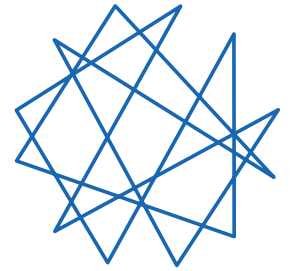
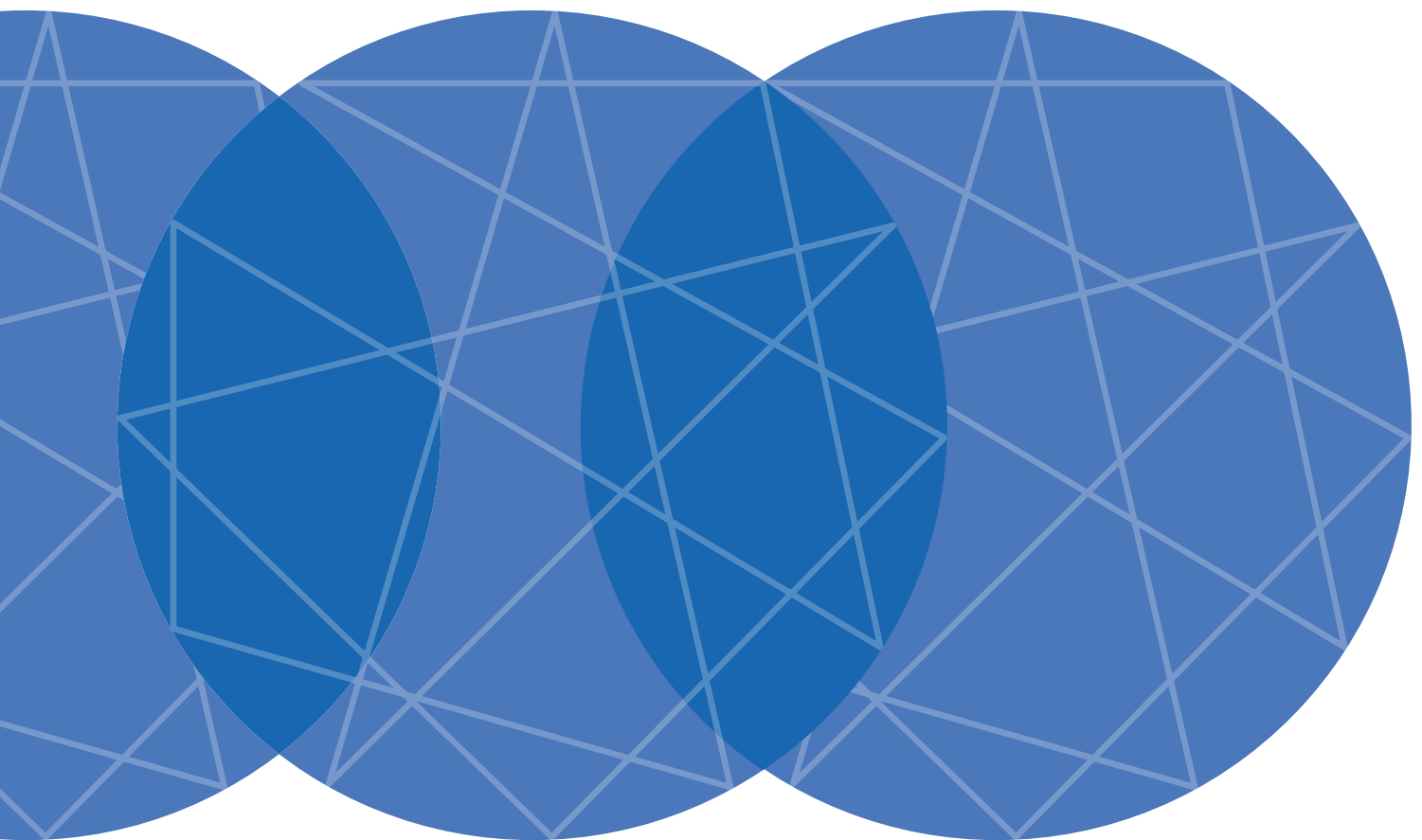


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How drones are reshaping humanitarian space: the future of trust, acceptance, and security operations

GISF Research Paper



Purpose

Drones are reshaping the environments in which humanitarian organisations operate, not primarily because of what they can do, but because of what they change: how risk is generated, how trust is built, and how visibility and acceptance function in conflict-affected settings. This document sets out why those changes matter and what they mean for humanitarian action.

It is intended for a range of readers across NGOs and the wider humanitarian sector: those who need to understand drone risk in order to make organisational decisions, those who need to engage on the issue externally, and those preparing to engage with the more technical or operational guidance in this series.

This document does not address drone capabilities, tactics, or targeting in depth - those are covered in Drone Capabilities, Actors and Tactics. It does not set out operational mitigation measures - those are covered in Operating Safely in Drone-Affected Environments and accompanying field tools. Its focus is on the broader implications: why drones amplify existing risks rather than simply adding new ones, why humanitarian visibility no longer reliably provides protection in all contexts, and why acceptance, one of the foundations of humanitarian security, is becoming harder to build and easier to lose.

This paper draws on a combination of desk-based research and aggregated insights from GISF member NGOs operating in drone-affected environments. These insights have been anonymised and consolidated to protect operational sensitivity and the confidentiality of contributing organisations. Where possible, findings are triangulated with publicly available data and reporting.

Audience

- NGO staff making organisational decisions who need to understand why drone risk is different, such as senior leadership, Country Directors, and security managers engaging upward.
- NGO staff engaging externally who need the argument and the evidence, such as advocacy staff, donor-facing roles, coordination bodies, and representatives to inter-agency mechanisms.
- People orienting themselves before engaging with the rest of the GISF technical and operational drone guidance.

Introduction

Drones, more formally known as unmanned aerial vehicles (UAVs), do not represent entirely new threats in warfare or conflict; instead, they amplify existing risks such as surveillance, targeted violence, and the blurring of civilian-combatant boundaries. Moreover, they are reshaping the norms of how aid operates in high-risk environments. The shift shows up most clearly across three core dimensions: risk, acceptance, and access.

This document is not concerned with the high-end drone capabilities of top-tier militaries. The focus is on relatively low-cost systems, from the Shahed down through dual-use commercial technology and first-person-view drones that can be purchased off the shelf for hundreds of dollars, whose accessibility and affordability have fundamentally changed who can deploy drone capability, and where. Rather than purpose-built military platforms, conflicts and humanitarian settings are now dominated by cheap, dual-use, and improvised systems that are rapidly iterated and increasingly difficult to classify or predict.¹

These characteristics allow both state and non-state actors to acquire capabilities that were previously limited to top-tier military forces, such as reconnaissance, precision attacks, and information control. It has also pushed these capabilities further down command structures, away from centralised oversight and formal targeting procedures, placing consequential decisions about surveillance and strikes in the hands of actors with limited scope for accountability, and increasing the speed, reach, and unpredictability of violence.

For NGOs, these developments pose significant challenges: drones can compromise operational security by exposing aid movements, heighten community mistrust where humanitarian drones are mistaken for military ones, and restrict access if authorities impose flight bans or security restrictions.² While drones themselves are tools, their proliferation intensifies existing threats to neutrality, safety, and trust in humanitarian action, challenging fundamental norms of neutrality, access, and the protection of humanitarian space that have long underpinned the delivery of assistance in conflict zones.

Users

State actors

State actors have used drones for warfare and intelligence gathering, significantly reducing the need for putting their forces in harms' way. Drones can undertake reconnaissance and surveillance missions without putting human lives at risk, while advanced military drones using precision-guided munitions can more accurately target specific enemy assets.

As of 2024, over 110 states were recorded owning military unmanned aerial systems (UAS), both armed and unarmed.³ Armed drones are primarily a military technology, with the U.S., Israel, China, Turkey, UK, Iran, Russia, and Pakistan being the main current operators.⁴ Some other countries are

¹ International Committee of the Red Cross (ICRC). (2025). 'The shifting battlefield: technology, tactics, and the risk of blurring lines in warfare'. ICRC Humanitarian Law and Policy Blog, 22 May. <https://blogs.icrc.org/law-and-policy/2025/05/22/the-shifting-battlefield-technology-tactics-and-the-risk-of-blurring-lines-of-warfare/>.

² Insecurity Insight. (2025). Hovering threats: the challenges of armed drones in humanitarian contexts. <https://insecurityinsight.org/wp-content/uploads/2025/01/Hovering-Threats-The-Challenges-of-Armed-Drones-in-Humanitarian-Contexts-January-2025.pdf>; Just Security. (2025) 'Drones are changing how wars harm civilians', Just Security, 4 November. <https://www.justsecurity.org/123474/drones-are-changing-how-wars-harm-civilians/>.

³ Center for a New American Society (CNAS). (2024). Drone Proliferation Dataset. <https://www.cnas.org/publications/reports/drone-proliferation-dataset>

⁴ Drone Wars UK. (2024). Which countries have armed drones? Available at: <https://dronewars.net/which-countries-have-armed-drones/>; New America Foundation (n.d.) World of drones: who has what. Washington, DC: New America Foundation. <https://www.newamerica.org/insights/world-drones/who-has-what-countries-with-armed-drones/>

catching up fast through domestic programmes or imports. National production of UAS has increased significantly: between 2000-2004, three states were developing armed UASs, and by 2019, an additional 26 states had started developing these systems.⁵

The Russo-Ukrainian war is widely described as the first true “drone war,” marked by large-scale, high-intensity unmanned aerial vehicle (UAV) use and major impacts on modern battlefield tactics.⁶ Both sides deploy a wide range of drones, from long-range fixed-wing systems to short-range FPV multirotors. Ukraine also became the first country to establish a dedicated military branch for drone warfare.⁷

Drone strikes are often presented as precise, but independent monitoring groups estimate that thousands of people have been killed, including significant numbers of civilians.⁸ This has made the true scale and impact of drone warfare difficult to verify, while raising ongoing legal and ethical concerns about accountability and proportionality.

Non-state actors

While the proliferation of drones in warfare has roots in decades of military innovation by state powers, the Islamic State (IS) was one of the first non-state groups to weaponise commercial drones effectively on a large scale.⁹ Around 2014-2017, IS began modifying small, commercially available drones such as quadcopters and fixed-wing models to carry grenades or small explosives, and to film propaganda videos and reconnaissance footage.¹⁰ This marked a turning point: it showed that drone-based warfare was no longer limited to technologically advanced militaries. IS’s improvised drone programme inspired and instructed other militant groups worldwide, demonstrating how consumer technology could be adapted for combat and proving that even insurgent and terrorist groups could deploy aerial technology to deadly effect.¹¹

Organised crime groups

Organised crime groups (OCGs) have increasingly adopted drones as versatile tools across the full spectrum of illicit activity, with the most developed use cases observed in Mexico and, more recently, Ecuador, and the wider Latin American region.

OCGs routinely use commercial UAVs to monitor law enforcement movements, rival groups, and civilian populations, enabling real-time situational awareness at low cost.¹² OCGs, most notably Mexican

⁵ New America Foundation. World of drones: who has what.

⁶ European Parliament. (2025). Military drone systems in the EU and global context: Types, capabilities and regulatory frameworks. [https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/772885/EPRS_BRI\(2025\)772885_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/772885/EPRS_BRI(2025)772885_EN.pdf)

⁷ Atlantic Council. (2025). Ukraine’s drone war lesson for Europe: Technology is nothing without training. <https://www.atlanticcouncil.org/blogs/ukrainealert/ukraines-drone-war-lesson-for-europe-technology-is-nothing-without-training/>

⁸ Airwars (2024) Drone and airstrike tracking database. <https://airwars.org>; ICRC. (2026). Frequently asked questions: international humanitarian law and the use of drones in armed conflict. <https://www.icrc.org/en/article/faq-international-humanitarian-law-drones-armed-conflict>.

⁹ Rassler, D. (2018). The Islamic State and drones: supply, scale, and future threats. West Point, NY: Combating Terrorism Center, United States Military Academy. <https://ctc.westpoint.edu/wp-content/uploads/2018/07/Islamic-State-and-Drones-Release-Version.pdf>; Combating Terrorism Center at West Point (CTC). (2025). The rising threat of non-state actor commercial drone use: emerging capabilities and threats. West Point, NY: United States Military Academy. <https://ctc.westpoint.edu/the-rising-threat-of-non-state-actor-commercial-drone-use-emerging-capabilities-and-threats/>.

¹⁰ Chávez, K. & Swed, O. (2020). “Off the Shelf: The Violent Nonstate Actor Drone Threat.” Air and Space Power Journal, Vol. 34, No. 3. https://www.airuniversity.af.edu/Portals/10/ASPJ/journals/Volume-34_Issue-3/F-Chavez_Swed.pdf

¹¹ Rassler, D. (2018). The Islamic State and drones: supply, scale, and future threats.

¹² Felbab-Brown, V. (2026). “How Mexican Cartels Are Using Drones, Now and in the Future.” Brookings. <https://www.brookings.edu/articles/how-mexican-cartels-are-using-drones-now-and-in-the-future/>; Center for Strategic and International Studies (CSIS). (2025). “Illicit Innovation: Latin America Is Not Prepared to Fight Criminal Drones.” <https://www.csis.org/analysis/illicit-innovation-latin-america-not-prepared-fight-criminal-drones>

cartels, have weaponised commercial drones to drop grenades or improvised explosive devices (IEDs), targeting rivals, security forces, and occasionally infrastructure. Groups such as the Jalisco New Generation Cartel (CJNG) and Sinaloa Cartel have developed specialised drone capabilities, including dedicated operators and modified payload systems.¹³ These attacks prioritise accessibility and deniability over precision, often relying on crude “crash-and-detonate” methods. OCGs also use drones to transport drugs, weapons, and contraband across borders and into prisons, particularly along the U.S.–Mexico frontier, as well as psychological tools, to reinforce territorial control and compliance among local populations.¹⁴

The targeting logic of OCG drone use differs fundamentally from both state militaries and non-state armed groups (NSAGs) in that OCGs prioritise profit protection and territorial control. Targets are selected based on their impact on revenue streams (e.g. smuggling routes), local dominance, or coercive signalling. Precision is secondary; intimidation and persistence often matter more than lethality.

For humanitarians, OCG drone use means that risk comes less from deliberate targeting and more from being present in spaces where control is being enforced. OCGs tend to act locally and granularly which means that national staff and partners face greater scrutiny and risk of coercion. The psychological use of drones (hovering, filming, or low-level harassment) can deter communities from engaging with aid providers, disrupt distributions without overt violence and ultimately erode acceptance-based security models.

This undermines traditional humanitarian assumptions about low visibility and increases the risk of:

- Diversion (aid becoming a resource to capture)
- Coercion (pressure to share information or access)

Private military and security companies

Private military and security companies (PMCs) represent a distinct and growing category of drone operator. Unlike state forces, PMCs typically operate outside standard military oversight structures, with limited transparency around rules of engagement and reduced accountability for civilian harm.¹⁵ Unlike NSAGs, they operate under contract - formally authorised by a state or government actor - which can create a veneer of legitimacy that obscures the accountability gap in practice.

The deployment of Vectus Global in Haiti illustrates this dynamic. Contracted by the Haitian government to provide anti-gang support, the company conducted 141 armed drone strikes between March 2025 and January 2026, killing over 1,200 people, including at least 43 adults and 17 children among those killed were civilians.¹⁶ The operations were conducted outside the standard oversight of the Haitian National Police, with no publicly available rules of engagement, and the UN Human Rights Chief characterised multiple strikes as unlawful.

For NGOs, PMC drone operations pose specific challenges. The accountability structures that humanitarian actors rely on - deconfliction mechanisms, no-strike lists, engagement with military legal advisers - may not exist or may not function when the operator is a private contractor rather than a state military. The contractual relationship between a PMC and its client government can shift

¹³ Felbab-Brown, V. (2026). “How Mexican Cartels Are Using Drones, Now and in the Future.”

¹⁴ Joint Counterterrorism Assessment Team (JCAT) (n.d.) Use of unmanned aircraft systems by FTO-designated Mexico-based cartels. Washington, DC: Office of the Director of National Intelligence. <https://www.dni.gov/files/NCTC/documents/jcat/firstresponderstoolbox/168b-Use-of-UAS-by-FTO-Designated-Mexico-Based-Cartels-danger-to-US-security-officials-and-public-safety.pdf>; Felbab-Brown, V. (2026). “How Mexican Cartels Are Using Drones, Now and in the Future.”

¹⁵ ICRC. (2026). Frequently asked questions: international humanitarian law and the use of drones in armed conflict. <https://www.icrc.org/en/article/faq-international-humanitarian-law-drones-armed-conflict>; Human Rights Watch. (2026). “Haiti: Drone Strikes Put Residents at Risk.” <https://www.hrw.org/news/2026/03/10/haiti-drone-strikes-put-residents-at-risk>.

¹⁶ Human Rights Watch. (2026). “Haiti: Drone Strikes Put Residents at Risk.”

rapidly, and the rules under which drones are operated may be opaque or contested. In environments where PMCs are active, NGOs should not assume that the protections nominally available in state military contexts will apply.

Humanitarians

The use of drones in humanitarian operations began to emerge in the early 2010s, as lightweight, affordable, and GPS-enabled models became commercially available. Organisations such as the United Nations, Médecins Sans Frontières (MSF), and UNICEF started experimenting with drones for mapping disaster zones, assessing damage after earthquakes or floods, and delivering essential medical supplies to remote or inaccessible areas.¹⁷ One of the earliest large-scale humanitarian applications was in Nepal after the 2015 earthquake, when drones were used to create detailed maps of devastated regions to guide relief efforts.¹⁸ Since then, humanitarian drones have expanded in scope, assisting in search¹⁹-and-rescue missions, monitoring refugee movements, and even re-establishing communication networks in conflict zones. This shift marks a transformation in drone use: from instruments of surveillance and warfare to critical tools for saving lives and improving humanitarian response.



However, as explained in this document, the potential benefits of drone use by humanitarians are being undermined by their potential harm, not just in terms of direct attacks, but also through surveillance and fear.

Current usage

For the humanitarian sector, Insecurity Insight recorded at least 426 incidents between 2016 and 2024 in which explosive drones affected aid or healthcare operations, killing at least 21 aid workers and 73 health workers. The geographic spread of such incidents expanded from five countries in 2022 to twelve by 2024, and the share of drone-delivered explosives among all explosive-weapon incidents affecting aid doubled from roughly 6% in 2023 to 12% in 2024.²⁰

These figures should be treated with caution; incidents are frequently under-reported, attribution between state and non-state actors is difficult, and the data shifts rapidly as drone arsenals expand. They are more reliable as indicators of trend than as real-time operational intelligence. Taken together, however, the direction is clear. The barrier to entry has fallen sharply, bringing drone capability within reach of an expanding range of state and non-state actors alike. As surveillance and strike-capable systems proliferate across contexts, the risks to civilians, humanitarian access, and operational neutrality grow, both directly, through misidentification and collateral damage, and indirectly, through fear, restriction, and regulatory uncertainty.

¹⁷ Médecins Sans Frontières (MSF) / Fondation Suisse de Déminage (FSD). (2014) 'Drones in humanitarian action: case study no. 2: using drones for medical payload delivery in Papua New Guinea'. <https://reliefweb.int/report/papua-new-guinea/drones-humanitarian-action-case-study-no2-using-drones-medical-payload>; UNICEF Supply Division (n.d.) Drones to reach the last mile. <https://www.unicef.org/supply/drones-reach-last-mile>.

¹⁸ Pudasaini, S. et al. "Drones in Disaster Management and Humanitarian Action: A Case Study in the Aftermath of Nepal Earthquake 2015." International Journal of Human and Health Sciences, 2019. <http://ijhhsfimaweb.info/index.php/IJHHS/article/view/137>

¹⁹ UNICEF Office of Innovation (n.d.) Drones. <https://www.unicef.org/innovation/drones>; UNICEF Supply Division (n.d.) Drones to reach the last mile.

²⁰ Insecurity Insight. (2025). Hovering Threats: The Challenges of Armed Drones in Humanitarian Contexts. <https://insecurityinsight.org/wp-content/uploads/2025/01/Hovering-Threats-The-Challenges-of-Armed-Drones-in-Humanitarian-Contexts-January-2025.pdf>



It is not just that drones create suspicion; it's that each use of drones reinforces conditions that produce even more suspicion, across multiple actors



Constant surveillance

Drones have grown from specialised military tools into widely used, multi-purpose assets in modern warfare. Globally, drones are used far more for surveillance than for attacks,²¹ but in active conflicts, their use for attacks is increasing rapidly. Although armed “hunter-killer” drones get most of the public attention, most drones are used to conduct surveillance and find or track targets.

This introduces a key - often uncomfortable - dimension to how NGOs are observed, monitored, and sometimes controlled. What used to be sporadic oversight (site visits, audits or government inspections), requiring physical presence (inspectors, checkpoints, informants) can now be done remotely, persistently, and often invisibly. Drones now enable continuous or on-demand surveillance to allow persistent monitoring (e.g. of camps, warehouses, and field operations); pattern-of-life tracking (i.e. who enters/exits, when aid is distributed, where staff travel); and high-resolution data collection (imagery, thermal sensing, even communications interception).²²

This fundamentally changes power dynamics; NGOs can be constantly observable, not just periodically accountable.



Importantly, drones are not neutral
- they reflect the interests of whoever controls them.

The suspicion feedback loop

The transformation of NGO surveillance by drones from sporadic oversight into continuous, multi-actor monitoring has the effect of reshaping power, trust, and operational freedom in humanitarian spaces. The “suspicion feedback loop” is one of the most important effects drones introduce into humanitarian settings. It is not just that drones create suspicion; it's that each use of drones reinforces conditions that produce even more suspicion, across multiple actors.²³

At its simplest, the loop works like this:

- Drones are introduced (by NGOs, governments, or others)
- People interpret them through existing fears (often associated with the military, surveillance and targeted violence)
- Trust declines (fear that “someone is watching”, “someone has power”, or “someone may act on that information” - even if the drone is being used for humanitarian purposes)
- Actors respond defensively (more secrecy, more monitoring, more control).
- Those responses look suspicious to others
- Suspicion intensifies

²¹ ICRC. (2026). Frequently asked questions: international humanitarian law and the use of drones in armed conflict.

²² Insecurity Insight. (2025); Van Wynsberghe, A. et al. (2019.) ‘Drones in humanitarian contexts, robot ethics, and the human-robot interaction’, *Ethics and Information Technology*, 22(1), pp. 1-13. <https://link.springer.com/article/10.1007/s10676-019-09514-1>.

²³ Greenwood, F. (2021). “Drones and distrust in humanitarian aid”, *ICRC Humanitarian Law and Policy Blog*, 22 July. <https://blogs.icrc.org/law-and-policy/2021/07/22/drones-distrust-humanitarian/>



Many NGOs use the concept of acceptance as a foundation of their security risk management strategy



This suspicion feedback loop is a self-reinforcing cycle, not a one-off reaction. It may result in governments or armed groups increasing aerial or ground surveillance of NGOs, or imposing new restrictions or regulations. NGOs may become more defensive with one another, limiting information sharing or reducing visibility of operations. For communities, this may result in reduced cooperation with NGOs, increased rumors, additional anxiety or fear.²⁴ As suspicion deepens across all actors:

- Communities trust NGOs less
- Governments regulate more tightly
- Armed groups monitor or interfere more

The loop is not about drones as machines, but more that they are an amplifier to existing tensions in relationships between NGOs and communities, between NGOs and states and between civilians and armed actors. Each actor is acting rationally, with everyone's responses making sense from their own perspectives (i.e. NGOs are trying to be efficient and safe; governments are trying to maintain control; communities are trying to protect themselves and armed groups are trying to assess threats) - but even if not every drone is a surveillance or strike threat, the suspicion loop itself can be just as damaging.

The erosion of acceptance

This cycle of suspicion resulting from the presence of drones not only complicates community acceptance - it redefines what acceptance even means for NGOs. Traditionally, "acceptance" meant something quite tangible: people know you, see you, talk to you, and tolerate or support your presence. Drones disrupt this fundamental idea. A drone hovering overhead looks the same whether it is delivering aid, mapping terrain or conducting surveillance. The suspicion loop persists because fear often outweighs technical facts, and rumors spread faster than briefings.

Many NGOs use the concept of acceptance as a foundation of their security risk management strategy, where acceptance relies on gaining consent from stakeholders in an operational area, including (especially) those who might obstruct access to or commit acts of aggression against beneficiaries and staff.²⁵ Acceptance is linked to the ability to inform and educate local stakeholders about an NGO mission and programmes, and to its negotiations for access to populations.²⁶ The point is that acceptance is not passive: it is usually built on reciprocity, whereby NGOs provide aid and communities provide access, information, and legitimacy. Drones fundamentally weaken this exchange, either when NGOs are targets of drone surveillance, or when NGOs themselves use drones for programming.

²⁴ ICRC. (2026). Frequently asked questions: international humanitarian law and the use of drones in armed conflict; Van Wynsberghe, A. et al. (2019) 'Drones in humanitarian contexts, robot ethics, and the human-robot interaction'; Murray, D. and Fussey, P. (2019) 'Chilling effects of surveillance and human rights: insights from qualitative research in Uganda and Zimbabwe', *Journal of Human Rights Practice*, 16(1). <https://academic.oup.com/jhrp/article/16/1/397/7234270>

²⁵ ODI Humanitarian Practice Network. (2022) 'A closer look at acceptance', Humanitarian Exchange. <https://odihpn.org/en/publication/a-closer-look-at-acceptance/>

²⁶ Ibid.



Drones also carry strong associations with power, signaling distance, control, and technical authority often linked to military or state actors rather than neutral organisations.



NGOs as targets of drone surveillance

When NGOs are the targets of drone surveillance - whether by governments, militaries, or armed groups - community acceptance can be significantly affected. The presence of surveillance can make NGOs appear politically entangled, leading communities to assume they are important to authorities, collaborating with them or at odds with them. Even when these assumptions are unfounded, the fact that an NGO is being watched signals political relevance and can undermine perceptions of neutrality.

At the same time, community suspicion often arises regardless of the NGO's intentions or actions.



Communities respond to what they observe, such as drones overhead, without necessarily knowing who controls them.

As a result, mistrust can develop, and in response to surveillance, NGOs may limit their movement, reduce their visibility, and tighten communication to manage risk. However, from the community's perspective, these changes can make NGOs appear more secretive and less engaged. Over time, this reduction in openness weakens relationships and erodes acceptance, particularly as trust is strained under the pressure of external monitoring.

NGOs as users of drones

When NGOs use drones, community acceptance can also be undermined in several interconnected ways. NGOs may come to be perceived as surveillants rather than trusted actors, as activities like mapping or needs assessments are easily interpreted as spying or intelligence gathering.²⁷ This shift generates suspicion, with communities questioning why engagement is no longer face-to-face and how collected data will be used, directing mistrust at the NGO's own choices.

At the same time, drone use can weaken the reciprocity that underpins acceptance by reducing direct interaction and replacing dialogue with remote data collection, leaving communities feeling observed rather than engaged. Drones also carry strong associations with power, signaling distance, control, and technical authority often linked to military or state actors rather than neutral organisations. As a result, NGOs risk being seen less as partners and more as external actors operating from a position of control. These perceptions may discourage NGOs from using drones, even when there may be benefits in doing so.

²⁷ OpenCanada / Centre for International Governance Innovation (CIGI). (2020). 'The case against humanitarian drones'. <https://opencanada.org/the-case-against-humanitarian-drones/>

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The presence of a drone does not indicate who is watching, why they are watching, or how the information will be used.

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Visibility paradox

The effects of drone surveillance on NGO acceptance are part of a wider change in how visibility functions in humanitarian settings. What emerges is not just a challenge to acceptance, but a breakdown in the long-standing assumption that visibility provides protection.

For a long time, humanitarian actors worked on a simple, practical logic: If we are visible, known, and understood, we are less likely to be harmed. Safety was built through physical presence on the ground, clear and recognisable identities such as marked vehicles and compounds, and sustained relationships through dialogue with communities and armed actors. Drones, and the broader surveillance environment they represent, do not just weaken that logic. In some contexts, they invert it.

Visibility is no longer something NGOs can actively manage or negotiate; it can be externally imposed, often without their knowledge or consent. At the same time, visibility becomes persistent, enabling patterns of movement and behaviour to be tracked over time. Rather than simply revealing presence, it generates predictability, which can be identified and potentially exploited by others. Visibility also becomes more ambiguous: the presence of a drone does not indicate who is watching, why they are watching, or how the information will be used.

Drones introduce a specific and underappreciated dimension to this question. The imaging capability of contemporary drone systems means that humanitarian markings are clearly visible to operators. A logo on a vehicle roof is typically over a metre across and easily legible from altitude. The question is therefore no longer whether markings can be seen, but whether they will be respected and by whom.²⁸ Insecurity Insight data indicates that being clearly identifiable as an NGO has not consistently reduced or increased risk, and the picture is not a simple one of collateral damage versus deliberate targeting.²⁹

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Visibility without human connection does not reinforce legitimacy - it can actively undermine it.

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As a result, visibility is no longer inherently protective. Separated from human interaction and mutual understanding, it can instead increase exposure and uncertainty. In this context, visibility without human connection does not reinforce legitimacy - it can actively undermine it.

This leaves security managers with a genuine dilemma. A movement may be authorised on the condition that vehicles are clearly marked – while the same manager knows that similarly identified humanitarian vehicles in comparable environments have been attacked. There is no formula for resolving this tension. Context-specific assessment is required of whether marking is likely to protect or expose, rather than reliance on visibility as a default protection measure.

²⁸ Kyiv Independent. (2026). 'Drone warfare is tragically transforming humanitarian aid', Kyiv Independent. <https://kyivindependent.com/drone-warfare-is-tragically-transforming-humanitarian-aid/>; Insecurity Insight. (2025).

²⁹ Insecurity Insight. (2025).



Action can occur without presence - but trust cannot



Increased risk

When NGOs are visible via drones, their locations can be precisely identified and their movements anticipated, effectively turning visibility into operational intelligence that can be exploited for theft, diversion of aid, or direct attacks. At the same time, being subject to drone observation can signal that an actor is important or worth monitoring, attracting additional scrutiny from states or interest from armed groups - so visibility may invite attention rather than deter it.

Visibility also creates association risks: in environments where drones are linked to military or state surveillance, being visible within the same aerial space can blur distinctions and raise suspicions about alignment or information sharing. Finally, visibility without direct interaction loses its protective value. While NGOs may be seen, they are not necessarily understood or trusted, as drones enable observation without presence or dialogue. In this context, visibility alone no longer provides protection and may instead heighten exposure and vulnerability. Visibility without human connection can actually undermine legitimacy.

Strategic adaptation by NGOs

Because of this shift, NGOs increasingly reduce overt visibility (unmarked vehicles, lower profile), limit information sharing about movements, avoid predictable patterns and sometimes deliberately stay unseen. This would have been counterintuitive in earlier humanitarian models, and results in an emerging paradox:

- Too visible - risk of surveillance, targeting, politicisation
- Too invisible - loss of trust, legitimacy, and acceptance

There's no stable middle ground in some drone-saturated environments.

When visibility no longer guarantees safety:

- NGOs cannot rely on openness alone;
- Communities may not see visibility as reassuring; and
- Being "seen" may even make communities feel less safe.

Both protection and acceptance become harder to sustain simultaneously.

In drone-affected environments, humanitarian visibility stops providing protection because it no longer signals trusted presence, but instead creates continuous, ambiguous exposure that others can monitor, interpret, and potentially exploit. This shift forces a rethinking of core humanitarian principles.

Conclusion

Drones have the technical capabilities to transform both aid operations and modern warfare, but their significance lies as much in what they do as in how they reshape the environment in which humanitarian action takes place. They carry strong symbolic associations with power, signaling distance, technical sophistication, and control over space, and in doing so, can erode the perception of NGOs as independent, neutral actors, even through mere proximity. As an amplifier of existing tensions between NGOs, states, armed actors, and communities, drones shift acceptance away from relationships built on presence and reciprocity toward something more fragile and perception-driven. At the same time, they turn visibility into a source of operational intelligence that can be monitored and exploited, while weakening the mutual exchange that traditionally underpinned trust. Action can occur without presence - but trust cannot, leaving acceptance increasingly one-sided and unstable, as summarised in the following table.

Dimension	Before Drones	With Drones
Risk	Risk is largely physical and situational (movement, presence, checkpoints)	Risk becomes continuous, surveillance-driven, and shaped by perception and interpretation
Trust	Built through face-to-face interaction, relationships, and presence; trust develops gradually through engagement and reciprocity	More fragile and harder to establish; trust is mediated through technology and interpretation rather than direct contact.
Acceptance	Strongly grounded in community relationships and ongoing dialogue; often negotiated with local actors and visible through presence	More uncertain and fragmented; shaped by perceptions of surveillance, distance, and intent rather than direct engagement
Humanitarian Principles	Reinforced through proximity—neutrality, impartiality, and humanity are demonstrated through visible, human-centered action	More difficult to signal and maintain; dual-use technology and remote operations can blur neutrality and create ethical ambiguity
Visibility	Visibility builds legitimacy and protection; being seen and known by communities contributes to safety	Visibility becomes ambiguous and potentially risky; it can enable surveillance, invite scrutiny, and increase exposure rather than provide protection
Power and control	NGOs negotiate access and visibility - information flows are more reciprocal	• Control over observation can sit with external actors (states, armed groups, etc.) • Information flows become more extractive and asymmetrical
Access	Negotiated through relationships, dialogue, and presence; dependent on acceptance and local engagement	More technically enabled and potentially expanded (e.g., remote access), but also more contested, regulated, and dependent on political and security dynamics
Information and data	Information gathered through interaction and presence. Data is contextual and relational	• Information gathered remotely, continuously, and at scale. • Data can be decontextualized, reinterpreted, or misused

Taken together, these dynamics point to a fundamental shift in the nature of humanitarian risk. Rather than being shaped primarily by proximity and negotiated access, risk is increasingly produced through persistent visibility, surveillance, and interpretation. NGOs operate in environments where they are continuously observable, more easily misinterpreted, and exposed to escalating suspicion through self-reinforcing feedback loops. In this context, visibility no longer reliably confers protection but may instead increase exposure, and acceptance becomes more fragile and reversible. Humanitarian actors are thus entering a more ambient, perception-driven, and contested risk landscape, where the boundaries between observation, control, and assistance are increasingly blurred.

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