian sector, academic and private sector actors have become more active in the broader complex system of collective humanitarian work.[33]

> "In the face of diminishing resources and increasing disasters and crises… it is imperative to bring in innovative resources," said Mamissa Mboob of the newly created Private Sector Section at the UN Office for Coordination of Humanitarian Affairs (OCHA). "It's almost as if we have no choice... The humanitarian system is stretched to its capacity… It's becoming more clear that no single entity can solve a lot of these world problems."[34]

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[33] Blake et al. "Principles on Public-Private Cooperation in Humanitarian Payments" World Economic Forum. www3.weforum.org/docs/IP/2016/FS/WEF_FI_Principles_Humanitarian_Payments.pdf

[34] Aly, Heba. "What future for private sector involvement in humanitarianism?" The New Humanitarian. August 26th, 2013. Accessed July 14th, 2020: https://www.thenewhumanitarian.org/analysis/2013/08/26/what-future-private-sector-involvement-humanitarianism

From local businesses to large multinational companies, private sector actors provide skills, funding, and resources that have led to more effective humanitarian response and operations.[35] Their growing role in humanitarian innovation through public-private partnerships (PPPs), however, has also been "inconsistent, ill-defined, and characterized by one-off projects and donations," while often lacking clear frameworks and sustainable models.[36]

Partnerships in humanitarian innovation and technology come with a unique set of opportunities and challenges. There are notable differences in goals, values, and outputs that need to be negotiated with each project, and PPPs in humanitarian innovation would benefit from better documentation of strengths and challenges of working with the private sector. There is also a sustainability problem to address, as international organizations and NGOs rely heavily on proprietary technology like Cisco Meraki network services. These tools require frequent updates and more holistic support through installation, maintenance, software updates, and funding from private sector actors to projects like delivering connectivity services in refugee camps.[37][38]

As the principal function of private sector actors is not philanthropy but rather profit, there is naturally a question of whether a business is supporting a certain project for good publicity while "giving back to the community" by doing something that doesn't make a profit, or whether they are doing so to benefit financially in other ways from the partnership, like using data from beneficiaries without their consent or knowledge[39]:

> "Mark Zuckerberg, chief executive of Facebook, promoted access to the Internet as "an enabler of human rights" and a "force for peace" on Saturday, as he announced that his company would help the United Nations bring Internet connections to refugee camps. 'It's not all altruism,' Mr. Zuckerberg said later, in an implicit acknowledgment that drawing new users to his service is also good for Facebook's bottom line. 'We all benefit when we are more connected.'"[40]

For humanitarian organizations, this can cause serious problems, and threaten the trust of beneficiaries who rely on their services and aid, and who don't have a way to challenge or protest the sharing of their data. Silicon Valley is known for startup culture, disrupting industries without considering the potential negative consequences, and operating under the motto "move fast and break things", meaning that making mistakes is a natural consequence of innovation in a highly competitive and complex environment.

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[35] UN Office for the Coordination of Humanitarian Affairs "Combining Capabilities: How Public Private Partnerships are Making a Difference in Humanitarian Action" May 2016. https://reliefweb.int/report/world/combining-capabilities-how-public-private-partnerships-are-making-difference

[36] Patuzzi et al. "Social Innovation for Refugee Inclusion: From bright spots to system change" Migration Policy Institute, June 2019

[37] Baekelmans, John. "Reconnecting refugees with loved ones thanks to the Cisco Disaster Response Team" Cisco Blog. December 11, 2015. https://blogs.cisco.com/digital/reconnecting-refugees-with-loved-ones-thanks-to-the-cisco-disaster-response-team

[38] Kaurin, Dragana. "Space and imagination: Rethinking refugees' digital access". UNHCR Innovation Service, 2020. https://www.unhcr.org/innovation/wp-content/uploads/2020/04/Space-and-imagination-rethinking-refugees-digital-access_WEB042020.pdf

[39] Madianou, Mirca. "Technocolonialism: Digital Innovation and Data Practices in the Humanitarian Response to Refugee Crises" Social Media and Society, Volume 5 Issue 3, July-September. July 26, 2019 Accessed July 28th, 2020 https://journals.sagepub.com/doi/full/10.1177/2056305119863146

[40] Sengupta, S. (2015, September 26). Mark Zuckerberg Announces Project to Connect Refugee Camps to the Internet. Retrieved from The New York Times: https://www.nytimes. com/2015/09/27/world/americas/mark-zuckerbergannouncesproject-to-connect-refugee-camps-to-the-internet.html

In PPPs that benefit the forcibly displaced, these values must be negotiated with the humanitarian principles of impartiality, neutrality, and the "do no harm" principle. This has proven to be a challenge across many joint innovation projects that were designed to help those forcibly displaced. Notably, there is often little transparency about the collection, storage, and sharing of data with projects where large NGOs or IOs partner with tech companies, like the $45 million WFP-Palantir partnership[41], and ICRC's use of Microsoft's facial recognition technology for family tracing and reunification programs.[42] While these projects may improve humanitarian operations for aid workers, there is a risk of losing trust in these institutions among the crisis-affected communities who might not have the power or the ability to opt out, or object to their data being used by private sector actors.[43]

There are also major differences in goals and outputs between the public and private sectors. NGOs and UN agencies usually have to plan within constraints of available funding and grant deliverables, yielding low-risk projects like adopting existing tools instead of developing new ones, which tend to show slow rates of growth and adoption to funders. In contrast, Silicon Valley invests big, takes big risks, and expects rapid revenue growth, making linear growth harder in joint humanitarian innovation projects.[44]

Lastly, there is an issue of ownership of innovation and patents. The drive for humanitarian innovation through inter-agency and public-private partnerships has often been "manifested as an effort by the 'old guard' of humanitarian actors to present themselves as dynamic and relevant while keeping control of resources and authority and maintaining barriers to entry into the system." This top-down approach can make the innovation work more performative in effect, and leave little room for meaningful change in systems, operations, and services.[45]

There are also cases where private sector actors design products for specific humanitarian purposes and sell them to the public sector. The LifeStraw water filter is designed by the Swiss-based Vestergaard Frandsen to provide clean drinking water by removing waterborne bacteria, microplastics, and parasites, and they have been distributed in several major humanitarian emergencies.[46] There is also Nutriset's Plumpy'nut, a peanut-based, ready-to-use therapeutic food (RUTF) to treat severe acute malnutrition, which can be

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[41] In February 2019, WFP announced a five-year partnership with data-mining company Palantir Technologies aimed at helping WFP use its data to streamline the delivery of food and cash-based assistance in life-saving emergency relief operations around the world. The partnership has raised concerns about data ethics in humanitarian innovation and public-private partnerships. Madianou, Mirca. "Technocolonialism: Digital Innovation and Data Practices in the Humanitarian Response to Refugee Crises" Social Media and Society, Volume 5 Issue 3, July-September. July 26, 2019 Accessed July 28th, 2020 https://journals.sagepub.com/doi/full/10.1177/2056305119863146

[42] Zomignani Barboza et al. "Aid and AI: The Challenge of Reconciling Humanitarian Principles and Data Protection." In: Friedewald M., Önen M., Lievens E., Krenn S., Fricker S. (eds) Privacy and Identity Management. Data for Better Living: AI and Privacy. Privacy and Identity 2019. IFIP Advances in Information and Communication Technology, vol 576. 2020. Springer, Cham. https://doi.org/10.1007/978-3-030-42504-3_11

[43] Kaurin, Dragana. "Data Protection and Digital Agency for Refugees" World Refugee Council Research Paper No. 12. May 15, 2019. Accessed July 28th, 2020
https://www.cigionline.org/publications/data-protection-and-digital-agency-refugees

[44] Erhhart, Dr. Christof E. and Kang, Kyung-wha. "Combining Capabilities: How Public Private Partnerships are Making a Difference in Humanitarian Action," May 31, 2016. United Nations Office for the Coordination of Humanitarian Affairs and Deutsche Post DHL Group. Available at https://reliefweb.int/sites/reliefweb.int/files/resources/ocha-dpdhl-group-ppp-report.pdf

[45] https://odihpn.org/magazine/humanitarian-innovation-and-the-art-of-the-possible/

[46] "Kenya: Lifestraw Water Filters Saving Lives in Mutomo" By Phillip Muasya https://allafrica.com/stories/201107040155.html

administered outside of hospitals.[47] While LifeStraw was later developed as a consumer product for "outdoor enthusiasts and survivalists"[48], Nutriset continues to sell the majority of Plumpy'nut production to IOs like UNICEF. Both companies have been heavily criticized by humanitarian practitioners and activists for patenting their life-saving products to raise prices, and holding a monopoly over the products.[49]

A number of questions then emerge around the ethics of private sector innovation for humanitarian crises, and whether it should be protected and marketed like other consumer products. Should the products like RUTFs that are designed specifically with the intent of addressing humanitarian challenges be afforded patent protection, and be able to keep the market cornered?[50]

In a response to a New York Times article about Plumpy'Nut, economist Jeff Sachs warned against silver-bullet solutions to complex humanitarian issues, and drew attention to the lack of sustainability in these models:

> "Plumpy'Nut addresses only one kind of hunger — acute episodes of extreme food deprivation or illness, the kind mainly associated with famines and conflicts… For the vast majority of the world's hungry, the main solutions lie in more productive local agriculture, a more diverse mix of nutritious crops, and much greater public awareness regarding feasible and low-cost approaches to a healthy diet. Plumpy'Nut has little role to play in circumstances of chronic hunger. Nonetheless, some people are apparently promoting it as a cure-all… an absurdly high cost compared to the real solutions of improved local agriculture, improved household dietary practices, and expanded access of the poor to basic healthcare."[51]

Perhaps the most successful and sustainable PPP model is when businesses offer mentorships, skill-sharing, and give business acumen to IOs and nonprofits. When rolling out public-interest tech projects, for example, there is a tendency to skip over usability testing, market research, and advertising for products because of funding constraints, and this is where the private sector could provide consultation and support through skill-sharing. Another example is the partnership between the Accenture consulting and the Ashoka Foundation in Belgium, where "social entrepreneurs are matched with business experts who coach them for four months, helping them think through their business plans and identify strategies for greater impact."[52]

Whatever shape they take, PPPs work best when there are well-defined roles, values, expectations, and guidelines, and where the work is transparent and available to all parties, including refugees and other beneficiaries. Starting small, therefore, is critical in public-private humanitarian partnerships to be able to responsibly scale up, and handle risk faced by marginalized and vulnerable populations who rely on these public institutions.

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[47] Rice, Andrew. "The Peanut Solution" New York Times. September 2nd, 2010. Accessed July 24th, 2020 https://www.nytimes.com/2010/09/05/magazine/05Plumpy-t.html?scp=1&sq=peanut%20solution&st=cse

[48] LifeStraw website https://www.lifestraw.com/

[49] "Nutriset patent impeding access to treatment of Severe Acute Malnutrition" Medecins Sans Frontieres. November 12th, 2009. Accessed July 26th, 2020 https://msfaccess.org/msf-nutriset-patent-impeding-access-treatment-severe-acute-malnutrition

[50]Ibid

[51] Sachs, Jeffrey. "Saying "Nuts" to Hunger" Huffington Post. September 6th, 2020. Accessed August 4th, 2020 https://www.huffpost.com/entry/saying-nuts-to-hunger_b_706798

[52] Patuzzi et al. "Social Innovation for Refugee Inclusion: From bright spots to system change" June 2019. Migration Policy Institute.

Case Study: IKEA Refugee Housing Unit

Today most refugees live in protracted refugee situations, living in a host country for five years or more, and some for more than a generation. As months turn into years in exile, millions of refugees living in camps face freezing temperatures, sweltering heat in the summer, flooding and leaking from rain in their tents. The typical tent generally lasts about six months, and it's not an adequate shelter in terms of privacy or protection from outside elements.[53] According to the World Health Organization, in January 2019, at least 29 children and infants died from hypothermia in one overcrowded camp in northeastern Syria facing shortages leaving thousands of people to spend several nights there "without any shelter or even blankets."[54]

In 2010, a joint project was started between the Swedish social enterprise Better Shelter, UNHCR, and the IKEA Foundation to build a longer-lasting shelter than the traditional tent, with insulation and better protection. The IKEA Refugee Housing Unit (RHU) is a flat-pack, temporary emergency refugee shelter project that was rolled out in 2015. It has since received many international accolades on innovation and simple design, was displayed at the Museum of Modern Art in New York as part of the permanent design collection, and even the 2016 Beazley Design of the Year.[55]

RHUs are described as "easy to assemble", constructed of "tubular metal frames and clad in flexible snap-together panels," and expected to last up to three years. Each shelter costs around $1,250, providing 17.5 square meters for up to five people, and featuring solar-powered lights, and lockable doors. This project was a decade in the making, worth $12.5 million, and deployed thousands of shelters, though the project made headlines after flaws within the design and safety concerns were identified, and were put on hold:

> "In 2015, when Zurich ordered 62 to house asylum-seekers, [they] found [that they] couldn't use them because they were "fire hazards". 'The shelters were never designed to meet Swiss fire regulations,' says Märta Terne of Better Shelter, 'or to be used indoors as the city proposed. The humanitarian aid world doesn't adhere to the same safety standards as you would for permanent buildings in Europe made of concrete and stone. But there are strict rules about the distance between shelters and no cooking is allowed inside.'"[56]

Funding in aid and development is notoriously competitive, limited, and siloed, and even though design problems were identified during the prototyping stage, they were "left out of a report for fear of losing

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[53] Wainwright, Oliver. "Why Ikea's flatpack refugee shelter won design of the year" The Guardian. January 27th, 2017. Accessed August 4th, 2020 https://www.theguardian.com/artanddesign/2017/jan/27/why-ikea-flatpack-refugee-shelter-won-design-of-the-year

[54] Yee, Vivian. "29 Syrian Children Die During Freezing Escape From the Islamic State" New York Times. January 31st, 2019. Accessed August 4th, 2020 https://www.nytimes.com/2019/01/31/world/middleeast/syria-children-refugees-isis.html

[55] Wainwright, Oliver. "Why Ikea's flatpack refugee shelter won design of the year" The Guardian. January 27th, 2017. Accessed August 4th, 2020 https://www.theguardian.com/artanddesign/2017/jan/27/why-ikea-flatpack-refugee-shelter-won-design-of-the-year

[56] Ibid

funding."[57] As field engineers on the ground noted durability flaws, vulnerabilities to fire, DIY repairs, and design issues, project partners claimed to be unaware of these structural flaws. The fight for funding overshadowed the actual effectiveness of the project and ultimately, the end-users. The project also received criticism for lack of inclusion and accessibility, complaints about wind draft, and inaccessibility for wheelchair users. Overall, he argued, it was important to include agency of the refugees and ownership over the space itself in the process of design and implementation; to include those who would actually be using this product.[58]

The lessons from the RHU project also question the procurement process and the need for inclusive input from all organizational stakeholders, not just the engineers and designers– but also legal, procurement, logistics, communications, and financial departments should be involved in the process as well to build the new workflow. The academic publication Forced Migration Review added their own recommendations from following the RHU project:

> "Interview co-workers from all levels and departments in partner organisations to understand requirements on the ground as well as logistical and procurement processes. It is important to establish feedback guidelines and processes for end users' opinions and experiences – and to do this early on in the project. There is value in diversity among design partners to represent different realities in order to create a more versatile product and to ensure that the concept can be implemented in as many contexts and to meet as many needs as possible."[59]

Innovation cannot be defined only by formation of new projects and systems, it has to be done through a safe, inclusive, and transparent approach. The RHU has the potential to mitigate and provide better living conditions for displaced people if it carefully and holistically accounts for the well-being of its end-users; in this case a population that's already at risk.

Transparency and engagement with beneficiaries were also a crucial aspect of iteration and improvement, which the Better Shelter project shared on their webpage: "During the prototype phase, several refugee families tested and gave input that improved the shelter's design."[60] Unlike in the private sector, where there is a competitive market for products, public interest products benefit from a diverse group of stakeholders in the design process to make sure everyone's needs are met. Inviting refugees only in the prototype stage is not meaningful and seems more performative participatory design that can only lead to identifying challenges in usability in absence of a market of products:

> "Unlike IKEA's customers, the end user in a refugee or IDP camp does not make the choice of what emergency or post-emergency shelter they wish to live in. This is decided by the humanitarian organisations and/or the donors, which biases the product development towards the purchaser and

[57] Fairs, Marcus. "Ten thousand IKEA refugee shelters left unused over fire fears, United Nations admits" Dezeen. April 29tth, 2017. Accessed August 4th, 2020 https://www.dezeen.com/2017/04/29/united-nations-admits-10000-ikea-better-shelter-refugees-mothballed-fire-fears/

[58] Fairs, Marcus. "Ten thousand IKEA refugee shelters left unused over fire fears, United Nations admits" Dezeen. April 29tth, 2017. Accessed August 4th, 2020 https://www.dezeen.com/2017/04/29/united-nations-admits-10000-ikea-better-shelter-refugees-mothballed-fire-fears/

[59] Terne et al. "The diversity of data needed to drive design" Forced Migration Review. June 2017. Accessed July 30th, 2020. https://www.fmreview.org/shelter/terne-karlsson-gustafsson

[60] Tubertini, Camilla. "Good design that's doing good" IKEA Foundation. 2017. https://www.ikea.com/ms/en_JO/this-is-ikea/ikea-highlights/2017/better-shelter/index.html

donor as their voices have a channel and proximity. While they know a lot about specific end users' needs, they remain an intermediary. The same goes for our design team; trained in European design schools, we carry a certain heritage that may or may not be relevant in all contexts."[61]

The RHU is a unique project in that the users don't design the product, and the designers will never use it. While the RHU is a far better solution than tents, especially in cases of extreme weather, refugees deserve to know why a particular solution was chosen for them, how much money it cost, how the decisions were made, and to contribute ideas for how to imagine these spaces differently and design camps as future cities, like so many have become: "Design for refugees can be good and beautiful, without costing any more. With the same materials and the same budget, it is possible to design a place, not just a shelter."[62]

Lastly, The RHU reminds us that, before all, design is first political. Through the partnership, the RHU is built on a theory of change that sees displacement in camps as temporary, when this is simply not the case for the vast majority of refugees today."[63] Any meaningful, quality design therefore can only exist when there is a will with governments to commit to providing long-term solutions. The double standard in fire safety measures for the use of the RHUs in Europe and in the developing world raises questions about the extent to which such design is upholding neoliberal policies and what message this is sending to refugees who will be using them:

> "Designers should be wary that their work does not end up being used to legitimise a state of permanent temporary living. Temporary shelters are exactly how neoliberals hope to discourage refugees from coming to Europe. The refugee crisis has to be understood in its totality, and cannot be seen as an isolated design issue. A shelter is not just a shelter, a campaign is not just a campaign – they relate to larger political ideologies and sentiments. If we do not take the impact that design has on the world seriously, design for good can do more harm than good."[64]

A Shift Towards Values-Based Innovation at UNHCR Innovation Service

In order to continue improving humanitarian action, innovation needs to be reframed as a "tool for changing the way systems work and our practices so that they better serve communities." Values-based innovation has emerged as an important part of grounding the mission and vision of organizations as "a set of values that runs through all of their practices." This practice ensures that innovation is aligned with the mission of the organizations, making sure its approach and end-results stay true to its original goal. Organizations with similar values mutually benefit from a values-based approach through inclusive frameworks and collaboration.[65]

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[61] Terne et al. "The diversity of data needed to drive design" Forced Migration Review. June 2017. Accessed July 30th, 2020. https://www.fmreview.org/shelter/terne-karlsson-gustafsson

[62] MacGregor, Marion. "Design for refugees: When does a shelter become a home?" InfoMigrants. July 23rd, 2019. Accessed August 5th, 2020
https://www.infomigrants.net/en/post/17921/design-for-refugees-when-does-a-shelter-become-a-home

[63] Fairs, Marcus. "Don't design yet another shelter" for refugees, say experts" Dezeen. December 18th, 2017. Accessed July 29th, 2020

[64] Pater, Ruben. "Treating the refugee crisis as a design problem is problematic". Dezeen. April 21st, 2016. Accessed August 5th, 2020 https://www.dezeen.com/2016/04/21/ruben-pater-opinion-what-design-can-do-refugee-crisis-problematic-design/

[65] Breuer et al. "Values-Based Innovation Management – Innovating by What We Care About" January 2017 Publisher: Palgrave Macmillan https://www.researchgate.net/publication/308937305_Values-Based_Innovation_Management_-_Innovating_by_What_We_Care_About

Though the approach is borrowed from the private sector, it serves humanitarian innovation space well by introducing the idea of market competition and building user trust through principles in responding to forced displacement by collaborating meaningfully and ethically, recognizing power structures to reimagine an inclusive future, and questioning whose voices are valued and why. First, recognizing the inability to adapt to similar models as in Silicon Valley, there is a need for a different approach and focus on knowledge sharing with partners, highlighting the importance of collective action, needs, and ethics. Collaboration across public and private sectors requires active engagement and collective intelligence. When working with vulnerable communities, it is equally important to recognize power imbalances, and examine which voices are being amplified by a project, through critical analysis of potential impact.[66]

Case Study: Predictive Analytics in Migration

To improve emergency response and on-the-ground humanitarian services for those who are forcibly displaced, a number of different actors in the humanitarian ecosystem have explored the use of predictive analytics, a technique that uses existing data, artificial intelligence (AI), and machine learning, a subfield of AI which enables computer algorithms to improve and learn from past data thorough experience, and generate predictions about migration and displacement. Such an ambitious project requires a lot of trial and error, a team with diverse skill sets, collaboration with affected communities, an open approach driving the innovation, and an organizational will to implement new technologies and restructure their workflows and internal policies.

IBM and the Danish Refugee Council created one such project together called Mixed Migration Review (MM4Sight) with support from the Danish Ministry of Foreign Affairs, which uses 85 indicators for predicting "why displaced people move and where they are likely to go", such as access to electricity and livestock production. The intent of the project is "not necessarily to stave off a crisis, but to predict how it will unfold to help Danish policymakers organize a response". While there have been regular updates on the success rates of predicting migration of people from Ethiopia to Europe, there is a troubling lack of a project narrative that describes exactly how this project might help policymakers at a time when there is a record low in refugee admissions in Europe and the US, how exactly the project helps refugees, what sort of risk modeling is being done, and a lack of voices of the people whose movement is monitored.[67]

In London, Brunel University's Flee project similarly uses publicly available data to predict forced displacement in Africa for better humanitarian preparedness, allocation of resources, and accommodation. The project uses agent-based modelling to study population movements, explain migration patterns, "predict the destinations of refugees fleeing conflicts in Africa" and can simulate multiple policy options for predicting how border closures or camp relocations would affect migration. As an academic project that's coming from outside the humanitarian ecosystem however, the group has yet to establish

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[66] Earney, C & Krishnan, A. "The Art of Values-Based Innovation for Humanitarian Action" Stanford Social Innovation Review. September 18th, 2019. Accessed July 28th, 2020:
https://ssir.org/articles/entry/the_art_of_values_based_innovation_for_humanitarian_action

[67] Horwood et al. "Mixed Migration Review 2019" Danish Refugee Council. 2019. https://flygtning.dk/media/5482230/mixed-migration-review-2019.pdf

collaborations with any humanitarian organisations that would use the product, and negotiate how to adapt this technology to support specific humanitarian efforts".[68]

Another predictive analytics project, Project Jetson, started around the same time at UNHCR, designed to improve internal operations and "steer UNHCR towards becoming a more data-driven organization", using the technology to create more opportunity for proactive, rather than reactive decision-making"[69]:

> "The potential [was] to become more proactive in their response efforts… understand not only patterns of displacement, but, if there were some significant data points that could give us predictions of how [refugees and internally displaced people] were going to move in the future. Predicting refugee and internally displaced persons (IDP) arrivals is of critical interest in humanitarian emergencies since field operations teams must prepare in advance for these arrivals. The better prepared they are, the better assistance teams can provide in the form of food, shelter, and other protection-related services, as well as for contingency planning purposes.[70]

Like MM4Sight and the Flee Project, it's worth noting that Jetson is also institutionally-based in Europe, and yet focused on predicting movement of displaced populations in East Africa, caused by climate change and violent conflicts.[71] Jetson was built off a previous predictive model created during the 2015 refugee crisis in Europe, and later adopted to "discover, understand, and measure the specific factors that cause or indicate the forced displacement of Somalis."[72]

The team initially identified variables including "rainfall, river levels, deaths and incidents linked to violent conflict, and historical population movement to use as indicators of Somali displacement." The project improved after adopting a participatory approach, and including refugees in the development who identified commodities market prices as a key indicator for the project and after narrowing down their time frame from predicting several months in advance with data that was several months delayed, to only one month in advance with real-time data.[73]

Jetson needed to be usable in areas with low internet bandwidth and usable to those without technical backgrounds, for the UNHCR team in Somalia to be able to access the same resources. Initially, the team built the site as "one package, even though some people would only visit the site to use certain parts of it, they weren't even able to visit other parts."[74] This meant that users with high-bandwidth would experience

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[68] Buchanunn, J. "New simulation technology to predict refugee destinations could improve aid efforts." Brunel University London. 2017. https://www.brunel.ac.uk/news-and-events/news/articles/New-simulation-technology-topredict-refugee-destinations

[69] UNHCR Innovation Service "Migration, Mitigation and MapsThe predictive role of UNHCR's first Winter Cell" October 17th, 2017. https://www.unhcr.org/innovation-year-in-review/essay-migration-mitigation/

[70] "Using artificial intelligence to model displacement in Somalia" Global Pulse Lab, New York. Accessed July 24h, 2020 https://www.unglobalpulse.org/project/using-artificial-intelligence-to-model-displacement-in-somalia/

[71] Krishnan, Aarathi. "Decolonial Humanitarian Digital Governance". Berkman Klein Center Collection Medium Blog. April 15th, 2021. https://medium.com/berkman-klein-center/decolonial-humanitarian-digital-governance-48b35b05b110

[72] UNHCR Innovation Service "A goat story" May 2019 https://medium.com/unhcr-innovation-service/a-goat-story-3ed6bdd2b237

[73] UNHCR Innovation Service "Is it possible to predict forced displacement?" May 2019 https://medium.com/unhcr-innovation-service/is-it-possible-to-predict-forced-displacement-58960afe0ba1

[74] UNHCR Innovation Service "A recipe for success: humility and resilience in humanitarian innovation failures". May 2019. https://medium.com/unhcr-innovation-service/the-recipe-for-success-humility-and-resilience-in-humanitarian-innovation-failures-d8d72276ceaa

the site at its full potential, and those with low-bandwidth experienced the bare minimum, which the team recognized as an inequitable solution, reflecting through a values-based approach in a series of blog posts who the product was designed for, who the product really works for, and how to make access more equitable.[75]

While all three projects have reported successes in predicting movement, there are major transparency and humanitarian data ethics issues that arise when public-interest technologies use data from a particularly vulnerable group like forcibly displaced people who are living in countries where they don't have easy access to legal protection mechanisms. While the projects don't use personally identifying data, those who have been forcibly displaced aren't aware of these projects that monitor and predict their movement. Such data could potentially be used by armed groups or governments in neighboring countries for border closures. Displaced communities also deserve to have an understanding of how humanitarian decisions are made based on this information, and failure to communicate this well to the affected communities can lead to loss of trust in the organizations involved. Lastly, unlike in the private sector where consumers have certain rights and protections through mechanisms like the General Data Protection Regulation (GDPR) or California Consumer Privacy Act (CCPA), humanitarian purposes are often excluded from the same policies and oversight, and are left to self-regulate. Often the only accountability measures taken are initiated by human rights watchdogs, advocacy groups, and other civil society organizations.[76]

This is not to say that including predictive analytics in humanitarian programs may not be necessary or possible. In humanitarian situations where seeking informed consent is not an option–as it might not be possible to seek informed consent from data subjects in a disaster for urgent humanitarian assistance– transparency about the project and easy access to information are absolutely critical for maintaining trust with affected communities. While organizations like UNHCR and DRC have developed data protection policies, they are not easily accessible or available in languages spoken by those forcibly displaced who speak languages like Somali, Amharic, or Oromo. Any policies that are available seem to be directed towards staff and authorities in host countries. UNHCR's data protection policy, for example, is only available in English, French, Spanish, Turkish, and Russian.[77]

Though the Jetson team stopped working on the model after encountering difficulties in implementing the project in the organization, they shifted focus to sharing lessons learned from the project and an analysis of humanitarian failures and mistakes. As a humanitarian project, success in Project Jetson can't be measured by the same private sector standards, through optimization, rapid scaling, and revenue growth alone. Rather, success in public sector innovation might be better defined by public sector standards and values like building open knowledge and open-source technology for others to be able to pick up the work where one project failed. Projects that challenge systems and push internally for transparency and inclusivity benefit everyone, and have the potential to make positive influences on both the humanitarian and private-sector tech actors through an open and values-based approach.

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[75] UNHCR Innovation Service "A goat story" May 2019 https://medium.com/unhcr-innovation-service/a-goat-story-3ed6bdd2b237

[76] Kaurin, Dragana. "Data Protection and Digital Agency for Refugees" World Refugee Council Research Paper No. 12. May 15, 2019. Accessed July 28th, 2020
https://www.cigionline.org/publications/data-protection-and-digital-agency-refugees

[77] UN High Commissioner for Refugees (UNHCR), *Policy on the Protection of Personal Data of Persons of Concern to UNHCR*, May 2015, available at: https://www.refworld.org/docid/55643c1d4.html [accessed 15 January 2021]

Importance of Participatory Design

Some of the most successful innovation projects created during the 2015 Mediterranean refugee crisis were created by the refugees themselves as independent projects. One such example is an app called Bureaucrazy, that was created by two Syrian refugees to help others struggling with navigating the German asylum process, by guiding users through necessary forms[78]. Another two examples of refugees-led innovation with good adoption rates are Gherbetna app, created to help refugees in host countries assimilate with local guides and information, and Dubarah, a platform that helps refugees find job opportunities. While these projects were lauded as rare examples of innovation initiated and developed by refugees, the lack of diversity in who designed the apps affected usability and accessibility:

> "Absent from the design of both Dubarah and Gherbetna, however, has been the targeting of the specific needs of women and girls. At the time of writing, there has been little public discussion on either platform of women's needs: women's and girls' gendered experiences of migration, their specific protection needs and opportunities to address them, or the challenges that women and girls face in accessing public services such as education or health services. Additionally, by their very nature neither platform takes into account the fact that women globally have less access to mobile phones or computers, and what access they do have is typically monitored by fathers, husbands or male siblings.
>
> In the design and implementation of every innovation, regardless of context, the demographics of the end-users should be considered. This includes differences in gender but also in age, religious affiliation, race and ethnicity, among other considerations. Crucially, the humanitarian community – which should understand the gendered and other impacts of migration, displacement and technology – must develop mechanisms which take steps to address those impacts while supporting technologies originating in the community."[79]

The lack of meaningful participatory design in humanitarian innovation is common even in refugee-led innovation projects, and the lack of diversity has led to significant accessibility issues. While there are many ways of incorporating participatory design approaches, there is a structured design process and important best practices that can help create successful solutions that reduce harm, and meet the needs of a diverse group of people in forced displacement. MIT's Development research lab (D-Lab) trains practitioners in adopting an approach called "co-creation" that can be adapted for a variety of innovation projects. Following this process does take more effort, discipline, and more time to find new ideas and solutions, in a space where quick fixes are often sought. effort, discipline, and collaboration. MIT's D-Lab design process includes three phases commonly used in participatory design approaches:

1. Framing the Problem
2. Creating a Solution
3. Developing a Product

[78] Oltermann, Philip. "Syrian refugees design app for navigating German bureaucracy" The Guardian. August 5th, 2016. Accessed August 8th, 2020: https://www.theguardian.com/world/2016/aug/05/syrian-refugees-app-navigating-german-bureacracy-bureaucrazy

[79] Robinson, Danielle. "Engaging with innovation among refugees and IDPs" Forced Migration Review. October 2016. Accessed August 7th, 2020: https://www.fmreview.org/community-protection/robinson

Following this process aims to avoid technosolutionist outcomes, seen in many innovation projects that start out with looking for ways to use newest and trendiest technology in their forced displacement operations, instead of starting with identifying challenges first. Each phase of this process also goes through three stages:

1. Gather information and insights to gain a better understanding
2. Brainstorm different ideas and use a selection method to determine the best approach.
3. Test, implement and validate the approach before moving on to the next phase.

The process demands a range of different stakeholders to be involved in the design process, to ensure that everyone who is invested in finding the best solution has an opportunity to advocate for their own needs and the needs of others in their community. Next, there are design requirements that follow from the needs identified by stakeholders, and to brainstorm design ideas that are then subject to a process of distinguishing between "objective information and measurements instead of individual opinions' '. Good design requirements in this approach are characterized by measurable targets or comparisons to existing solutions, and in case none of the ideas end up passing the set requirements, stakeholders may need to consider non-traditional approaches or "revise the requirements to be more realistic."[80]

There are a number of different design approaches used in response to forced displacement, though human-centered design and user-centered design[81] in particular have become widely used in recent years. These two approaches are often prized in the private sector innovation for improving product sales and adoption by empathizing with the user and anticipating their needs better, but these approaches don't necessarily rely on user participation through the process. They are approaches that optimize products in an open market, where the consumer has a choice of products. This is rarely the case for beneficiaries of aid and services and even for those operating in the system, as one humanitarian described "people cannot actually make a choice whether they want to get a cash grant from me or from you."[82] Therefore it is critical for design approaches in forced displacement response to follow more inclusive methods.

While participatory design can bring those who have been forcibly displaced into planning and decision-making, such projects have dealt poorly with conflict and have done little to disrupt established power structures. Critics of design ethics in public-interest innovation have questioned the degree to which people's participation actually shapes humanitarian innovation outcomes beyond just having their input noted:

> "Beware the use of participatory design as a form of "performative ethics." Beware the prioritization of flashy maps over the quality of data they present or the value of insights they generate. Beware folksy exercises in collaborative design that create a semblance of public process while ultimately endorsing a predetermined outcome; and beware highly stylized drawings and

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[80]Sweeney et al. "Handbook for Biomass Cookstove Research, Design, and Development: A practical guide to implementing recent advances" Global Alliance for Clean Cookstoves. July 2017. https://www.cleancookingalliance.org/binary-data/RESOURCE/file/000/000/517-1.pdf

[81] Human-centered design is a framework that considers human perspectives throughout the design process. User-centered design is an iterative design process that assesses user needs in each phase of development centering product design on their individual needs.

[82] "Humanitarian Sci-Fi" Meg Satler and Paula Gil Baizan. Trumanitarian Podcast. March 5th, 2021. https://trumanitarian.org/

maps that make official plans impenetrable or untouchable. Recognize that mapping tools reinforce particular ideologies; and that reforming those tools to suit a different ideology may not produce change in real-world effects. Beware mapwashing in all its guises. Acknowledging these risks and designing against them can help open up possibilities for participatory planning."[83]

Case Study: MIT D-Lab Stoves

While millions of refugees receive food from humanitarian agencies, access to modern cookstoves and fuels for cooking has been a continuous challenge for refugees in protracted displacement. Energy for cooking is a gendered issue, especially in places where women do most of the cooking, and collecting water and energy fuels like firewood.[84] Women and girls are also forced to "walk greater distances today due to deforestation to get firewood," and girls often don't go to school so they can help out.[85] They often face great risks while searching and collecting firewood, and suffer from respiratory infections caused by the smoke from cooking over open fires.[86]

Nearly 80% of all refugees are in protracted refugee situations, which UNHCR defines as one in which 25,000 or more refugees from the same nationality have been in exile for at least 5 years in a given host country.[87][88] Refugee camps are also often geographically isolated and ill-equipped to meet other needs like shelter, water and sanitation, shelter, and access to electricity and internet connectivity. 80 percent of those forcibly displaced lack access to electricity, and spend over a third of their total income on energy for heating and lighting.[89]

Solar energy has been widely praised as the most viable long-term solution for refugees in Africa. In a decision that was not made together with the affected population, in 2013 UNHCR purchased 600 Blazing Tube solar cookers for refugee camps in Burkina Faso.[90] The solar-powered cookstove gets its name from its large diameter; it requires direct sunlight and approximately 5 liters of vegetable oil placed in a glass

[83] Mattern, Shannon. "Post-it note city" Places Journal. February 2020. Accessed September 23rd, 2020: https://placesjournal.org/article/post-it-note-city/?cn-reloaded=1

[84] Troconis, Isabella. "The broken promise of solar cooking? The case of Goudoubo Refugee Camp" London School of Economics blog. 2015. https://blogs.lse.ac.uk/internationaldevelopment/2018/01/12/the-broken-promise-of-solar-cooking-the-case-of-goudoubo-refugee-camp/

[85] McColl, Sarah. "A New Kind of Stove Could Save Lives and Trees in Ethiopia" Takepart World and Global Citizen. November 2015. www.takepart.com/article/2015/11/06/new-cookstoves-ethiopia

[86] Muthiah, R. and Aleinikoff, A. "Millions of Refugees Need Access to Cleaner, More Efficient Cookstoves and Fuels" Clean Cooking Alliance. June 19, 2015 Accessed August 8th, 2020: https://www.cleancookingalliance.org/about/news/06-19-2015-millions-of-refugees-need-access-to-cleaner-more-efficient-cookstoves-and-fuels.html

[87] UN High Commissioner for Refugees (UNHCR), *Global Trends: Forced Displacement in 2019*, September 2019, https://www.unhcr.org/globaltrends2019/

[88] UNHCR "Protracted, long-term refugee situations" Global Trends in Forced Displacement, UNHCR blog. 2018. https://www.unhcr.org/globaltrends2018/#:~:text=Protracted%2C%20long-term%20refugee%20situations&text=UNHCR%20defines%20a%20protracted%20refugee,in%20a%20given%20host%20country.

[89] Lahn, Glada. "Heat, Light and Power for Refugees: Saving Lives, Reducing Costs". Chatham House. November 17th, 2015. Accessed August 9th, 2020: https://www.chathamhouse.org/2015/11/heat-light-and-power-refugees-saving-lives-reducing-costs

[90] McKibben, Bill. "The race to solar-power Africa" New Yorker June 19th, 2017. https://www.newyorker.com/magazine/2017/06/26/the-race-to-solar-power-africa

tube, which is heated up by a solar reflector. As it heats up, the oil overflows into a special container, from where the heat "transfers to metal cooking pots that are placed in the container, creating a [heated bath]."[91]

> "Before the introduction of the stove, refugee women had to walk several hours a day to collect firewood," says Olivier Lompo, UNHCR Environmental Officer in Burkina Faso. "Since we have a lot of sunshine, the stove allows them to cook without spending any more time on firewood collection. And, more importantly, it does not produce any smoke - they love it."[92]

The Blazing Tube cookstove initially had relatively high levels of acceptance in refugee camps, "refugees reported accepting the blazing tube cooker only because it was free, the average number of uses was between 15 and 20 times, averaging only 2% of adoption one year later" as a secondary energy source. For most refugees the build felt misleading, and even though it was quite a big device, they found that it didn't allow them to cook more food at once. The users reported the food didn't taste the same as it did on an open fire, and that it even caused marital problems for them. There was also a design oversight problem - for women in the camps, it didn't look like a cookstove.[93]

Co-creation as a participatory design approach allows for an opportunity to "involve individuals with first-hand knowledge of the difficulties and constraints of living in the refugee camp", allowing them to take the lead in design, as experts through a more dignified approach. D-Lab has worked on a number of projects responding to forced displacement with NGO partners, UNHCR, and host communities to incorporate the co-creation approach. In 2014, they hosted a program with refugee communities in northern Uganda to skillshare with mechanical engineers and produce cookstoves that meet universal needs in local context and environment:

> "In each team, participants were able to provide invaluable insights on why certain technologies might be accepted or rejected, and what gaps existed that could be filled. For example, the cooking team wanted to reduce the risks that women in camps face when going out to collect firewood by decreasing the amount of fuel needed for cooking. Many energy-saving cookers have been introduced, but few have been accepted. The refugee and community participants explained that women often rejected cooking devices that looked different from traditional stoves. The team designed a familiar-looking mud Lorena stove that had an insulated, fireless cooker incorporated into it. The initial reactions to the design were very positive, and the local members of the team plan on building full-sized prototypes to test at their homes."[94]

The Lorena-style clay cookstoves have proven to be cost-effective and come with several advantages for refugees, since sand and clay are available in most places, and the material is versatile, and the tools necessary are simple. The construction of the stoves requires simple skills to build almost any size or shape

[91]Clean Cooking Alliance blog. "Blazing Tube Solar Cookers in Burkina Faso Refugee Camps" October 2015. Accessed September 23rd, 2020: https://www.cleancookingalliance.org/about/news/10-20-2015-blazing-tube-solar-cookers-in-burkina-faso-refugee-camps.html

[92] Ibid

[93]Troconis, Isabella. "The broken promise of solar cooking? The case of Goudoubo Refugee Camp" London School of Economics blog. 2015. https://blogs.lse.ac.uk/internationaldevelopment/2018/01/12/the-broken-promise-of-solar-cooking-the-case-of-goudoubo-refugee-camp/

[94] McKown, Lauren. "Bridging the gap between short-term humanitarian relief and long-term development" MIT News. December 2nd, 2014. Accessed August 8th, 2020: https://news.mit.edu/2014/rethink-relief-design-summit-technology-solutions-for-post-conflict-refugees-1202

of stove, and they are easy to repair or replace. The cookstoves are not easily transportable, however, and not very durable, requiring replacement every 2 years. While the Lorena-style cookstoves had high adoption rates with this group and are still in use in this community of refugees, it's important to note that its success is not due to the product itself, but rather the process.[95]

Inclusive Futures in Innovation with Refugees

There are several key lessons to be learned from these case studies and mistakes, some of which continue to be repeated in humanitarian innovation, like technosolutionist approaches, lack of transparency and accountability to aid users, and implicitly assuming that all the steps between invention and distribution don't matter to the way that commercial products and services are launched. What is certain is that there are no silver bullet solutions or quick fixes for forced displacement issues, though it is often portrayed that way in the media, and that technical solutions cannot solve social and political problems at the core.[96] What works well in innovation is sharing both successes and mistakes, and working with affected communities from the beginning - not as performative participation, but rather through a transparent and engaging approach that offers dignity and choice through a market of aid and services. As we step into a new decade, and as the humanitarian sector is working to reorganize operations due to the COVID-19 emergency, it is worth assessing the state of innovation work today and what is the role of innovation in responding to forced displacement going forward.

While innovation continues aiming for improved operations and services, it has brought to surface structural problems in aid and development that affect those forcibly displaced:

> "Despite the dramatic change in the operating environment, the structure of the humanitarian system has remained essentially closed and unchanged. As a result, pressure is building to fundamentally alter the way business is done, and many humanitarian actors and donors are looking to innovation as a vehicle for introducing these changes.[97]

> "The longer-term impact of the focus on innovation is less certain. As the political and operational contexts which shape humanitarian aid change, the extent to which the current system is able to adapt and evolve in response will depend on whether it is possible to achieve a shift in the culture and underlying politics of the aid system."[98]

Innovation is first a political matter, and using the right approaches can create opportunities to reflect on what structures and ideologies are being upheld with certain products and designs. What message are we

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[95] Kenney. M. and Verploegen. E. "Report from Uganda: Scaling Improved Cookstove Companies". MIT D-Lab. 2017. https://d-lab.mit.edu/sites/default/files/inline-files/Ugandan%20Cookstove%20Business%20Models%20final%20Oct%2011%202017_0_0.pdf

[96] Latonero and Kift. "On Digital Passages and Borders: Refugees and the New Infrastructure for Movement and Control". Social Media + Society. March 20, 2018 https://doi.org/10.1177/2056305118764432

[97] Betts et al. "Humanitarian Innovation: The State of the Art." UN Office for Coordination of Humanitarian Affairs Occasional Policy Paper. November 2014. https://www.rsc.ox.ac.uk/files/files-1/humanitarian-innovation-the-state-of-the-art-ocha.pdf

[98] Scriven, Kim. "Humanitarian innovation and the art of the possible" Humanitarian Practice Network. April 2016 https://odihpn.org/magazine/humanitarian-innovation-and-the-art-of-the-possible/

sending to refugees when they aren't consulted or even informed about the use of their data, or when we don't provide any information in their language? Exciting innovations like solar-powered cookstoves and predictive analytics can only transform humanitarian aid as part of a larger strategy for changes in systems and organizational norms. This kind of single-dimensional narrative therefore could prevent any meaningful intervention from happening:

> "Despite the dramatic change in the operating environment, the structure of the humanitarian system has remained essentially closed and unchanged. As a result, pressure is building to fundamentally alter the way business is done, and many humanitarian actors and donors are looking to innovation as a vehicle for introducing these changes."[99]

Structural changes and business models of older organizations aren't going to happen overnight. This is why it's important to have stewardship programs and cross-organizational partnerships to create space for this kind of discourse and create allies. Meaningful changes will come from addressing the humanitarian elephant in the room–challenging organizational culture and business models internally. In 2018, UNHCR Innovations Service published a blog post reviewing their own bias in reporting and the lack of representation of refugees' voices:

> "A total of 89 interviews took place over the period of 2015-2017 that were included in the articles we posted and only 34% of these interviews were with women… In all the interviews conducted by men on our team – only one article included an interview with a woman– in any article they wrote. Ever. 13% of our articles had refugees that were direct authors or specifically interviewed for the article itself. This deserves a separate article that undertakes not only the question of including refugees voices in the humanitarian innovation conversation but also defining what meaningful journalism and stories are that include "refugee voices." Ideally, these are stories written and led by refugees themselves."[100]

At ICRC, a new biometrics policy was announced in 2019 as part of the organization's digital transformation agenda that would both facilitate the responsible use of biometrics and address the data protection challenges it poses. The blog post that announced the change in policy contemplates how biometric data of the world's most vulnerable populations should be used and whether it should be used at all. A critical part of the policy is redefining the meaning of consent and walking back on previous claims that the data has been obtained and used with real, meaningful consent of affected communities.

They further claimed that, as an impartial humanitarian organization, they should be able to and will continue using biometrics in their operations. While this may seem like a small step in the right direction, it is nonetheless an important one because it changes the foundational arguments on which these policies are built on. Once we can admit that the system isn't working, it opens the possibility to more transparent accountability measures.

Innovation projects across the humanitarian sector have come to serve a critical role in challenging systems, pushing for a culture of transparency, and a narrative beyond temporary reliance, and towards resilience of

[99] Betts et al. "Humanitarian Innovation: The State of the Art." UN Office for Coordination of Humanitarian Affairs Occasional Policy Paper. November 2014. https://www.rsc.ox.ac.uk/files/files-1/humanitarian-innovation-the-state-of-the-art-ocha.pdf
[100] Parater, Lauren. "We need to fix the gender imbalance in our stories on innovation" UNHCR Innovations. 2018 https://www.unhcr.org/innovation/gender-imbalance-innovation/

those forcibly displaced. There is plenty of room for innovation in the future, in fact building a localized and transparent humanitarian ecosystem that works for everyone may well be entirely dependent on innovation - not with algorithms and trendy technology, but rather through organizational norms and meaningful systemic transformation.