

Between

Terror Strikes and **Targeted Killings**

The evolving role of drone warfare in Iraq



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Cover photo: An MQ-9 Reaper remotely piloted aircraft takes off from Joint Base Balad, Iraq, July 17, 2008. U.S. Air Force photo by Tech. Sgt. Richard Lisum

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Introduction

In the mid-1990s, Saddam Hussein attempted to impress the world with his weapon arsenal and presented Iraq's newest tool to a group of journalists. This medium-sized uncrewed aerial vehicle (UAV) was named the al-Quds, or more technically, the RPV-30A.¹ Western intelligence agencies hyped the potential for this drone to deliver weapons of mass destruction in the period leading up to the 2003 war, though the remotely piloted plane was of little significance. Fast forward to February 2014, when the jihadi extremists known as the Islamic State in Iraq and Syria (ISIS) began their march towards power in Iraq. Using a small Chinese DJI quadcopter drone, they filmed a long column of fighter-laden and machine-gun equipped vehicles in Fallujah, in the western Iraqi governorate of Anbar, in one of the group's first major propaganda videos. ISIS saw the advantage of cheap drones and soon was one of the largest developers and users of weaponized drones, sowing terror among Iraqi communities, soldiers and the international coalition fighting them.

Since then, drones in all shapes and sizes have been a tool in Iraq's many internal and external conflicts. Both state and non-state actors deploy these lethal tools of remote violence, which have reshaped the power dynamics both within Iraq and in the region. Countries like Iran and Turkey, through their drone operations on and from Iraq's territory, have managed to project power well beyond their national borders to either target armed groups or the US and its allies, while the US's 2020 targeted execution of the Iranian general Qassim Soleimani, head of the Islamic Republic Guard Corps, by a US MQ-9 Reaper drone further demonstrated how drones were an effective tool in their campaign against Iran.²

The deadly application of drone violence is also predictive of how this method of warfare can be used in conflict settings and beyond. From ongoing targeted drone killing campaigns against suspected militants to direct attacks against politicians, peace and security in Iraq, as well as in other parts of the world, are facing novel challenges brought by the weaponization and proliferation of drones. This report examines how different state and non-state actors have been or are using drones in Iraq. In particular, the objective of the report is to explore new developments that have born out of increased access to both military and commercial drones by various parties, and their implications for regional security and multilateral arms export controls discussion.

Novel military technologies are setting new boundaries and breaking open existing security paradigms. Building on the previous work by PAX on the use of drones in conflicts in Yemen, Ukraine³, the African continent⁴ and Syria⁵, this report aims to provide an overview of how drones have been and are being used by all security actors in Iraq. Such an overview provides insights on military technological developments, tactical and strategic choices, and helps to understand how drones and drone technologies are advancing the security interests of states and armed groups in the region.

Use of drones & trends in Iraq

From their initial use as intelligence, surveillance and reconnaissance (ISR) platforms, the use of drones in Iraq quickly changed post-2003. This saw the deployment of the US Predator drone to provide close air support (CAS) to US troops, both during the US invasion and the Iraqi insurgency in the period 2004-2011, where overwatch of drones was key for tracking militant movements, eavesdropping on communications and carrying out strikes. More influential was the Islamic State's drone usage in 2014, as the group professionalized the weaponization of commercial drones with small bomblets which wreaked havoc and fear among both Iraqi pro-government militias and international coalition forces.⁶ This type of use was soon copied by other armed groups, including Iraq's Popular Mobilization Units (PMUs), known locally as Hashd al-Sha'bi. Difficult to detect, yet effective if used well by a trained pilot, these small quadcopters equipped with bomblets were hard to shoot down and were able to drop explosives on protected positions, being capable of easily circumventing ground-based security measures such as concrete walls and roadblocks.

The effectiveness of these tools did not go unnoticed in Iraq's neighbor Iran, which became one of the most prolific drone developers and shared these weapons with their proxy allies in Yemen, Syria, Lebanon and Iraq. Military-grade small drones started being used against US bases and international airports in Iraq by Iran-backed militias in the period after the ISIS defeat in 2017, when Iran's influence was growing, to pressure the US and its allies. The purpose of such attacks demonstrating Iran's readiness to inflict casualties was twofold: to spur the domestic debate in the US to pull out of Iraq, and as retaliation for US operations against these militias.⁷

In Iraqi Kurdistan, armed drones strikes have become an essential part of the Turkish military campaign against the Kurdistan Workers' Party (PKK). This insurgent group has been in conflict with Turkey since the mid-1980s, when it took up arms to fight for autonomy for the Kurdish population in Turkey, and it established a stronghold in the northern mountains of Iraq in 1998. This has been met with increasing Turkish airstrikes and incursions into northern Iraq. The PKK gained a larger foothold in northern Iraq, particularly in the area around Sinjar on the Syrian border, as its fighters came to the rescue of the Yazidi population that was slaughtered by ISIS in 2014; armed forces of the Kurdistan Regional Government (KRG), known as the Peshmerga, and the Iraqi army failed to protect the Yazidis. The PKK became essential in the subsequent international fight against ISIS in both northwest Iraq and in Syria. This bolstered the group's presence on the ground, which Turkey perceived as a threat. Turkey subsequently began a campaign of extrajudicial executions targeting PKK members and its linked militias, such as the People's Defense Units (YPG) in Syria and the Yazidi Sinjar Resistance Units (YBS) in Ninewa province. This campaign by Turkey also resulted in civilian casualties, with strikes hitting refugee camps without any legal justification or compensation provided.

After being invited by Iraq to support the fight against ISIS, Iran was visibly present with troops and weapons, while also supplying the PMUs with their own armed drones and loitering munitions. Some of the PMU militias already had long-standing ties with Iran, who provided support to Shia groups in their armed resistance to the US occupation after 2003. There have also been clear indications that Iran used southern Iraq as a launching pad for drone strikes against Saudi Arabia's oil infrastructure, while in the northeast, it has been targeting Iranian-Kurdish armed groups with drone strikes and drone-guided ballistic missile attacks.



Source: Twitter

A weaponized commercial quadcopter drone used by the PMU near Mosul, March 2, 2017

What emerges is a country where military drones have bolstered armed groups and paved the way for low-risk targeted killing campaigns run by several states. With their relative low-cost and high-impact capabilities, the precision use of lethal force opened up a new set of methods by both state and non-state actors, which undermines peace and security in Iraq and the broader region. From unlawful executions to striking civilian infrastructure, drone use in Iraq shows the world the challenges for the future that urgently need to be addressed to prevent further erosion of legal principles around the use of lethal force, in particular outside areas of armed conflict.

Military Drone Users in Iraq since 2003

United States

During the Gulf War in 1991, the US began to use RQ-2 Pioneer drones for intelligence, surveillance and reconnaissance missions to support the air campaign against Iraqi positions in Kuwait and Iraq itself. The drone became famous, as it was the first uncrewed aircraft to receive surrenders from Iraqi soldiers. The utility of these flying robots piqued the US Air Force's interest in developing more efficient drones that could support ISR missions⁸, in particular for monitoring Iraq's military developments as part of the UN sanctions regime. For this, models such as the RQ-1 Predator were deployed to monitor the south of the country. In 2003, RQ-1 Predator drones were used as both ISR platforms⁹ and decoys for Iraqi air defenses, while the large, sophisticated RQ-4 Global Hawk, with its impressive set of sensors, cameras and other electronics, was used for monitoring troop movements and battle damage assessments. On the ground, smaller types of drones, including the RQ-5 Hunter and RQ-7 Shadow, were used by ground forces for ISR missions.¹⁰

Ever since, military drones have played a vital role in US operations in Iraq, with MQ-1 Predator, MQ-1C Grey Eagle and MQ-9 Reaper drones monitoring US counterinsurgency efforts during the period 2003-2014. They patrolled vast stretches of desert areas where armed groups were in hiding and planning attacks and kept overwatch during operations in urban areas. During the fight against ISIS, armed drones became a leading tool for the US, with the al-Assad air base in Anbar province becoming a key drone hub. Besides the Reaper and Grey Eagle, US forces have also used larger ISR drones that are used by the US, which was revealed when a US drone crashed in Iraqi Kurdistan.¹¹ US Special Forces also started to use smaller loitering munitions, better known as kamikaze drones, such the Switchblade-300 in their operations against ISIS.¹²

US drone monitoring was contested by the IRGC, whose growing support to its Iraqi proxy militias also came with attempts to hinder and counter US drone operations. They went as far as claiming to have crashed US MQ-1 Grey Eagle drones, though this operation was more likely the result of infiltration of joint Iraq-US operation centers and stealing video imagery that the drone shot, that actually had the capacity to overtake US drone controls.¹³

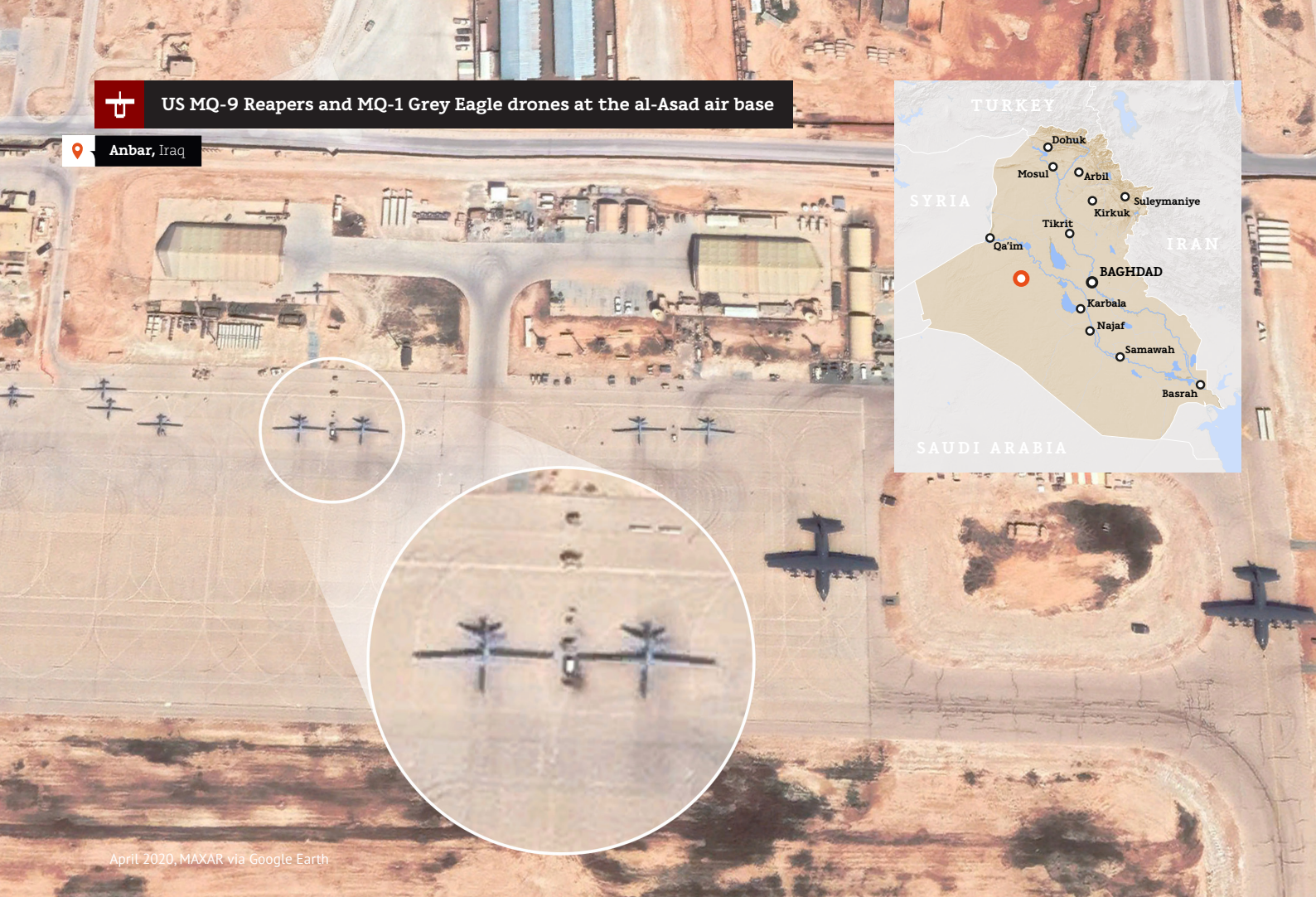
The most recent and notorious use of armed drones by the US was the 2020 targeted killing, ordered by President Trump, of the Iranian General Qassem Soleimani and the PMU deputy leader Abu Mahdi al-Muhandis. They were in a convoy alongside eight other people when they were hit by at least two



US MQ-9 Reapers and MQ-1 Grey Eagle drones at the al-Asad air base



Anbar, Iraq



April 2020, MAXAR via Google Earth

Hellfire missiles launched from a MQ-9 Reaper. General Soleimani was thought to be behind a range of attacks on US soldiers during the US occupation of Iraq and suspected to be planning more attacks against US targets¹⁴, and had a long list of war crimes in Syria to his name. His death was labeled an extrajudicial killing by a UN special rapporteur in a thematic report on armed drones.¹⁵ Iran retaliated against the strike by launching a barrage of ballistic missiles at US forces at al-Assad air base, after giving prior warning to the US. Due to the warning, the base was evacuated and there were no US casualties. US drones continue to operate from both Iraq and Jordan for targeted killings of suspected ISIS leaders in Syria, and in support of US operations in northeast Syria.

Iraq

As the fight against ISIS intensified in 2014, the Iraqi air force saw the utility of getting greater access to ISR capabilities. As the US has been reluctant to export its larger armed drones to non-NATO countries, Iraq looked to China, which became a growing producer and exporter of armed drones from the mid-2010s. The Iraqi Air Force allegedly obtained 10 China Aerospace Science and Technology Corporation (CASC) CH-4B drones, which were spotted on satellite imagery and seen on social media footage at the al-Kut airbase in southern Iraq.¹⁶ The UAVs became part of the newly formed 100th Squadron, which was hosted at Balad air base in central Iraq and carried out hundreds of missions in the fight against ISIS.¹⁷ These drones are equipped with Chinese-built AR-1 TV-guided anti-tank missiles and FT-9 guided bombs. However, ongoing failures limited their use, with only one drone being operational in 2019, and more returning to operation in 2022.¹⁸

Iraq's armed forces also operate some US-delivered ScanEagle small tactical drones for close-quarter ISR missions, and the RQ-11 Raven donated by the US military.¹⁹ There have been statements given by Iraqi officials that they intend to buy eight Turkish TB-2 Bayraktar armed drones, but beyond the announcement, there have been no signs of their delivery or use at the time of publication.²⁰

In September 2023, social media posts indicated that Iraq has acquired the Chinese CH-5 armed drone, showing Iraqi pilots in China with certificates for flying the CH-5.²¹ The CH-5 has expanded capabilities compared to its CH-4 predecessor, with a flight endurance of 36 hours, a flight range of 10,000km and a payload of up to six missiles.



Iraq Air Force Commander with CH-4 armed drone at Balad Air base, October 2018. Source: Iraqi Ministry of Defence

The use of commercial drones in military operations also became a standard tool among Iraq's armed forces and with the Iraqi Federal Police units, demonstrating their use of weaponized commercial drones.²² This usage was soon copied by PMUs fighting alongside the federal Iraqi armed forces.

Iran

Over the last decade, Iran made significant progress with its domestic drone program, capable of building both long-range armed drones and a diverse set of medium and small military drones, often with single-use attack mode.²³ One of the first documented uses was during the 1980-1988 Iran-Iraq war, when Iran armed the Mohajer-1 drone with an RPG to fire it at Iraqi troops, as seen on recently released footage.²⁴ In 2009, the US shot down an Iranian Ababil-3 drone after it intruded into Iraqi airspace from Iran.²⁵

Turkey

The largest drone power currently active in Iraq is Turkey, which has become one of the world's largest producers and exporters of military drones. Air traffic monitoring sites regularly show Turkey to be operating multiple armed drones on a daily basis over various regions of the KRG. Turkey has been waging war against the PKK since the mid-1980s. The PKK has an extended network of bases in both southern Turkey and northern Iraq, which Turkey has been targeting both from the air and through incursions on the ground, resulting in the establishment of Turkish military bases on Iraqi soil in support of these operations. These operations already came with severe costs to civilians and their livelihoods, causing death, destruction and displacement among the diverse communities living in Iraqi Kurdistan.³²

The need for intelligence collection through drones by monitoring PKK movements became an essential part of Turkey's air campaign. It initially deployed the ANKA-S Medium Altitude Long Endurance (MALE) drone, and since 2015, the Bayraktar TB-2 armed drone. The breakdown of the ceasefire with the PKK in 2015, and the growth of the PKK's influence in northern Syria as they supported their Syrian counterpart the YPG in the fight against ISIS, brought a new challenge for Turkey. Ongoing military incursions in northern Iraq proved to be challenging as they risk the lives of Turkish soldiers. The ability of persistent drone presence over northern Iraq, combined with a network of intelligence collection from signals and spies provided Turkey with opportunities to target suspected militants with drones. This resulted in an ongoing campaign of extrajudicial killings of suspected PKK members and affiliates throughout Iraq and northern Syria.³³ The TB-2 became a regular sight in the area, spotted by both local eyewitnesses and online flight tracker systems, circling over the Qandil mountains, where the PKK's headquarters are located. Turkish drones are used in an ISR and targeting role as well as for supporting targeting and battle damage assessment for F-16s strikes, and carrying out direct drone strikes against suspected militants. More recently, the Bayraktar AKINCI armed drone, with a larger payload and longer range, has also been deployed over northern Iraq.

A PKK militant standing next to crashed Bayraktar TB-2 armed drones in the Qandil Mountains, Iraq, June 14, 2023.



On a lower level, footage shared by PKK militants shows that Turkey also deployed small tactical military drones, such as a version of the RQ-20, one of which was claimed to be shot down in 2022.³⁴ Other footage of downed drones shows a larger quadcopter equipped with high-tech camera systems, which could either be a commercial UAV or a Turkish domestically produced military quadcopter.³⁵

Turkey has stated that it is at war with the PKK, though it has never officially provided a legal rationale or justification for use of lethal force outside armed conflict in the fight against the militant group. Only informal comments have been given by Turkish defense officials, referring to UN Charter Article 51's right to self-defense.³⁶ During the ongoing air campaign, there have been numerous incidents where civilians were killed³⁷ or wounded as a result of the drone campaign.³⁸ Turkish drones and F-16s bombed medical facilities³⁹, refugee camps⁴⁰, and struck targets when civilians were present nearby.⁴¹ This raised questions over the intelligence, precision and accuracy of these strikes, and the responsibility of Turkey to avoid civilian casualties.

Since the recapturing of the Sinjar region by the YPG, with the support of the PKK and international coalition airstrikes, Turkey has increased their air strikes against the PKK and the Yezidi armed group, the Sinjar Resistance Units (YBS). They targeted several YBS leaders who were involved in defeating ISIS in the area⁴² or fulfilled a civilian function.⁴³ Ongoing monitoring by research group Airwars indicated that in the Sinjar region, at least 10 incidents with civilian casualties have occurred since 2018 from airstrikes, including by armed drones.⁴⁴ In other areas of the KRG, Turkish airstrikes and the continued presence of armed drones in the skies over the mountains created fear⁴⁵ in local communities, as drones continued to kill civilians in strikes, leading to more displacement of farmers from the area.⁴⁶

The perception of precision with armed drones also resulted in Turkey taking more risks in their strikes, which could have an escalatory effect on peace and security in the region. For examples, Turkish drones struck a column of military vehicles that included US troops, the Syrian Democratic Force (SDF) commander Mazloum Abdi, and peshmerga from the KRG counterterrorism groups in early 2023, causing a strong rebuke from the US⁴⁷ and the Iraqi government.⁴⁸

Turkey so far failed to provide accountability for the civilian casualties as a result of these strikes, which continue to occur. In September 2023, another Turkish drone hit a small airfield, killing three Iraqi members of the Iraqi Kurdish counterterrorism forces that are part of the Patriotic Union of Kurdistan (PUK), a part of the KRG that works closely with the SDF in anti-ISIS campaigns.⁴⁹ One of the victims killed in that strike was a Kurdish drone engineer.⁵⁰ Turkey states that it was striking PKK-linked targets.

United Kingdom

During the peak of the US-led Operation Inherent Resolve in the period 2014-2017, other countries also deployed armed drones over Iraq. The United Kingdom first used a MQ-9 Reaper drone for a strike against an ISIS target in Iraq in 2014,⁵¹ operating its MQ-9 drones from a base in Kuwait that has carried out thousands of strikes.⁵² Investigative research by journalists and human rights groups revealed that despite the official reference to precision warfare capabilities, there are clear indications that civilians were killed by UK drone operations against ISIS, despite UK denial. So far, no attempts to redress these casualties or provide compensation have been conducted by the UK.⁵³

Israel

The role of Israel in Iraq remains opaque. There are continuous airstrikes carried out against alleged Iran-backed militias⁵⁴ and Iranian troops on the Syrian and Iraqi border at al-Bukamel, which are claimed to be drone strikes.⁵⁵ So far, no evidence has emerged that proves this. Other anonymous sources quoted in credible international media outlets accredit some of the explosions at munitions depots to Israeli drones strikes.⁵⁶ Israel is also claimed to be behind a series of drone strikes on Iranian drone factories and sites linked with uranium enrichment inside Iran, using weaponized commercial or domestically built small drones.⁵⁷ These types of operations, which are thought to be conducted from Iraq soil, also resulted in retaliatory strikes by Iran using ballistic missiles, with the 2022 massive bombing of a large villa near Erbil as the most illustrative example.⁵⁸ The use of explosive quadcopter drones by Israel in Iran would also be an indication for the type of drones used against Iran-linked PMU depots in Iraq.

Plumes of smoke rise after an explosion at a military base southwest of Baghdad, Iraq, after an alleged Israeli airstrike, possibly by a drone. August 12, 2019



AP Photo/Loay Hameed

Non-State Armed Groups

Islamic State in Iraq and Syria (ISIS)

Since their rise in power in Iraq and Syria, the terrorist group ISIS immediately took the lead in multipurpose use of commercial drones. The group's first major media publication started with a propaganda video of them filming their long column of vehicles in Fallujah early 2014 with a drone camera. This continued to become an integral part for propaganda purposes, combined with slick footage of the operations against Iraqi armed forces and was a sign of the growing role of commercial drones for non-state armed groups.⁵⁹ ISIS's use of drones quickly grew from acquiring commercial Chinese DJI quadcopters to homemade drones made from foam, cardboard and commercially available engines.⁶⁰ The group became particularly infamous for their widespread use of weaponized commercial drones, either equipping them with small bomblets or as airborne improvised explosive devices (AIED).⁶¹ While initially dropping rigged explosives with contact fuses and badminton shuttles as fins, this soon evolved into using professionally molded tail fins for more precision. They also started a drone pilot school for young recruits, and formed their own "Unmanned Aircraft of the Mujahideen" unit.⁶² At the the peak of the fighting around Mosul in northern Iraq in 2016, ISIS carried out dozens of strikes per day, with multiple drones attacking a target, essentially giving the group a tactical-level air force in their fight against the US-led coalition forces and their Iraqi counterparts.⁶³

Screengrab from ISIS propaganda video shows militants operating a Skywalker X-8 commercial drone.



The group's approach to accessing drones, parts and components and developing its own indigenous drone program is another unique element.⁶⁴ ISIS funneled millions of dollars into acquiring drones, drone-related technologies and equipment such as pulsejet engines, micro-turbine, mobile antennas, lithium batteries and GoPro cameras shipped to Iraq and Syria.⁶⁵ Large smuggling networks were set up in Europe, including multiple fake companies to obfuscate the end destination and to avoid raising suspicions by law enforcement. Drone footage was also sent back to supporters to make professional video compilations for propaganda. Much of this came to light after the arrest of ISIS supporters in the West and subsequent hearings during court cases.⁶⁶ More recently, Western supporters were put at trial for providing instruction to ISIS on how to use 3D printers in assembling parts and components to build single-use explosive drones.⁶⁷

Popular Mobilization Units (PMUs)

After the rise of ISIS, the call by Iraqi Grand Ayatollah Sistani to put up resistance led to the formation of the PMU. The group consists of various militias, largely dominated by Shia forces but also including Christian, Sunni and Yezidi groups.⁶⁸ The Shia groups themselves are also divided, but dominated by Iran-backed militants that existed prior to the rise of ISIS and were involved in the uprising against the US occupation. Soon after ISIS took the lead in using commercial drones, the PMUs were quick to adopt similar methods. Links between Iran and the more hardline PMU brigades provided these groups with more sophisticated drones, which was shown in both open and more subtle ways. During official PMU parades and in videos, one of the groups, Kataib Hezbollah, presented its Iranian Mohajer-6 armed drones in use.⁶⁹ The armed drone has a flight range of a few hundred kilometers, and is armed with Iranian Qaem TV-guided munitions. In 2023, the PMU announced that they have begun producing their own drones, though footage again showed the Mohajer-6.⁷⁰ Other images from parades also show the Iranian-origin Sahab drone, an adapted version of the Sarmad loitering munitions used by Houthi militants in Yemen. The militias also use Iranian ISR drones such as the military types from the Ababil series, and smaller commercially available Skywalker X8 drones, also spotted in Yemen with the Houthis, making an Iran-link plausible.⁷¹

Screengrab from propaganda video showing an Iranian origin Mohajer-6 armed drone operated by the PMU flying over Iraq. Published June 14, 2023



Source: PMU Telegram channel

A more opaque type of drone attacks, linked with militias but not claimed as such, became a real threat to peace and security in Iraq. From 2019 onwards, different types of weaponized commercial drones and military grade loitering munitions were used against a wide range of targets. The first sign came after drone strikes against Saudi oil refineries in May 2019, allegedly launched from Iraq.⁷² This was followed by a massive barrage by drones and ballistic missiles in September 2019 against Saudi Aramco oil processing facilities in Abqaiq and Khurais, with suspicion that some were also launched from southern Iraq, though the US denied this claim. In early 2021, Saudi Arabia's capital Riyadh was hit by several explosive-laden drones, and those attacks were claimed by unknown Iraqi militants groups, though drone remnants and statements by Iraqi officials indicated Iran's hand behind these attacks.⁷³ Similar attacks were also reported on targets in the United Arab Emirates⁷⁴ originating from Iraq and claimed by a hereby unknown militia.



Qasf-2K explosive drones used against US bases at al-Tanf and Hasakah in Syria, launched from Iraq in 2022

The use of explosive-laden kamikaze drones became a larger security concern and potential destabilizing risk in Iraq, as numerous strikes took place against US targets throughout Iraq, including the US al-Asad airbase, Erbil airport and Baghdad airport. This forced the US to respond, which in turn set off more protests and drone attacks in retaliatory strikes, creating a downward spiral of violence. All the drones involved in these strikes had Iranian fingerprints on them, with models based on the Sammad fixed-wing drones, as well as a smaller unknown homemade drone that had Iranian parts and components.⁷⁵ The ability to target US forces with lethal precision using these drones was labeled by US officials as “the military mission’s biggest concern in Iraq”, underscoring the significance of these capabilities and the difficulty in countering these drones.⁷⁶ Part of the US reaction was to conduct airstrikes against suspected drone production and storage facilities on the border of Iraq and Syria, resulting in the death of PMU members.⁷⁷ Later in 2021, sanctions were also put in place against Iranians involved in the drone program, citing their involvement in providing drones to Iraqi militias.⁷⁸ Despite this, attacks with these type of military drones against US targets in Iraq and Syria⁷⁹ continued in 2022⁸⁰ and 2023. These strikes were conducted by both Samad and Qasf-2K Iranian-origin drones, as well as a new type of small kamikaze drones called the Murad-5 that was used to target Baghdad and Erbil.⁸¹

The potential for escalation became clear again, when a drone strike in Syria, originating from Iraq, resulted in the death of an American contractor and two others wounded.⁸² The drones were assessed to be of Iranian origin, resulting in US retaliatory strikes against several facilities in Syria linked with the Iranian IRGC and PMU militias.⁸³

One unique type of drone use was the attack on Iraq's former Prime Minister Mustafa al-Kadhimi in November 2021 by unknown attackers. Two commercial quadcopter drones dropped explosives on the house of the Iraqi leader, destroying parts of his residence and wounding six security guards.⁸⁴ These types of drone were seen before in Baghdad, either equipped with small explosives or in an ISR capability while flying near sensitive targets.⁸⁵ Analysts assess that the responsibility for these strikes likely lies with some of the PMU groups less well-connected with Iran, as a way to pressure both the Iraqi government and project force. Nonetheless, the strike is a serious sign of the grave risks of weaponized drones, whose rapid proliferation (and resultant US response) has created widespread concern that there will be an overreaction that will spill out of control, underscoring the escalation potential.⁸⁶

Kurdistan Workers Party (PKK)





During its long war against the Turkish state, the PKK has had access to a wide range of weapons, including anti-aircraft missile systems such as MANPADS.⁸⁷ Despite these military successes, their use of drones remains limited, and the PKK has been mostly on the receiving end of Turkish drone strikes. The group did, however, gain more expertise on using weaponized commercial drones, in particular alongside their Syrian sister organization, the YPG. In 2016, Turkey captured two RQ-20 drones that were in possession of the PKK, allegedly retrieved from northern Syria. According to Turkish researchers, the PKK began using drones in their operations in 2016,⁸⁸ but the first attack with weaponized drones took place in 2017, with strikes against Turkish bases inside Iraq.⁸⁹ The images show the PKK using both DJI quadcopters drones and homemade small fixed-wing aircraft in their operations.⁹⁰ In 2018, the PKK in Turkey used a handful of small fixed-wing Talon-X commercial drones equipped with explosives to target a military base at Sirnak, indicating their desire to develop their own drone program, though the rudimentary remote-controlled model planes used for the attack also showcased the group's limitations.⁹¹





























Compilation of commercial weaponized drones used by the PKK in Iraq and Turkey



Sources: Twitter/X, Gerilla TV, Turkish media

In 2020, the PKK announced the establishment of the 'Air Defense Units', a specialist group trained to use weaponized commercial quadcopter or homemade drones with explosives against Turkish targets.⁹² This group has claimed over 34 strikes⁹³ against Turkish targets up to 2021,⁹⁴ though their impacts remain small. Analysis by PAX of the various videos and imagery posted on the Gerilla TV website, linked with the PKK, indicates that the group is mainly using larger DJI Matrix-type octocopter drones (or their derivatives) with heavier payloads, such as RPG warheads, small mortar rounds and and homemade explosives equipped with makeshift stabilizing fins.⁹⁵ Their attacks do not seem to be very effective, with small bomblets dropped from high altitude, likely affected by Turkish electronic countermeasures such as jammers. Various other sorts of commercial drones were also used, with an example of a Chinese origin Mugin-3 fixed-wing drone that was shot down near Şırnak on the border with Turkey. A similar drone was later shot down by Turkey-backed rebel groups in areas under their control in northeast Syria, allegedly coming from SDF controlled areas, making the link with the YPG and PKK plausible.⁹⁶ In early 2023, in an operation in northern Iraq, Turkey killed the head of the PKK's drone program, who was responsible for several major attacks on Turkish bases with multiple weaponized drones.⁹⁷

Drone types				
(Weaponized) commercial drones				
Loitering munitions				
Small tactical military drones				
Military armed drones				

Actors				
United States 				
Iraq 				
Iran 				
Turkey 				
United Kingdom 				
Israel 				
Kurdistan Workers Party, PKK 				
Popular Mobilisation Units, PMU 				
Islamic State in Iraq and Syria, ISIS 				

Key Findings

Iraq has become the staging ground of a set of unique drone developments that have changed the ways wars are fought, while at the same witnessing the continuation of existing practices around the use of armed drones. Over the last decade, these developments have been shaping novel military tactics in drone use by both state and non-state armed groups, which will continue to evolve and define the ways wars and insurgencies will be fought in the near future. There are three key developments in terms of drone use that emerge from PAX's analysis of drone employment in Iraq.

1 Weaponization of commercial drones

The massive investment by ISIS in research and development on weaponizing commercial off-the shelf drones was a turning point for this type of warfare. First, ISIS took advantage of the propaganda value of drone imagery and used drones' ISR capabilities as their eyes in the sky to boost the effectiveness of their military campaigns both in Iraq and Syria, and later in other areas the group had a presence in. Their ability to acquire large quantities of drones through their networks and to weaponize them with a range of munitions or turn them into airborne improvised explosive devices became a real problem for US-led coalition and Iraqi forces fighting them. Other armed groups, such as the PKK and PMU, quickly picked up on this, and deployed these types of drones in their operations, though less successfully. The PMU had less need to use commercial UAVs, as it had access to Iranian drone technology, meaning larger types of military UAVs. Only the Iraqi federal police have been effectively using similar applications with weaponized commercial drones, while the PKK has attempted also to deploy these drones, albeit with limited success against a technologically advanced opponent in Turkey. Israeli use of these small drones against Iran-linked PMU targets is a clear example of how states can send a message to their adversaries using limited means. Lastly, the use of weaponized commercial drones by an unknown armed group to target the Iraqi prime minister was the first use of drones to directly target a state leader. Similar previous use of drones trying to target political leaders were averted, including the 2015 use of radioactive materials dropped on the Japanese prime minister's office⁹⁸, and the alleged failed attack on President Maduro in Venezuela with commercial drones equipped with explosives.⁹⁹

Armed groups' ability to use these types of remote controlled tools of lethal force is posing serious security challenges for states, both in conflict and peace settings. This became clear in Iraq, with ISIS's use of drones against Iraqi forces and US-led coalition troops, and later with strikes against domestic targets by unknown assailants, including allegedly Israel. Their small signature makes them hard to detect and shoot down, and requires additional levels of protection for sensitive targets. The US already deployed special counter-drone measures around their embassy in Baghdad and their military bases to intercept drones, such as the Phalanx 20mm Counter Rocket Artillery Mortar (CRAM) weapon system, which fires over 3,000 bullets per minute to intercept incoming projectiles. These are expensive systems, however, that cannot be deployed in regular urban settings, as they pose a risk to civilians in nearby areas from falling bullets.

The widespread use of weaponized commercial drones in conflict zones around the world, with Iraq being a notable example, indicates that this technology is proliferating, and states are behind on developing proper technological countermeasures, as well as on addressing export control issues with commercial drone technologies. New developments such as mass production

of explosive-laden first-person-view (FPV) drones, as seen in Ukraine, heralds a new reality. These fast-moving drones, custom-built by Ukraine's and Russia's domestic defense industries, are causing havoc on the battlefield. They have also appeared in Sudan.¹⁰⁰ The next step is likely a combination of the application of swarming tactics of multiple drones in a coordinated attack alongside the use of artificial intelligence, considering the rapid spread of hardware and software enabling such capabilities.

2 Power projection with loitering munitions

Iran's emergence as a regional drone power has also had security impacts in Iraq, as the IRGC has been actively supplying militias with drones as well as using drones themselves. The role of Iran in providing long-range loitering munitions to Iraqi militias is evident based on the numerous types of drones used against US targets in Iraq that have known Iranian designs, as well as parts and components from Iran. Initially, Iran used these militias and Iraqi soil as a staging ground for drone strikes against high-profile targets in Saudi Arabia, such as oil refineries and the royal palace in Riyadh, and allegedly also against Kuwait and the United Arab Emirates. This provided Iran with the cover of deniability in their strikes against regional adversaries, while still projecting power with the use of drones.

A photo released by Kurdistan Region counter terrorism forces shows the wreckage of one of three drones that attacked a residence in the outskirts of Erbil on June 26, 2021.



Beyond these staging ground strikes, Iran and its proxies in Iraq have also increased attacks on US forces. Initially used unguided mortar and missile attacks against US targets, the turning point became apparent after the US drone strike against IRGC general Qassem Solaimani. The use of Iranian drones against a wide range of targets also heightened tensions between Iran and the US, as any US casualty resulted in retaliatory strikes against the PMU. With increased access to these types of drones, this risk of escalation in case of severe casualties could set off a regional conflict. This type of proxy drone war has managed to put more pressure on US interest in Iraq, as it is also fueling concerns over US presence in Iraq in US domestic politics and strengthening calls amongst part of the political spectrum to withdraw US forces. These drone attacks have also forced the US to improve protection of its bases, while putting its presence in Iraq at heightened risk, requiring a rethink of their strategy. So far, US drone defenses and sheer luck have resulted in minimal casualties, though improvements in precision and delivery technology and strike capabilities for Iran's proxies could result in a different scenario.

The Iranian-origin drones used by Iraqi militias seem largely to be constructed from civilian parts and components, including from Western countries, and equipped with military-grade explosives. Porous borders, as well as PMU control over some border checkpoints between Iran and Iraq, make smuggling and transfer of these drones relatively easy for Iran. Notwithstanding this obvious limitation in Iraq, this still underscores the need for proper export controls to limit proliferation and improve risk assessments to prevent unwanted end users gaining access to drones and drone technology. This can be combined with a sanctions regime to target specific individuals or companies that continue to be involved in production of these drones.

The grave of a mother and newborn baby at the burial site of Kurdish-Iranian opposition killed during the 2022 Missiles and Drone attack by Iran. March 25, 2023.

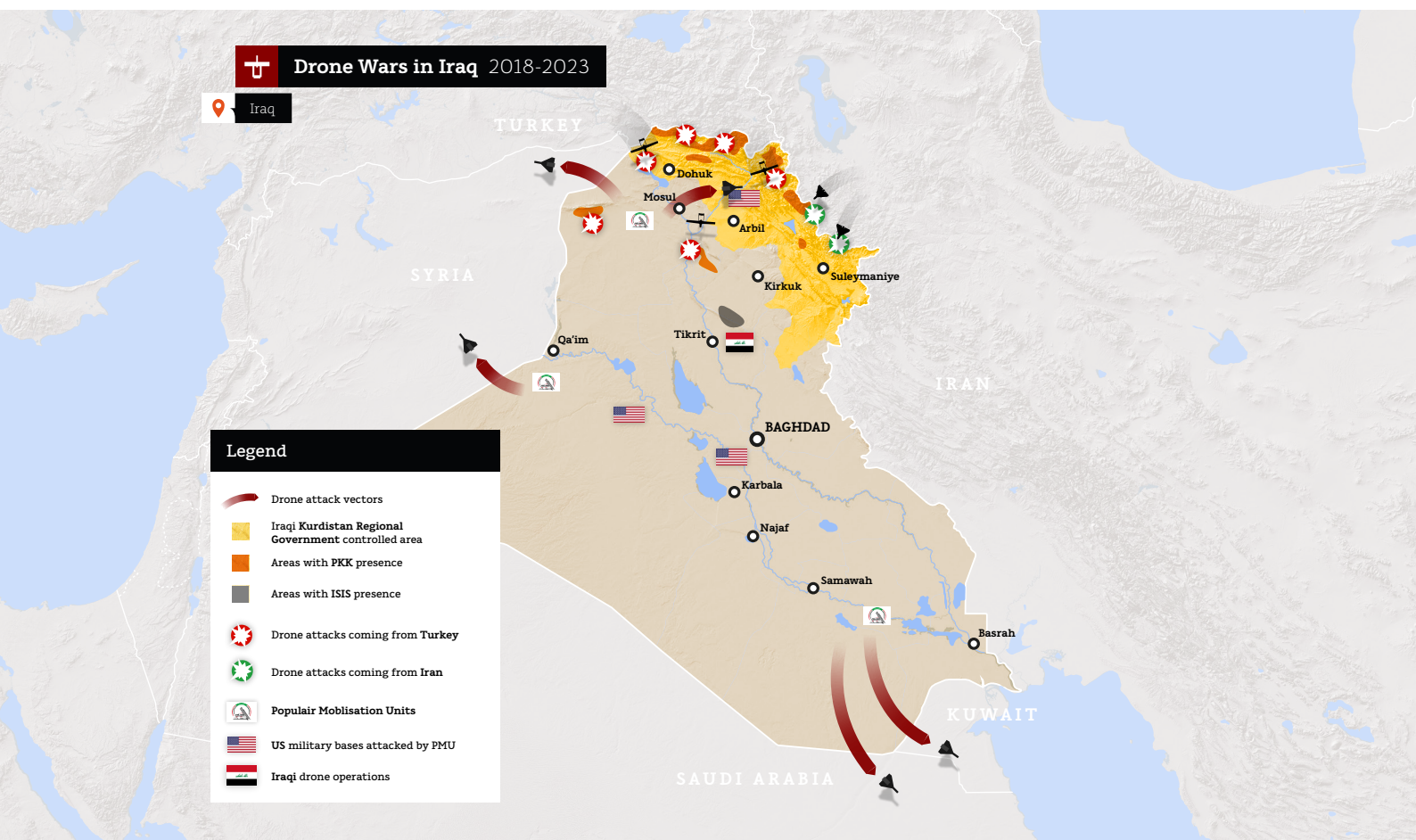


3 Targeted killings

Armed drones and their ability to loiter over large areas with high-tech surveillance systems provides militaries with significantly greater intelligence, enabling them to have more accurate information. Combined with precision munitions, this could be used to avoid civilian casualties. Despite this progress, Iraq has mainly witnessed the continuation of a practice that has been scrutinized by human rights campaigners, UN special rapporteurs and legal experts: namely, extrajudicial killings via drones. The US drone campaigns in Pakistan, Yemen and Somalia have resulted in hundreds of civilian casualties, and it took years for the US to change its rules of engagement and go public with its legal justification to carry out targeted killings outside an area of armed conflicts. Turkey has now taken over as the leader in drone killings with its operations against suspected PKK militants in northeast Syria and Iraq. Turkey's general justification for their military operations in Iraq, citing self-defense, still should take into account that lethal force is only the last resort. As shown in the report, there are numerous credible reports of civilian casualties from Turkish drone strikes, with little to no pushback from the Iraqi government.

Ongoing Turkish drones loitering daily over the mountains over Iraqi Kurdistan is instilling fear into rural communities, that, combined with fear of the PKK and restrictions in movement, is driving displacement of the population towards urban areas as people lose their incomes and livelihoods. The silence by both the KRG and the Iraqi government to speak out against the lack of transparency from Turkey and demanding a legal justification risks undermining both legal principles around the use of force, as well as the trust of Iraqi citizens in their own government's ability to protect them.

The US also still operates armed drones from Iraq, used mainly in an ISR function in counter-ISIS operations in support of the SDF in northeast Syria, as well as for targeted killings of suspected ISIS or al-Qaeda militants in northwest Syria. For the latter operations, the drones could also be coming from the CIA H4 base in Jordan. Recent investigative work by journalists revealed that civilians were also killed in some of these US drone operations.¹⁰¹



Conclusion

The presence of various US, Chinese-origin and Turkish military drones in the skies over Iraq has come with both challenges and opportunities. The use of a wide range of drone systems by the US-led coalition forces did provide them with the ability to limit civilian casualties in the fight against ISIS. However, leaked documents also showed the limitations of precision warfare, with regular misinterpretations of drone imagery and a lack of accurate data in the targeting process, leading to hundreds of civilian casualties.¹⁰² The US targeted killing of the IRGC's Qassem Soleimani with a MQ-9 drone did cause a surge of drone strikes by Iranian proxies against US bases for over a year in the period 2021-2022, though few or no drone operations occurred in 2023. Despite operating a number of Chinese armed drones, the Iraqi Air Force seems to make limited use of them in ongoing counter-terrorism operations against ISIS parts of Iraq, apparently largely due to technical failures with these systems.

In the north of the country, however, Turkey has stepped up its campaign of targeted killings with drones against the PKK and associated groups, with its civilian and political costs. As indicated earlier, there are serious concerns over both civilian casualties and the lack of accountability of Turkish drone strikes. Moreover, recent strikes also targeted Kurdish security forces that are part of the Kurdistan Regional Government, increasing tensions between the Iraqi government and Turkey over sovereignty and the use of lethal force on Iraqi soil. The lack of international pushback against US drone campaigns in Pakistan, Yemen and Somalia provided Turkey with the political space to apply similar tactics in the fight against the PKK. This means no clear legal public rationale, no transparency over targeting and no accountability and right to redress for civilian casualties. This further risks undermining existing legal principles on the use of lethal force. In statements from anonymous officials, Turkey refers to the right of self-defense under Article 51 of the UN Charter in the fight against the PKK. There are legitimate security concerns for Turkey considering ongoing PKK operations. Yet Turkey is not in an official war with Iraq, nor has Iraq officially indicated that it gave Turkey permission to use lethal force on Iraqi soil. Hence, Turkish operations would need to be seen through the lens of law enforcement, meaning that international human rights law should apply for drone strikes, in particular those taking place in populated areas. This means they can only be employed as a last resort and in case of imminent threat. Turkish military intelligence (MIT) has already conducted capture operations on Iraqi soil of suspected PKK members, demonstrating their ability to use non-lethal ways to achieve their aims and put suspected militants in custody for a trial.

The decades long-war also shows that military force is unlikely to solve the conflict, even though Turkish operations and presence in northern Iraq did seriously degrade the PKK's capabilities and strength. This came with a serious cost to Kurdish and minority groups in Iraq, many of whom are leaving the region under fear of airstrikes and bombings. In the end, a political solution would need to be found that addresses Turkish security concerns as well as Kurdish demands and aspirations for more autonomy in the region.

Responsible Use and Controlling Proliferation

Uncrewed systems have now taken up a common place in the stocks of armed forces and non-state armed groups. With this development, there remain a number of challenges over both responsible use of military drones and how to deal with proliferation. As indicated in this analysis, the unique features of drones have opened up a new toolbox of targeting that has been actively exploited by states and armed groups to use lethal force. This brings serious escalation risks, undermines protection of civilians and could erode legal principles around the use of lethal force. The scale of surveillance, data collection and targeting requires proper policy and legal frameworks to prevent civilian casualties, improve accountability and oversight and adhere to international legal principles in both a humanitarian and human rights law framework. The main current concern is over Turkey's drone campaign targeting suspected PKK militants and associated groups, and Iran using drones in proxy warfare against the US and its allies, as well as targeted strikes against Kurdish militants. In both instances, there is no official approval given to Turkey and Iran by the Iraqi government to use lethal forces on its own territory. Both the US and the UN mission in Iraq have called for halting the strikes, stating that "security concerns must be addressed through dialogue and diplomacy, not strikes".¹⁰³ In a similar vein, Iraqi President Rashid has stated that:

"the persistent and targeted military attacks against cities, civilians, and military personnel are unacceptable under international law. These attacks violate principles of good neighborliness, particularly when executed with weapons typically reserved for open warfare, such as drones. These drones have become a common tool in Turkey's aggression against Iraqi soil, threatening the stability and security that Iraq has worked to achieve since 2003. We strongly condemn these ongoing assaults on our region's safe cities."¹⁰⁴

Publicly, the Iraqi government has pushed back when its soldiers were killed¹⁰⁵, but privately officials stated they have 'no leverage over Turkey or Iran'.¹⁰⁶ Iraq's federal government and their regional counterparts in Iraqi Kurdistan's tacit agreement to these strikes is a concerning development that risks undermining Iraq's sovereignty. In particular, the area under control by the Kurdistan Democratic Party (KDP) and their close collaboration with Turkey indicates that they are in agreement with these operations. By allowing the use of lethal force on its own territory, the KRG and the federal government admits that they are unable to address the security issues on its own soil and gives a free hand to other states to carry out targeted strikes. This has to be placed in the context of the complex history over the Kurdish fight for independence and civil war in Iraqi Kurdistan in the mid-1990s that complicated the difference alliances between Kurdish factions and their role vis-a-vis the PKK and Turkey. Nonetheless, the absence of a diplomatic process to come to a peaceful resolution is making matters worse for civilians in northern Iraq, regional peace and security and the rule of law.

With the growing consolidation of the PMU as part of Iraq's armed forces, their access to drone and drone technologies from Iran questions the oversight and control of the federal government on arms import and export. The role of state-sponsored delivery of drones to militant groups and their subsequent use will continue to pose risks related to escalation of force. With Iraq now also acquiring more armed drones themselves, the government should clearly outline their legal policies around targeted strikes in relation to international humanitarian and human rights law around the use of lethal force. In order to improve accountability and transparency and protection of civilians, all states operating armed drones inside Iraq should clarify their positions on the use of lethal force, including improving transparency around targeted strikes and compensation for civilian casualties.

Recommendations

The findings of this research underscore the need for improving international regulations, norms and standards around the use of lethal force with military and weaponized commercial drones. To protect civilians, foster peace and security, uphold international law and strengthen transparency and accountability, PAX has the following recommendations:

Legal and Policy Recommendations on Military Drone Use

- ◆ States deploying armed drones in counter-insurgency and counter-terrorism operations in Iraq should articulate clear policies and legal positions on how they are using armed drones in order to strengthen transparency and accountability. This includes publishing their rules and procedures to show full compliance with international law, including preventing, mitigating and investigating all unlawful deaths, and more broadly all civilian harm.
- ◆ States that use armed drones in counter-terrorism operations must provide timely public information on their use – on a case-by-case basis – on the legal and factual grounds on which specific individuals or groups are targeted and provide information on the number of casualties and their identities.
- ◆ States involved in drone strikes must conduct prompt, thorough, independent and impartial investigations into all allegations of unlawful death or civilian harm and publish the results of each investigation in a timely manner. All states must ensure that the rights of victims of drone strikes are upheld, including by ensuring effective access to judicial remedies and reparation.

Export and subsequent use of military drones and drone technology

- ◆ States should establish clear, robust and binding International Standards on the export and subsequent use of military drones. Initial discussions – led by a core-group of States under the auspices of the United Nations – should explore opportunities that could lead to a political declaration and starting point for discussions on guiding standards around risk-analysis, export control mechanisms and legal principles around the use of lethal force with uncrewed systems.
- ◆ States should establish and resource a Governmental Group of Experts on Uncrewed Systems in relation to Peace and Security. The groups should explore, inter alia, options to make a living document for export controls on drone and drone-related technology; review how existing arms and dual use export control regimes, including the Arms Trade Treaty, the Wassenaar Arrangement and the Missile Technology Control Regime, can be a tool for improving oversight on exports; periodically review latest developments on the novel risk to peace and security associated with proliferation and use of uncrewed systems.

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