

RSIS Commentary is a platform to provide timely and, where appropriate, policy-relevant commentary and analysis of topical issues and contemporary developments. The views of the authors are their own and do not represent the official position of the S. Rajaratnam School of International Studies, NTU. These commentaries may be reproduced electronically or in print with prior permission from RSIS and due recognition to the author(s) and RSIS. Please email: RSISPublications@ntu.edu.sg for feedback to the Editor RSIS Commentary, Yang Razali Kassim.

Disaster Drones: Great Potential, Few Challenges?

By Zin Bo Htet

Synopsis

The proliferation of Unmanned Aerial Vehicles (UAVs) in emergency response highlights their increasingly important role in disaster relief. However, the use of UAVs in such operations also raises important ethical and legal issues, which need to be addressed.

Commentary

UNMANNED AERIAL Vehicles (UAVs), popularly known as drones, are one of the most promising and powerful new technologies to improve disaster response and relief operations. UAVs are frequently portrayed as being a game-changer for disaster relief, both with respect to gathering information and delivering aid. UAVs equipped with imaging devices can capture timely and useful information for making more informed decisions for effective and timely responses in post-disaster settings.

However, the use of UAVs in disaster relief operations raises challenging questions around regulation, privacy, safety, and how to best integrate UAVs into disaster response. There are also important unanswered questions on community consent and participation, responsible data gathering and management. Answering these questions will require developing legal frameworks, coherent policies, good practices and guidance for deploying UAVs in disaster-affected communities. Humanitarian agencies will need to address these challenges through transparency, community engagement and guidelines on privacy and data security.

Life-saving Technology

Despite the fact that most of the news coverage about UAVs has focused on their

negatives, such as interfering with air traffic and the use of armed drones, there is growing interest in using UAVs in humanitarian response. Manufacturers are promoting UAVs as 'life-saving technology' for humanitarians that will complement traditional manned relief operations. When a disaster strikes, UAVs are able to assist with risk assessment, mapping, and planning. They can be used to provide relief workers with better situational awareness, carry out structural analysis of damaged infrastructure, locate survivors amidst the rubble, and deliver required supplies and equipment. With this additional information, humanitarian actors are better able to understand the situation on the ground, and can plan and carry out their response more efficiently and effectively.

Humanitarian organisations have started to use UAVs for data collection and monitoring that include real-time information and situation monitoring, search and rescue, and mapping. Portable micro-UAVs were deployed by humanitarian actors in Nepal after the earthquake and in the Philippines after Typhoon Haiyan for mapping and needs assessment. In the aftermath of Typhoon Haiyan, UAVs were flown along the coast to evaluate damage and see which villages were affected. In the aftermath of the Nepal earthquake, UAVs were used to search areas inaccessible by land, and to check if roads were travelable. Indeed, camera-equipped UAVs play an increasingly important role in coordinating emergency responses of any disaster.

While the most common use of UAVs in humanitarian response today is data collection, mapping and monitoring, research is underway on the delivery of goods, particularly smaller items such as vaccines or other small medical supplies. The delivery of medical payload using UAVs was tested in Papua New Guinea where access to healthcare is significantly limited by geographical and logistical constraints. UAVs can also act as temporary telecommunications infrastructure. Airborne UAVs could serve as temporary AWACS (Airborne Warning and Control System), sending Wi-Fi and cell phone service when communications are needed the most. In 2014, a research team from the University of North Texas demonstrated a drone capable of supplying Wi-Fi to disaster areas with a range of up to 3.1 miles. With that capability, cell phone and internet service can be restored promptly in the aftermath of disaster by using UAVs as temporary AWACS which is pivotal in immediate response.

Challenges to Effective Use of UAVs

The use of UAVs in humanitarian action also poses challenges particularly around legal and regulatory issues. Many countries where humanitarians work do not have an appropriate legal framework, which means that the use of UAVs are cleared on an ad hoc basis with local and national authorities. During the Typhoon Haiyan response, the use of UAVs was cleared by a special agreement with the Mayor of Tacloban as the Philippines did not have necessary regulations. Prior to the April 2015 Nepal earthquake, UAVs were not regulated and many rescue and relief organisations brought their own for search and rescue, and to document the devastation. Due to the influx of UAVs, the Nepal government restricted their use by enforcing new regulations.

Another issue is over the governance of privacy and data protection for using UAVs in humanitarian operations. Regulators are debating how to deal with UAVs' capability to discover private property and capture sensitive personal information.

When imagery collected by a UAV is stored, privacy and data protection issues are raised such as how it can be accessed, accumulated and distributed. As such, any use of UAVs by humanitarian actors needs clear policies on which data and information they will share or make public, how they will secure it and how long they will store it. Because of these concerns, transparency and engagement with communities or local authorities will be critical for humanitarians operating UAVs.

UAVs: Future Prospects

There is no doubt that humanitarian actors will continue to use UAVs as the technology becomes more affordable and accessible. The trend of using UAVs for the purpose of conducting surveys, carrying out investigations, collecting information and taking photographs is gradually increasing in post-disaster situations. UAVs have the potential to revolutionise disaster planning, preparation, response, and reconstruction. Nevertheless, for this potential to be fully realized, policy makers need to develop supportive legal and regulatory frameworks, clear guidelines and rules consistent with international humanitarian law. Humanitarian actors also need to advocate for national regulatory agencies to recognize the humanitarian uses of UAVs.

One of the major obstacles to deploying UAVs remains a concern over privacy; hence there is a need to develop best practices for transparency and engaging local authorities and communities, including data security guidelines. Last but not least, more research and evidence is needed to identify the comparative advantages and effectiveness of using UAVs. This is particularly needed on integrating aerial observation and data collection into needs and damage assessments, and search and rescue. Addressing these challenges will be an important step in moving UAVs for disaster response and relief operations from a promising technology to a game-changing reality.

Zin Bo Htet is Research Analyst with the Humanitarian Assistance and Disaster Relief (HADR) Programme, Centre for Non-Traditional Security (NTS) Studies at the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University, Singapore.
