FSD

Drones in Humanitarian Action

– A survey on perceptions and applications

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The frequency and scale of humanitarian emergencies present unprecedented management challenges.[1] The 2016 United Nations Secretary General's Agenda for Humanity states that to deliver collective outcomes, the humanitarian sector must promote a strong focus on innovation.[2] The concept of humanitarian drones is relatively new in mainstream discussions of humanitarian action, and is a high profile albeit controversial component of the humanitarian innovation agenda.

Summary

The first in its kind, this survey measures perceptions of the use of drones in humanitarian action. The Swiss Foundation for Mine Action (FSD) undertook the survey between 15 November 2015 and 15 January 2016.

A majority of survey respondents expressed confidence that drones have the potential to strengthen humanitarian work, and that drones can greatly enhance the speed and quality of localized needs assessments, while a significant minority viewed the use of drones in humanitarian work unfavourably. Importantly only roughly one in ten respondents had actual experience with drones in humanitarian settings.

The reasons cited for a negative perception fall into three general categories – concerns that the technology creates distance between beneficiaries and aid workers; the potential association with military applications; and the lack of added value delivered by the use of drones.

The potential improvements respondents identified include extending the reach of monitoring, assessments and the delivery of essential relief items where access is limited or hazardous for humanitarians on the ground. For these and other uses, respondents viewed drones as a tool to improve – but not replace – the work of ground teams.

1 OCHA report on effectiveness (2015) "Leaving No One Behind: Humanitarian effectiveness in the age of the Sustainable Development Goals"

2 Agenda for Humanity, Annex to the Report of the Secretary General 2016, core responsibility four. http://reliefweb.int/sites/reliefweb.int/files/resources/Agenda%20for%20Humanity_rev.pdf

Humanitarian perceptions on the use of drones

The concept of humanitarian drone use emerged initially from the drone industry's interest in acquiring legitimacy and moral capital, but the focus has since shifted to how drones can assist in humanitarian action.[1] The applications have broadened from an exclusive focus on surveillance capacities and now include a host of small and medium drones equipped with heat-seeking and listening devices and a range of cargo capacities. Drones have become part of the broader discussions on humanitarian technology and innovation, on remote management and on the relationship between humanitarian action and international peacekeeping.

Despite this growing interest, however, no systematic effort has been made to understand if, how, and in what circumstances the use of drones can deliver added value to humanitarian work. An evidence-based approach can help integrate drones successfully and ethically into humanitarian work. This survey begins the important work of developing a baseline for considering the practical added value of drones, and for identifying the normative dilemmas and challenges to humanitarian imperatives and principles that might arise from their use.

The European Commission Directorate General for Humanitarian Aid and Civil Protection (DG ECHO) funded the initiative, "Drones in Humanitarian Action". As part of this initiative, the Swiss Foundation for Mine Action (FSD) developed, implemented and analysed a survey on the use of drones among humanitarian practitioners. The objectives of the survey were to understand current thinking and practice, and to determine what applications could be of most interest to humanitarians. To ensure the survey's relevance, FSD collaborated closely with humanitarian practitioners and academic experts.

Both the scope of the survey and the final sample are limited, and should not be taken as a global representation of humanitarian opinions on the use of drones. Rather, this survey represents the first attempt to understand the thinking about drone proliferation and acceptance in the humanitarian sector. It provides an invaluable source for practitioners, policymakers and academics interested in the issue. Hence, FSD welcomes any discussion of the survey, and feedback on future surveys on this issue. In the following sections, selected quotes from survey respondents illustrate the wide array of perceptions on drones and drone use, and illustrate potential trends in thinking.

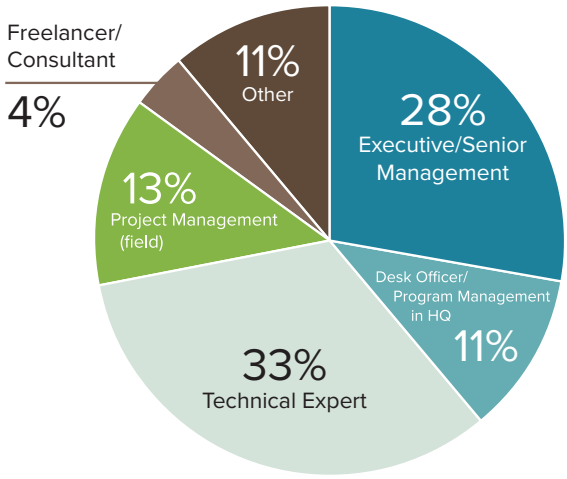
1 While industry and military actors may prefer terms such as RPAS or UAV, the term drone has the greatest degree of currency in the humanitarian sector, and was thus used for the survey.

Data collection

The survey was distributed[2] in English, French and Spanish to humanitarian professionals working in 61 different countries, and responses were collected via an online form between 15 November 2015 and 15 January 2016.

Of the 194 responses received, most came from humanitarian NGOs (52%), followed by donors (19%), and United Nations agencies (10%). Other responses came from national governments, private businesses and others. More than half of the respondents were either technical experts (33%) or senior managers (29%) in their respective organizations; the rest were project managers in the field (13%) and desk officers (11%), consultants (4%) and others.

Figure 1: Respondents by type of organization



All the major humanitarian sectors [3] were represented, and a majority of respondents reported working in more than one sector. Slightly more than half (51%) the respondents had never used drones and had never looked into their use for humanitarian work, while 21 per cent were exploring po-

2 The survey was distributed through a number of networks, among others, University of Fordham International Humanitarian Affairs Alumni Newsletter, NGO Voice Newsletter, United Nations Protection and Shelter Clusters, ECHO Field Offices, United Nations INSARAG Secretariat Field Coordination Support Section and the Humanitarian UAV Network, and was posted on the FSD website and social media.

3 Food assistance, short-term food security and livelihood support (N=50); Water sanitation and hygiene promotion (45); Health (36); Nutrition (33); Shelter and NFIs (43); Disaster Risk Reduction and Disaster Preparedness (56); Protection (59); Coordination (48); Support and Special Operations (22); Mine Action (33); Child Protection (20) and other (48).

tential uses and only 13 per cent actually had experience using drones in humanitarian settings and 15 per cent, marked "other" when asked about their experience. Relatively few respondents are familiar with using this technology and there is a significant gap between experience and opinions and many that have brainstormed potential best uses, or voiced opinions through this survey (positive or negative) have no actual practical experience using drones.

Overall perception

The overall perception among the group of respondents was generally favourable or very favourable (61%), but 22 per cent viewed the use of drones in humanitarian work as unfavourable or very unfavourable. The respondents' organizational roles made no difference in perceptions, but those who have looked into the use of drones or used them viewed them less negatively than those that had never looked into their use or used them. [4] This theme was also evident in follow-up interviews where respondents noted that they were more critical when starting the survey without prior knowledge of potential humanitarian drone applications. After exposure to a menu of potential humanitarian uses, the respondents viewed the possibilities more positively.

Figure 2: Respondent views on drone in humanitarian work

4 Out of 51 respondents who used drones or looked into their use, 3 viewed them unfavourably, 5 viewed them neutrally, and 43 favourably. Out of 82 without prior knowledge or experience, 24 viewed them unfavourably, 18 neutrally and 40 favourably. (The chi-square statistic is 17.51. The p-value is <.001).

Unfavourable views

The reasons cited for a negative perception fall into three general categories – concerns that the technology creates distance between beneficiaries and aid workers; the potential association with military applications; and the lack of added value delivered by the use of drones.

Humanitarian aid from a distance

The respondents who expressed concerns that the technology may create distance between aid workers and beneficiaries were unfamiliar with drones and had no experience using them. Their comments included the following:

"[Drones are] too distant from people and inhumane."

"[H]umanitarian work requires empathy [...] With drones human proximity to the affected people will not be there thus reducing the core value of the humanitarian work – being humane!"

"[Even] if [drones] might contribute to somehow increase the availability [of] technological data, analysis, overview, it will first and foremost contribute to the current trend to remove actors from field operations and beneficiaries, which leads to deterioration of the quality of aid [...]"

Confusion of purpose

Even more pronounced and common among respondents were concerns regarding a mixing of military and humanitarian uses. Many respondents noted that humanitarians believe that it is of key importance that the difference between humanitarian and military uses of drones are clear both to the affected population and to the users of the data collected by the drone. Comments included:

"The association of drones to the conflicts [and] surveillance for war efforts would make it a conflict of interest for the neutrality of the humanitarian space."

"How do we insure the difference between a military instrument and a civilian aid?"

"In order for drones to be useful one must ...draw a difference between the military/political uses and humanitarian uses."

Several critical responses pointed to the deployments by United Nations Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO), where the United Nations peacekeeping missions use a "Falco" drone made by Selex ES, a Defense and Military Outfitter. Humanitarian staff working in the Democratic Republic of the Congo offered the following accounts:

"Whether we like it or not, UAVs are confused with weaponized drones and are perceived by the general public as related to military operations and/or intelligence gathering. In countries and contexts with conflict environment, it is illusory to imagine that the general public, authorities and the armed actors will make a distinction between good 'humanitarian/civilian' drones and bad 'military' drones. The reputational risk on humanitarian organizations would be too high and could jeopardize the operational humanitarian space. The issue is even more critical in countries where United Nations Peacekeeping operations take place and drones are already in use. In DRC, MONUSCO offered the use of their [non-weaponized] drones to assist the humanitarian community with information, aerial surveillance, etc. The offer was clearly rejected by the humanitarian community [...]"

"[I]f the drones belong to MONUSCO, they are not supposed to be utilized by humanitarians to avoid confusion between military actions and humanitarian action."

"In the DRC context at least, the drones are managed by the United Nations, which maintains a large armed peacekeeping presence in the east of the country, and which is not a humanitarian or neutral actor, but a de facto party to the conflict, supporting the DRC government in military operations against rebel groups. I believe the use of drones has a military objective [...] for intelligence gathering and that the information is not in reality collected for humanitarian purposes, nor used for this purpose. I also do not believe that drones, in this context at least, are necessary [...] to guide the humanitarian response – the humanitarian NGOs have ample data collection methods in place for this."

Lack of added value

The lack of clarity regarding the practical value of the use of drones appeared occasionally among respondents who were mildly negative or neutral with regards to drones. Comments included:

"How will the information be used, [...] and what risks [are involved]?"

"I have observed the use of drones and think they can only have a very limited use in humanitarian aid."

When asked about the potential use of drones, one responded summarized the main criticisms in a string of rhetorical questions:

"When we want to work from home? When we don't want to take any risk? When we want to play with expensive toys? When we want to save money? When going to the field is complicated? When I don't want to meet beneficiaries and local authorities? When I want to work on my own? When I want to brag about all the data I have collected and analysed through the lens of a drone? When I am so high-tech?"

Favourable views

Sixty-one per cent of the respondents had either a positive or a very positive view on the use of drones in humanitarian work, a view that was only sometimes based on direct experience where drone use has delivered added value:

"[I] worked with UAVs for one year in Bosnia and Herzegovina and [was] impressed with [the] results."

"Our experience [has] been in Tanzania that with limited resources, we've been able to obtain very recent, accurate and high-resolution imagery. Also in circumstances where [a] regular aerial survey would have mostly captured clouds."

"Drones allow for a bird's-eye view; assessments can be done very rapidly [...] and it would enable more systematic assessment and monitoring."

"We already use a lot of GIS and technology approaches and support the United Nations Office for the Coordination of Humanitarian Affairs in information management."

"I have seen the use of [a] drone for humanitarian purpose in DR-Congo and it was very useful to identify the scale of movements of population and destruction in remote areas, which were not easily accessible by humanitarian actors. It helped assess if there was a need for an intervention and an estimate of the scale."

Drones seen as providing access

Participants frequently brought the theme of enabling extended reach where direct intervention with conventional means would not be possible forward. This focused both on difficulties of humanitarian access in the context of insecurity and infrastructure obstacles, and on time constraints:

"There are situations where human involvement is not possible or viable and drones can likely work remotely."

"A tool that can easily be used to assess and get a clear situation in areas that cannot be accessed in the shortest time without involving many people."

In addition to mapping and "having an eye in the sky", this perceived advantage was also emphasized with respect to the potential for goods and service delivery through cargo drones:

"Access is key and sometimes impossible with traditional transportation resources."

Other reasons for a positive impression of drone use were fragmented and seemed to be based on a perceived potential and the efforts of humanitarian drone entrepreneurs, rather than direct experience:

"The potential for information acquisition as well as quick delivery seems enormous. This is based on media and conference presentations."

Positive views but with caution

Most notably many respondents with some prior experience, in spite of having a positive view on the use of drones in humanitarian work, remarked on the imperative to ensure that drones are used where they deliver added value:

"The result of the drone work must produce a good added value for my job. Pictures are not enough."

"Proponents of UAVs need to be very careful about showing impact of their use and mitigating risks."

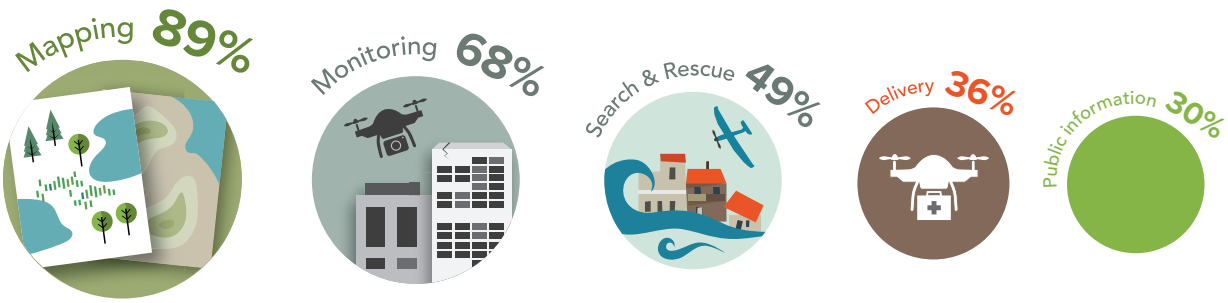
The need for better integration of this technology was also addressed:

"Usefulness of the technology depends on the type of operation, expertise, experience and area. [Drones] must be used together with other technologies that can provide a complete picture of a situation. Rapid development of drone technology could increase the number of applications."

Uses of most interest

Mapping, which seems to be the best-known use, was the most popular use among respondents and, in fact, is also the most documented use.[5]

Figure 3: Humanitarian drone applications listed in order of interest



In general, respondents saw the use of drones in hard-to-reach or inaccessible locations as a scenario with large potential:

"A great idea for difficult-to-reach areas (i.e., rural South Sudan in the rainy season)."

"After natural disasters for assessments. Especially in remote areas where it is hard to send people quickly."

"Monitoring conditions in remote hard-to-reach areas."

"Delivery of medication in remote/dangerous areas."

"Sending supplies to remote teams."

"Sometimes in conflict zones – when you cannot enter occupied territory that you know is full of people in need, I will use drones."

"Delivery in areas which are hardly accessible to aid workers – either due to hard to reach areas, high insecurity or a risky context for emergency response."

Respondents identified monitoring as potentially useful in grasping the overall context of a situation and in understanding the scale and pattern of displacements. Several respondents named monitoring functions related to population movements – estimating the numbers of people in groups, tracking movements of people (displaced or otherwise), understanding displacements, finding populations in need and tracking refugees.

In terms of situational awareness and assessments, respondents suggested that drones might be useful in rapid assessments and population estimates, in assessing access and risks, and in reducing physical exposure to hazards. Comments included:

"The drone can help with orientation and determining the adequate logistical means to reach an area in need."

"[Drones can make] assessments of the situation before committing rescuers/responders to carry out tasks that may have some elements of risk."

In the context of demining, respondents identified potential drone uses as:

"[A] survey tool for safely accessing hazardous areas for mine action."

"The remote control of demining machines."

Some saw a role for drones in the verification and monitoring of operational impact:

"Drones can play a role in some remote management contexts where the use is not biased by political perceptions (i.e., Africa, not the Middle East)."

"Assessments in a remote management context."

"[Especially where] there is a need to monitor progress regularly (e.g., advancement of infrastructure reconstruction, size of settlement, etc.)."

"[Real-time monitoring] of logistics convoys."

"To assist demining team supervisors to plan and/or monitor demining tasks."

5 See mapping case studies under "Drones in Humanitarian Action" http://drones.fsd.ch/2016/03/17/case-studies-mapping-drones-in-humanitarian-contexts/

Comments on the potential uses related to disaster preparedness included:

"Provision of early warning triggers."

"Refining our disaster risk analysis of given areas and contributing to … risk-informed programming in humanitarian assistance."

"Understanding the geographical vulnerability and future vulnerabilities."

"[Using] imagery from the drones to improve the assessment of dangerous places for the preparedness phase. This would improve the rescue of people once such disaster has occurred."

For many uses, respondents viewed drones as a tool to improve – but not replace – the work of ground teams:

"[Survey drones] could never replace a thorough on-the-ground-needs assessment."

"I fail to see a situation where we could do without human monitoring for assistance."

"[Drones] have the potential to expand the monitoring capabilities of ground teams."

"I believe drones can only aid staff monitoring and needs assessments, not replace them or shift decision-making."

"A proper quality oriented needs assessment takes human factors, questions and replies into consideration."

Views were notably split on the use of drones in conflict settings: 41 per cent slightly or fully agreed that "drones should never be employed" in conflict settings while 40 per cent slightly or fully disagreed with this statement. One saw good potential, "only in cases of natural catastrophes", and another noted that, "in all instances communities must be informed and consulted."

Outlook

A large majority (86%) felt that clear guidance and rules would need to be established in order for drones to be useful in humanitarian work and 70 per cent agreed with the statement that humanitarians needed more experience in the use of the technology. Sixty-one per cent called for dedicated service providers and 55 per cent felt that coordination must be improved and institutionalized.

Among the pool of respondents to this survey there is confidence that drones have a large potential to strengthen humanitarian work (66%) and especially that drones can greatly enhance the speed and quality of localized needs assessments (71%). In addition, however, the survey results indicate a broad conviction that humanitarian actors need more experience in the use of drones. Respondents also suggested that the use of drones needs to ensure added value, and that enhanced coordination was necessary. Comments included:

"I have no doubt that there's potential in the use of drones for humanitarian activities; however, there are also significant challenges especially related to the legality and perception of their use, and I fear that humanitarian actors may not have the capacity to manage these properly … Basically, Í don't trust the humanitarian industry to use them responsibly at this point in time."

"Practical difficulties of importing into countries and accessing the impacted areas also make the use problematic."

A relatively high number of respondents, 57 per cent, think, "local populations feel threatened by the use of drones". This number appears to be at odds with evidence from the so-far evaluated case studies that indicate relatively little concern from the communities when the typically small civilian UAVs have been deployed in humanitarian and development contexts.

Reflections on future research

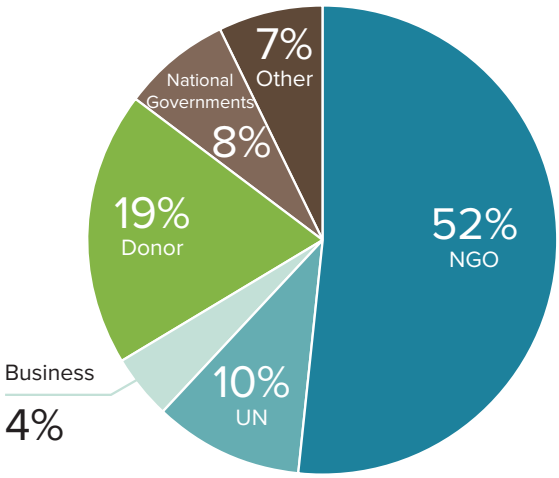
Notably, many of the uses favoured by respondents (tracking of population movements, reaching into inaccessible areas) are not currently implemented because the state of the technology may not provide humanitarian organizations the range and performance levels necessary for safe handling at an affordable cost. Military outfitters may be able to provide the necessary level of technology, but the military association and conflict dynamics are main concerns of humanitarians. Given this situation, future surveys might explore the following issues:

- Technology and drones themselves: evolving sizes and capabilities, including surveillance, search and rescue, and cargo applications;
- The use of microdrones versus macrodrones: the differences in applications, perceptions, costs and legal issues between these two types;
- Purpose: what humanitarians want to do with drones and how they can properly integrate this tool into their operations;
- Humanitarian data: the specific challenges that may arise when data are collected by unmanned vehicles, especially when used for tracking population movements and related uses.

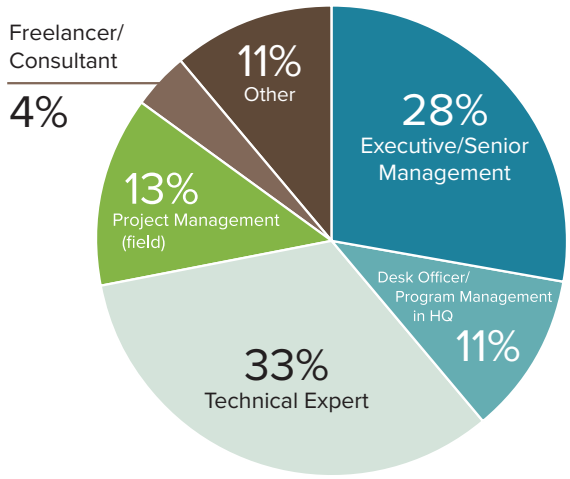
There is no question that humanitarian actors will continue to use drones as the technology becomes more affordable and available. The results of this survey confirm the need to understand the added value that drones can provide to humanitarian operations, and the need to discern when, how and where this technology can appropriately be used.

ANNEX: Questions and Responses (not including text answers)

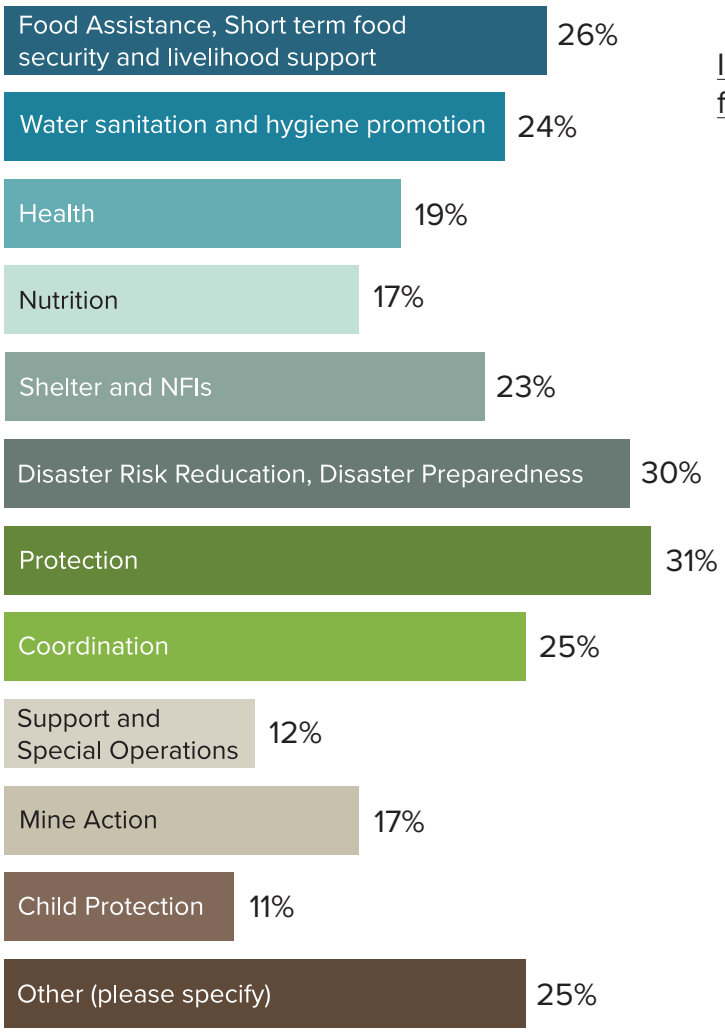
What's the type of your organisation?



What is your role within the organisation?

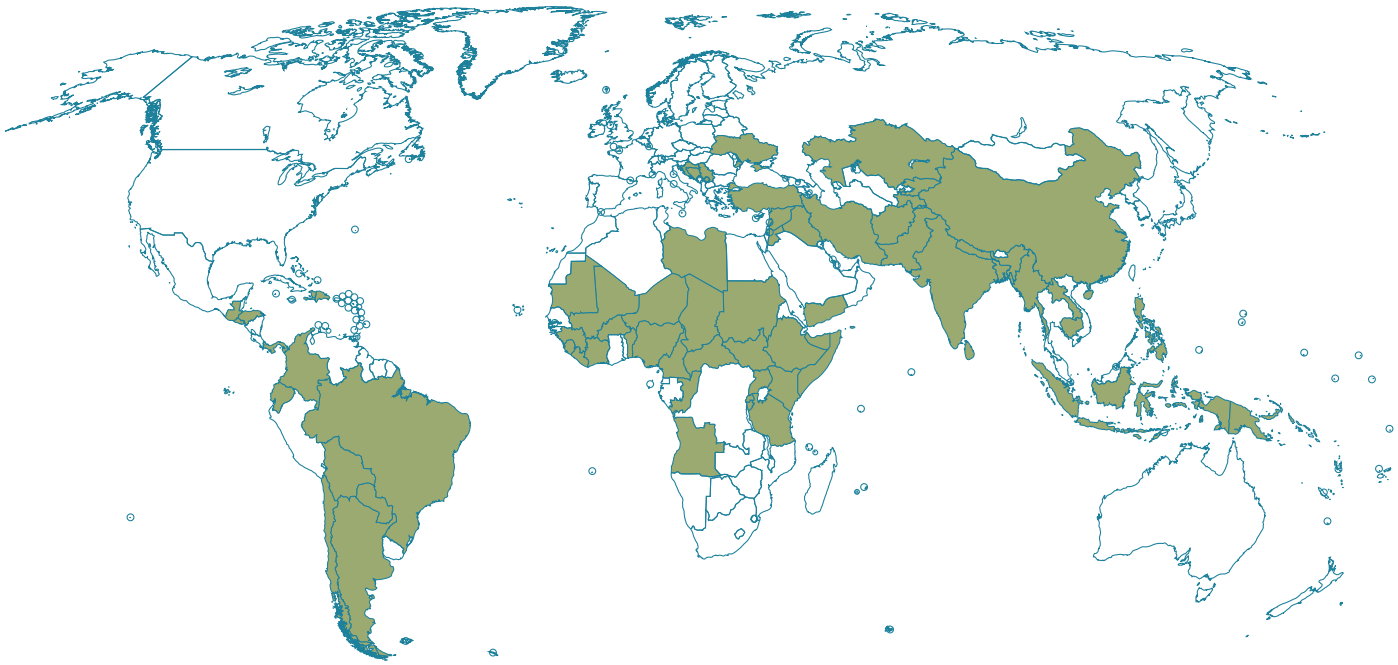


What is/are your main sector/s of activity?

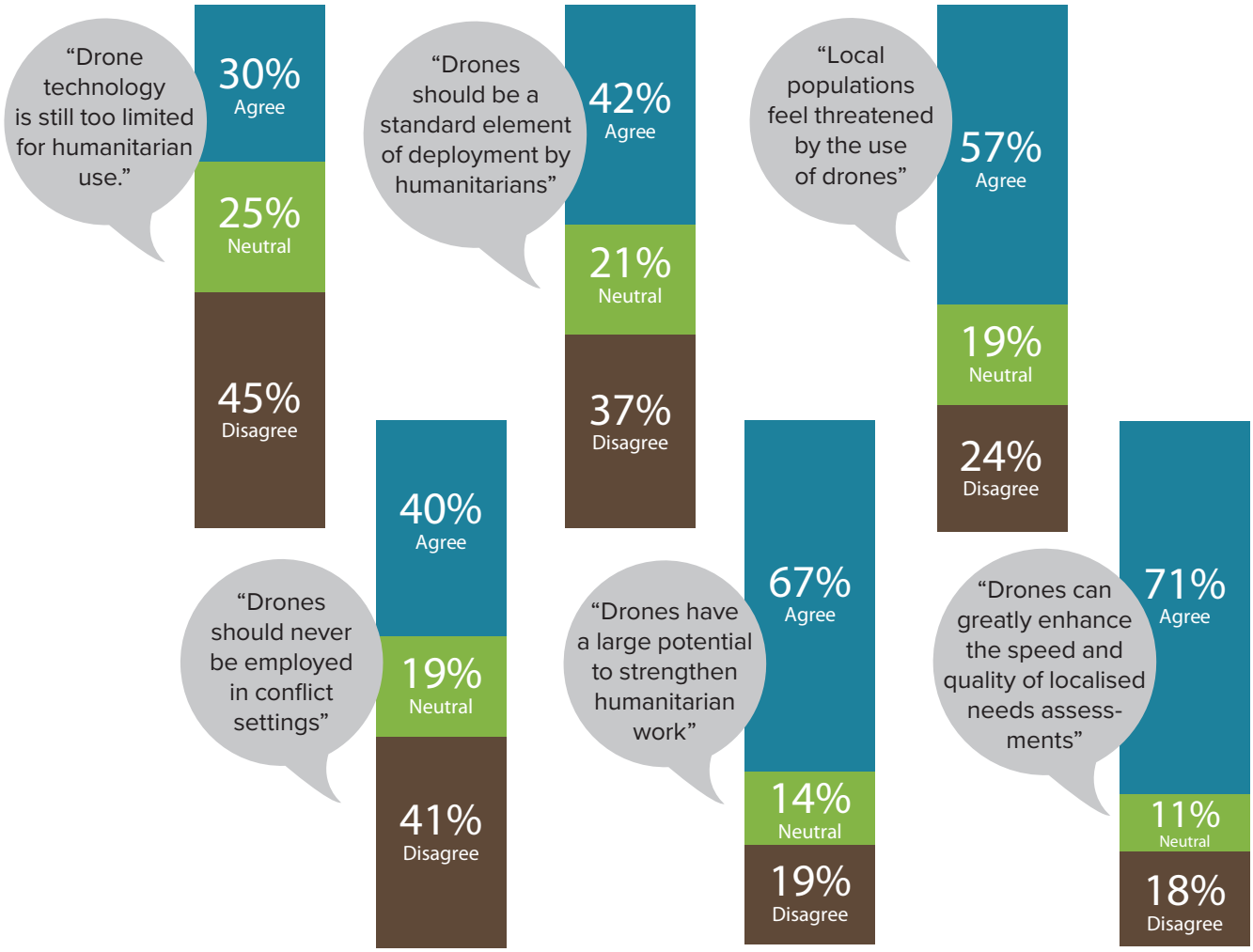


In general, how do you view the use of drones for humanitarian work?

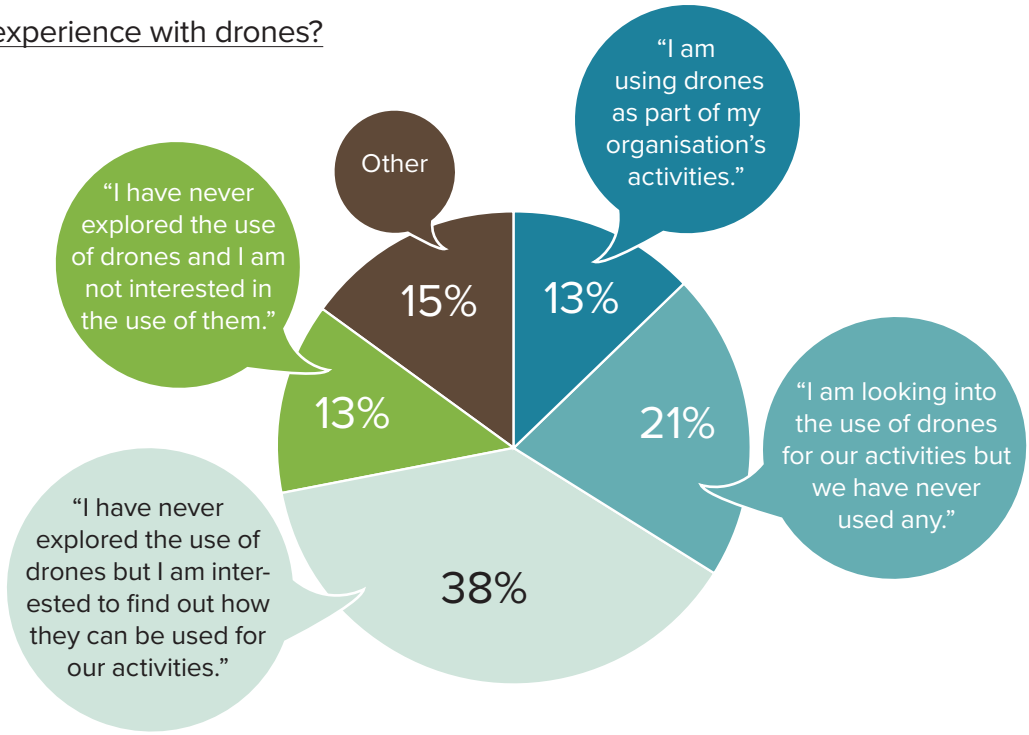
In which countries do you mainly work?



Please evaluate the following statements concerning humanitarian applications of drones

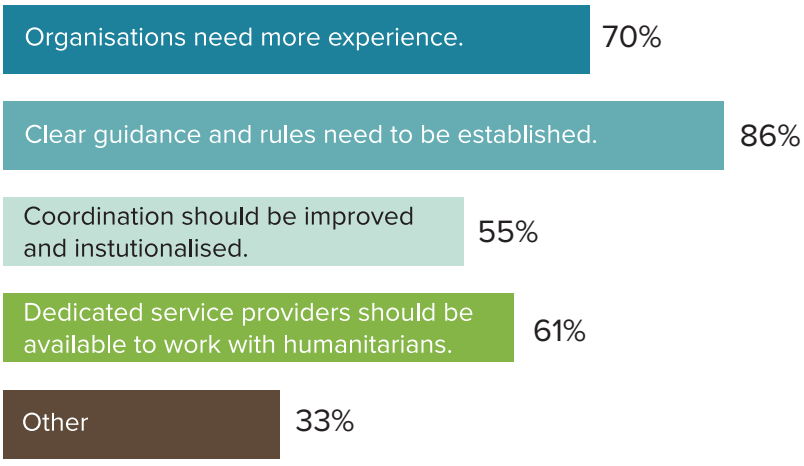


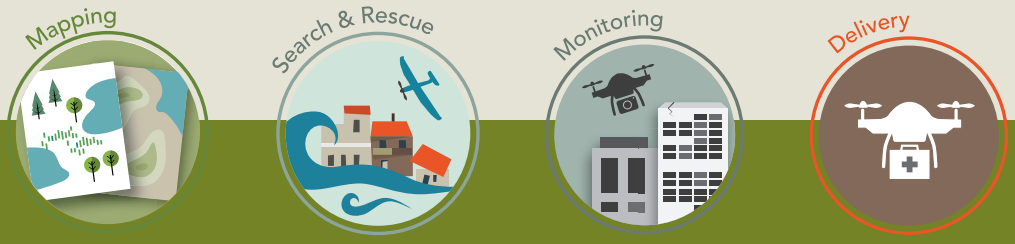
What is your experience with drones?



What purpose of drones are or would be of most interest to you?

In order for drones to be useful in humanitarian action...





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