

Example Specific Tasks of Fire Protection Units in Armed Conflict Conditions: Challenges, Coordination and Recommendations

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Abstract

The article analyzes the role of firefighting units in armed conflict and their importance for the protection of civilians. Using examples from Ukraine and Israel, it describes the expansion of tasks from classic firefighting and rescue to civil defense activities: evacuations, interventions in simultaneous fires, technical assistance and debris removal, emergency water supply, handling unexploded ordnance and CBRN incidents, and providing psychosocial support. He discusses key challenges (safety, logistics, staff workload) and emphasizes the need for coordination with the Integrated Rescue System and the army. He proposes recommendations for increasing preparedness and resilience.

KEY WORDS: *fire protection units, armed conflict, civil defense, evacuation of the population, CBRN protection*

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1. Introduction

Modern armed conflicts have a devastating impact not only on military targets, but also on civilian infrastructure and populations. Events in recent years – from the war in Ukraine to the escalation of violence in the Middle East – show that ensuring the protection of civilians is an integral part of national defense. In situations where cities are exposed to missile attacks, artillery shelling, or sabotage, firefighting units (fire departments) are on the front line of response to emergencies. Their role thus extends from routine firefighting and rescue work to the area of so-called civil defense in wartime conditions.

Historically, the importance of firefighters in conflicts was demonstrated, for example, during the air raids of World War II, when they helped extinguish widespread fires and ensure the survival of residents in destroyed cities [1]. Today, however, we face even more complex threats. In Ukraine, since the beginning of the invasion in 2022, over 60,000 professional firefighters and rescuers, together with hundreds of thousands of volunteers from the State Emergency Service, have been risking their lives daily to rescue civilians [2,3]. In Israel, too, a significant part of the civil protection forces was mobilized during the rocket attacks in 2023-2024 to protect the population from the effects of shelling [4,5].

This article deals with the specific tasks performed by firefighting units in armed conflict situations and analyzes the challenges associated with these activities. The individual chapters focus on (1) evacuating the population in cooperation with other components of the Integrated Rescue System (IRS) and the army, (2) extinguishing fires caused by combat operations, (3) technical assistance including debris removal and emergency infrastructure repairs, (4) securing emergency water supplies, (5) disposal of unexploded ordnance and CBRN protection, and (6) providing psychosocial support and communicating with the public. The article then discusses the need for coordination between firefighters, other IZS components, and the armed forces, and summarizes the main problems these units face in combat conditions. Finally, recommendations for practice are formulated to increase the preparedness and resilience of firefighting units as an important pillar of national security in the current geopolitical situation.

2. Specific tasks and activities of fire protection units in conditions of armed conflict

A summary overview divided into individual areas according to the activities of fire protection units, using examples from Ukraine and Israel, is provided in Table 1 at the end of the chapter.

2.1. Evacuation of people from endangered areas

One of the first priorities when civilian areas are threatened by combat operations is to evacuate residents from the most dangerous zones. Firefighting units participate in evacuations in close cooperation with the police, emergency medical services, local authorities, and often the army. In practice, they warn residents, organize evacuation centers, and, to a large extent, transport people to safety. Firefighters are equipped with technology (evacuation buses, tanker trucks, boats, etc.) and professionally trained to help move vulnerable groups of the population, such as the elderly, the sick, and children, from combat zones.

In Ukraine, special evacuation teams have been set up within the state rescue service since the beginning of the conflict. One example is the "Phoenix" group in the Donetsk region, whose members visit dozens of households near the front line every day and persuade local residents to leave their homes [6]. This is not just a matter of organized transport; it is often necessary to explain the risks of staying and provide psychological support to people so that they agree to evacuate. In Israel, too, during the recent conflict with Hamas and the Lebanese Hezbollah, a large-scale preventive evacuation of border communities was carried out. In October 2023, the government ordered the evacuation of residents from dozens of communities in northern Israel as a result of cross-border attacks, with temporary accommodation organized and financed by the state [4]. These examples show that evacuations in combat conditions are logistically demanding operations requiring.

During evacuations, firefighters also take care of securing evacuation centers and providing humanitarian support to evacuees. They often help set up temporary accommodation, secure water, heat, and other basic necessities for evacuees. For example, as part of the integrated rescue system, they may cooperate with humanitarian organizations (Red Cross, Caritas, etc.) to register and treat evacuees. In situations where evacuations take place under threat of shelling, firefighters can also provide a "security escort," with their equipment and personnel helping to form a convoy and monitor the route to minimize the risk to fleeing civilians.

In summary, the successful management of civilian evacuations in armed conflict depends on rapid response and effective cooperation between all parties. Firefighting units bring organization, technical resources, and crisis management experience to this process, thereby making a significant contribution to saving lives and preventing civilian casualties.

2.2. Extinguishing fires caused by combat operations

The massive deployment of firefighting units is also necessary when extinguishing fires caused by combat. Bombing and shelling of cities often causes dozens to hundreds of fires at the same time - residential buildings, fuel depots, industrial facilities, but also forests and fields in the surrounding area are on fire. Firefighters are thus faced with a situation where they must prioritize which fires to extinguish first. Rescue unit commanders carry out a kind of strategic triage of fires: they assess which fires pose the greatest threat to the population and key infrastructure and assign available forces to them, while less dangerous fires may be left temporarily unattended. This approach was applied, for example, during intense shelling in the Irpin and Bucha areas in the spring of 2022, where firefighters had to let some buildings burn out in a controlled manner in order to save other more important buildings [1].

Another specific feature of fighting fires in wartime is the need to intervene even under ongoing fire. In Ukraine, it is common for firefighting teams to be called out to extinguish the aftermath of a rocket strike while the area is still under repeated attack. Rescuers therefore interrupt their intervention and take cover as soon as an air raid siren sounds or a drone correcting fire is spotted, returning to extinguish the fire once the attack has subsided. Despite this danger, they are often forced to intervene "under fire." Since the beginning of the war, Ukrainian firefighters have therefore introduced the use of ballistic protection, wearing Kevlar helmets and bulletproof vests when responding to calls in areas under fire, which adds an additional ~20 kg to their normal equipment [7]. Nevertheless, a number of firefighters have already died while fighting fires in dangerous areas due to so-called double strikes by the enemy (repeated hits on the same location during rescue operations). For example, in the Kharkiv region alone, more than 1,700 fires caused by shelling have been recorded since February 2022, killing at least three firefighters and injuring around 30 [7].

Other problems include disrupted water and electricity supplies, which complicate the work of firefighters. Damage to engineering networks can lead to a drop in pressure or a complete failure of the water supply network, rendering hydrants inoperable. In such cases, units have to improvise - they set up pumping stations by rivers, use tankers and shuttle transport for water, or mobile pumps. During World War II, for example, London firefighters used special pumps to draw water from the Thames to extinguish widespread fires caused by bombing. In the current conflict in Ukraine, firefighters also faced a critical shortage of fuel for fire trucks, especially in the early stages of the invasion. As a result, they were forced to limit their call-outs to confirmed incidents only. For example, when a fire is reported, reconnaissance units in smaller vehicles are sent out first to assess the situation before heavy equipment is dispatched [1]. These measures help to save fuel for truly serious incidents.

Large-scale fires, especially forest and steppe fires caused by fighting, are a specific issue. In Israel, during Hezbollah's rocket attacks in 2024, a large number of vegetation fires broke out simultaneously in the north of the country, burning over 5,000 hectares of forest and scrubland in two weeks. Hot debris from rockets shot down by the Iron Dome missile defense system fell to the ground and started fires in many places at once. Firefighters had to mobilize aerial firefighting and create firebreaks to protect populated areas [5]. Here, too, the need for prioritization became apparent, with some fires left to burn out in less accessible terrain while forces concentrated on protecting villages and towns.

Overall, firefighting in conditions of armed conflict places extreme demands on personnel and equipment. Firefighting units must adapt to non-standard situations, fight multiple large fires at once, operate in an environment where there is a threat of further attack, and often with limited resources. Nevertheless, their efforts minimize secondary losses of life and property, prevent the spread of fires, and thus contribute significantly to maintaining the functionality of the affected cities.

2.3. Technical assistance: rescue, debris removal, and temporary repairs

In addition to extinguishing fires, another key task of firefighting units during conflicts is to provide technical assistance in rescue and clean-up operations. This includes, in particular, searching for and rescuing people trapped in the rubble of collapsed buildings, removing debris and dangerous structures, and provisionally securing damaged infrastructure. After rocket and bomb attacks, dozens of injured people remain trapped under collapsed ceilings and walls. In such cases, firefighters deploy rescue equipment (hydraulic devices, cranes), trained rescue dogs, and specialized procedures known from natural disaster response. For example, in January 2023, after an attack on a residential building in Dnipro, firefighters and rescuers searched the rubble for several days and rescued dozens of survivors, while simultaneously extinguishing the fire and eliminating the threat of explosion caused by a gas leak [2].

In Ukraine, more than 800 people have been rescued from the rubble since February 2022 thanks to the deployment of State Emergency Service units. At the same time, however, rescuers often have to recover victims who did not survive the attack—in the first two months of the war alone, nearly 900 civilian bodies were recovered from the ruins of buildings [3]. These activities have a significant psychological impact on responders, who encounter tragic situations on a daily basis. At the same time, however, their work allows survivors to escape from the rubble and provides a chance to find others alive even several dozen hours after an attack.

Clearing debris is important not only for rescuing people, but also for restoring basic functionality to the affected area. Firefighters help clear roads blocked by collapsed structures and wrecked vehicles so that ambulances, supply trucks, and evacuation buses can pass through. They temporarily secure structurally compromised buildings and prop up unstable ceilings and walls to prevent further collapse during the search for survivors. In cooperation with municipal technical services, they disconnect gas, electricity, and water supplies in damaged buildings to prevent secondary accidents (fires, explosions, or floods). For example, during an operation in Kramatorsk, the unit faced a gas leak that threatened to explode, so firefighters had to urgently seal the damaged pipeline while searching through the rubble [2].

Technical assistance also includes emergency repairs to the most critical infrastructure. Firefighters temporarily cover damaged roofs with tarpaulins, secure buildings against leaks, pump water out of flooded areas after water pipes have burst, and remove dangerous fragments of buildings that threaten to fall into areas where people are present. These seemingly minor activities are of great importance in stabilizing life in the affected area as soon as possible.

The extent of destruction in modern armed conflict is enormous. For example, by April 2022, more than 75,000 civilian buildings had been completely destroyed or severely damaged in Ukraine, including hundreds of schools, hospitals, and other public buildings [3]. The disposal of such a huge amount of debris requires the deployment of all available capacities. Firefighting units therefore often work with army engineering units, construction companies, and volunteers from the local population to clean up and secure debris-stricken cities [3]. Their efforts help restore basic services, enable energy and water companies to repair networks, restart transport connections, and allow the population to return, at least partially, to their homes. The technical assistance provided by firefighters thus forms an essential bridge between the acute phase of saving lives and the subsequent reconstruction of war-affected communities.

2.4. Securing emergency water supplies

Physical destruction of infrastructure during war often affects water supply systems. Destroyed pumps, broken water mains, and contaminated sources can leave thousands of people without access to drinking water. Firefighting units therefore play an important role in ensuring emergency water supplies for both their own firefighting operations and the basic needs of the population.

For firefighting purposes, firefighters usually build alternative water sources if the traditional hydrant network fails. They set up pumping stations near rivers, lakes, or retention reservoirs from which they refill tankers. They also use fire reservoirs and emergency hydrants, which they can connect to a functional part of the network or fill from tankers using shuttle transport. For example, in besieged Mariupol in 2022, fire crews had to pump water from city wells and improvised sources because the water supply system had been completely destroyed. Flexible tactics for securing firefighting water are essential to enable firefighters to respond effectively even when infrastructure is severely disrupted.

Equally important is the supply of drinking water to the population. Fire trucks and emergency water mains are often used to distribute water to civilians in areas where the supply system has been knocked out. State rescue service units

in Ukraine regularly transport water and other essential supplies to residents, even in dangerous regions that have been left without infrastructure after attacks [3]. Firefighters set up collection points where people can draw drinking water from tanks, or they help install temporary water containers and filters in cooperation with water companies and humanitarian organizations. In the event of prolonged outages, they place tanks with imported water in central locations in municipalities and ensure that they are regularly refilled.

An example of this is the situation in the summer of 2023, when the destruction of the Kakhovka Dam in southern Ukraine deprived hundreds of thousands of people of their water supply. Firefighting units were involved in distributing bottled water and setting up emergency wells until supplies could be restored by other means. Similarly, in Israel, following rocket attacks, firefighters in some cases assisted in supplying water to cut-off villages until damaged water pipes were repaired.

Securing water is critical both for the survival of the population and for other rescue and clean-up work (hygiene, health care, etc.). Thanks to their equipment (tankers, pumps) and experience in handling water resources, firefighting units are a key element of the improvised supply chain in crisis conditions. Their activities mitigate the humanitarian impact of war, prevent the outbreak of epidemics from the use of contaminated water, and help maintain basic living conditions for both evacuated and remaining populations.

2.5. Demining and disposal of unexploded ordnance

Armed conflict leaves behind a considerable amount of unexploded ordnance – aerial bombs, rockets, artillery shells, mines, and improvised explosive devices. These remnants pose a deadly danger to civilians and emergency responders. Firefighting units (especially in state rescue services) have specialized pyrotechnic teams dedicated to searching for, neutralizing, and removing these unexploded devices.

Since the beginning of the invasion, dozens of pyrotechnic units of the State Emergency Service have been deployed in Ukraine to search liberated territories in a coordinated manner and mark or remove explosive hazards. During the first year of the war, they defused over 70,000 pieces of unexploded ordnance and cleared an area of more than 12,000 hectares. These efforts continue, as the density of contamination of the territory with mines and sharp weapons is enormous and threatens a return to normal life. Firefighters work with metal detectors, remote-controlled robots, and armored vehicles, and they work closely with army engineers. Still, it's a high-risk job, and several rescuers have lost their lives, while others have been injured [3].

The disposal of unexploded ordnance involves both controlled detonations on site and the removal of ammunition for later disposal at secure locations. Firefighters also often respond to urgent cases where ammunition posing a threat to residents is found, evacuating the area around the site and securing it until the arrival of pyrotechnicians. In conflicts such as the one in Ukraine, however, the distinction between "military" and "civilian" pyrotechnicians is blurred over time, with all available specialists involved in the extensive demining of cities, fields, and roads.

Firefighters in other countries also have similar responsibilities. In Israel, for example, army engineering units are primarily responsible for this task, but civilian units are also trained in the identification and basic securing of unexploded rockets and grenades that land in populated areas. Firefighters cordon off the danger zone, prevent civilians from entering, and wait for the arrival of army experts or take initial measures to reduce the risk (e.g., cooling burning rocket debris, extinguishing fires around ammunition to prevent it from exploding).

The work of the fire department's pyrotechnic teams is extremely important for the safe restoration of life in post-war areas. Demining allows residents to return, agriculture to be restored, and infrastructure to be repaired without fear of explosions. In addition, by removing ammunition, they reduce the risk that it could be misused or cause further damage in the future. Firefighters thus play the role of "silent heroes" of post-war stabilization in this area, whose work often takes place outside the spotlight but is fundamental to future reconstruction.

2.6. Decontamination and protection against CBRN threats

The danger of chemical, biological, radiological, and nuclear (CBRN) threats increases in armed conflict. The deliberate use of chemical weapons, the release of toxic industrial substances following attacks on factories, threats to nuclear power plants, and the use of radiological "dirty bombs" are all scenarios for which firefighting units must be prepared.

Fire departments in many countries have specialized chemical services and decontamination teams that become critical in times of war. These experts monitor the air and water for the presence of hazardous substances, take samples, and can assess whether a chemical or radiation attack has occurred. In Ukraine, there were concerns about the possible use of chemical weapons by the attacker, so the local emergency services urgently requested modern equipment for detecting chemical warfare agents and protecting the respiratory tract of responders [3]. Firefighters were equipped with personal dosimeters and anti-chemical suits and are on standby near nuclear power plants in case of a radiation accident.

Part of the firefighters' work involves decontaminating people, equipment, and the environment affected by hazardous substances. In the event of a chemical attack, firefighters would set up a mass decontamination station to rinse affected persons with water and special solutions to prevent the further spread of toxic substances. They are also prepared to decontaminate their own protective equipment and technology so that they can continue their intervention. In the event

of radiological fallout (e.g., after the explosion of a dirty bomb or a nuclear accident), firefighting units would measure radiation, mark out evacuation perimeters, and ensure that contaminated surfaces are washed.

Prevention and preparation for CBRN incidents also includes informing and protecting the population. In Israel, for example, residents are regularly instructed on the use of home-based personal protective equipment (protective masks, shelters) in the event of a chemical attack, and similarly in Ukraine, potassium iodide tablets have been distributed in areas threatened by radiation from a nuclear power plant. Firefighters are involved in this education and are often the ones who advise people in the field on how to proceed in the event of a chemical alarm or contamination.

Overall, fire protection units in the CBRN area serve as a kind of "first line of defense" for civil protection against invisible threats. Their rapid detection and response can significantly reduce the impact of a potential chemical or radiation incident on the population. However, this requires state-of-the-art equipment and training, from specialized vehicles with detection devices to ongoing training of personnel in protective clothing. In conditions of armed conflict, such preparedness is all the more important, as the risk of a CBRN event (even an unforeseen one, such as an attack on a chemical plant) is considerable and its consequences could be catastrophic.

2.7. Psychological support and communication with the population

Armed conflict affects civilians not only physically, but also psychologically. People exposed to bombing and loss of their homes suffer from stress, shock, and often trauma. In addition to their technical tasks, firefighting units therefore also act as first responders providing psychological support, offering basic psychosocial support to those affected and facilitating communication between the authorities and the public in crisis situations.

During interventions, firefighters are often the first to make contact with victims and witnesses of tragic events. Their empathetic approach and ability to calm the situation are key to managing the initial panic. Firefighters are trained in crisis intervention – they know how to listen actively, provide simple reassuring information and practical assistance (e.g., blankets, water, basic treatment), which gives those affected a sense of security. For example, after rocket attacks on residential areas in Ukraine or Israel, firefighters took care of evacuated families at assembly points, distributing water and informing them about the next steps, thereby alleviating chaos and fear.

Communication with the wider public is equally important. Fire and rescue services are often a source of verified information at a time when rumors and misinformation are spreading. Through the media and social networks, they provide information on the progress of interventions, refute falsehoods, and advise residents on how to protect themselves [10]. In Ukraine, the state rescue service actively uses communication channels (including apps such as Telegram) to warn residents about dangerous areas and to provide instructions on when it is safe to return [3]. In Israel, firefighters work closely with the army's Home Front Command. Sirens and warning text messages alert residents to rocket attacks, followed by firefighters who drive around the affected areas after the rockets have landed and communicate with residents to see if they need help or psychological support.

The mental resilience of firefighters is a separate issue. Constant confrontation with tragedies – dead civilians, injured children, destruction of homes – takes its toll on them as well. Studies show that a high percentage of firefighters working in extreme situations develop post-traumatic stress disorder (PTSD) or other mental health issues [11]. That is why modern rescue services emphasize psychosocial services for their own members. For example, the Fire Rescue Service of the Czech Republic has a Psychological Service with a team of experts who provide crisis intervention to firefighters and their families after demanding operations. Similar programs exist at the international level. In the US, for example, peer support programs are common, where experienced firefighters trained in mental health help their colleagues cope with stress.

Overall, communication and psychosocial care are an integral part of the fire department's response to crisis situations. By helping people overcome the initial shock not only physically but also mentally, firefighters contribute to maintaining the morale of the population and strengthening public confidence in the rescue system. At the same time, by caring for their own members, they ensure that they will be able to operate in demanding war conditions in the long term without succumbing to exhaustion and trauma themselves.

2.8 Coordination of rescue system components and armed forces

Effective management of the tasks described above requires close coordination between all parties involved – the integrated rescue system (IRS) and the army. In armed conflict, the line between "civilian" and "military" operations is often blurred: rescue operations take place in combat zones, and military forces are involved in protecting civilians and providing infrastructure assistance. It is therefore necessary to establish clear rules for cooperation, information sharing, and command to avoid chaos or even mutual endangerment.

One of the key aspects is the flow of information. Rescue units need timely warnings from the military about planned operations (e.g., bridge demolitions, artillery strikes), and conversely, the military needs an overview of where civilian rescuers are operating to minimize the risk of "friendly fire." It turns out that insufficient communication can lead to dangerous situations. For example, in the early days of the invasion, Ukrainian firefighters were caught off guard several times by destroyed bridges, which the army had decided to demolish to slow down the enemy's advance, endangering the fire crews rushing to the scene [1]. Such incidents can be prevented by setting up joint operations centers or liaison teams, where representatives of the fire department, police, medical services, and army coordinate their actions.

Another aspect is the division of tasks and responsibilities. The army usually has greater capacity in terms of heavy equipment and logistics; for example, it can provide engineering machinery for clearing rubble, pontoon bridges for temporary roads, or helicopters for aerial firefighting and evacuation. Firefighters, on the other hand, bring expertise in rescue procedures and detailed knowledge of the terrain and risks in the civilian sector. The synergy lies in the fact that the military and civilian components perform their tasks in a coordinated manner and complement each other. In Israel, for example, there is a Home Front Command within the army that provides civil defense, but deploys mixed teams including firefighters, medics, and soldiers for field operations. A similar model is emerging in Ukraine, where joint emergency control centers operate in the most affected areas.

The international dimension of coordination cannot be overlooked. The European Union has a Civil Protection Mechanism, through which foreign aid flowed to Ukraine in response to the war, including hundreds of fire trucks, equipment, and teams of experts [12]. Fire departments from various countries sent material aid to Ukraine and participated in training their colleagues there. These activities had to be coordinated with local authorities and the army to ensure that aid was delivered effectively where it was needed. Another example is the CTIF (International Association of Fire and Rescue Services) platform, which, at the request of the Ukrainian government, helped distribute firefighting equipment to the war zone.

It follows from the above that organization and command in wartime must be flexible and unified. Rescue services should be integrated into the state's crisis management alongside the army, e.g., by involving firefighting commanders in civil defense staffs or, conversely, by assigning military liaison officers to rescue units in the field. This is the only way to ensure that the effectiveness of assistance is maximized and the risk of duplication or accidents is minimized [13]. Modern conflicts demonstrate the need for a "whole-of-society defense" approach, where professional and volunteer units, both civilian and military, work together to protect the population.

Table 1.

Tasks of fire protection units in armed conflict: objectives, activities, examples, and risks [own]

Area	Primary objective	Key activities (selection)	Coordination (main partners)	Practical examples	Main risks/limitations
Evacuation of residents	Safe transfer from endangered zones	Warning, assembly points, transport of vulnerable persons, securing centers	Police, emergency medical services, local government, army	Donetsk region – specialized evacuation teams; Israel – evacuation of northern communities 10/2023	Shelling during relocation, pressure on logistics, psychosocial support for evacuees
Extinguishing war fires	Protecting lives and critical infrastructure	Fire triage, firefighting under threat of repeated strikes, alternative water sources	Fire department / firefighters, army (reporting, protection), technical services	Irpın/Bucha – controlled intervention priorities; northern Israel 2024 - extensive vegetation fires	Double strikes, water/power outages, fuel shortages, ballistic protection for responders
Technical assistance and USAR	Rescue of buried victims, stabilization of the area	Search and rescue, disconnecting utilities, temporary securing of structures	Emergency medical services, technical services, engineers, volunteers	Dnipro 2023 - parallel USAR + firefighting + gas hazard	Secondary collapses, gas/electrical hazards, psychological stress on crews
Emergency water supply	Securing water for emergency services and civilians	Alternative pumping stations, shuttle transport, drinking water distribution points	Waterworks, local government, humanitarian organizations	Kachovka 2023 - water distribution; improvised sources in besieged cities	Contamination, safety of dispensing points, tank capacity limits
Explosive Ordnance Disposal (EOD) / Unexploded	Removal of unexploded ordnance	Survey, securing, pyrotechnic work, blasting	Army engineers, police	Thousands of pieces of UXO and cleared areas in Ukraine by 2022	High risk for pyrotechnicians, extent of contamination, long duration of operations

Ordnance (UXO)					
CBRN	Protection against chemical, biological, radiological, and nuclear threats	Detection, monitoring, decontamination, HDK stations, informing the public	Specialized CBRN teams, healthcare	Distribution of KI tablets; readiness in the vicinity of nuclear power plants	The need for cutting-edge equipment, tactical coordination, public communication
Psychosocial support and communication	Stabilizing victims and responders, combating misinformation	Crisis intervention, peer support, media/social media, instructions for the public	Psychological services, NGOs, media	Use of Telegram/SM for alerts; support programs for firefighters	PTSD risk, overload, need for continuous care and rotation
Coordination of Integrated Rescue System - Army	Uniform control and safe operation	Joint operations centers, sharing team/operation locations, SOPs	Fire and Rescue Service, Police, Emergency Medical Service, Army, EU/CTIF	EU Civil Protection Mechanism; joint teams (Home Front Command)	"Friendly fire," duplicity, information fog

3. Key challenges and risks for firefighting units in conflict situations

The deployment of firefighting units in armed conflict poses a number of challenges and risks that go beyond the scope of "normal" emergencies:

- Threat to the lives of responders: Firefighters and rescue workers often operate within range of enemy fire. Despite the protection afforded by the Geneva Conventions, they become targets of attacks, with the enemy sometimes deliberately targeting ongoing rescue operations. This results in the loss of lives among rescue workers and the destruction of equipment. In Ukraine, for example, more than 300 fire trucks and 123 fire stations had been destroyed or damaged by Russian attacks by April 2022, and at least 33 members of rescue units had been killed in the line of duty [3]. Every call to a "hot zone" thus poses an extreme risk to the responding personnel.
- Extreme physical and psychological stress: Long-term continuous deployment without the possibility of rest leads to exhaustion. Firefighters in Ukraine and Israel served continuously 24 hours a day for many weeks during the acute phases of the conflict [4]. Added to this is the psychological trauma of constant tragedy. Encountering large numbers of victims, including children, and the destruction of homes can cause post-traumatic stress in responders [10]. Firefighters' stories tell of tears in their eyes when looking at dead children or feelings of helplessness when rescuing people from the rubble, where it is impossible to help everyone [7]. Maintaining the morale and mental health of firefighters is therefore a huge challenge requiring professional care and rotation of forces.
- Material and technical problems: The intensity of the fighting can significantly deplete the resources of rescue services. In addition to the aforementioned losses of vehicles and stations, there is also the consumption of fuel, a shortage of fire extinguishers, spare parts, and protective equipment. In conditions of disrupted logistics, it is difficult to replenish these resources. In the first months of the Ukrainian conflict, units faced a shortage of fuel and protective equipment, which limited their ability to act [1,3]. In addition, the destroyed infrastructure complicates communication - power and internet outages make it difficult to transmit information and call in reinforcements.
- Coordination of many actors: The war environment involves a number of different actors in rescue and humanitarian operations, including professional rescue services, the army, local volunteers, foreign teams, and non-governmental organizations. Coordinating their activities so that they do not interfere with each other and complement each other is a major organizational task [13]. In Ukraine, during the first weeks of the war, over 10,000 new volunteers spontaneously signed up to help with rescue efforts. Integrating such a large number of people, providing them with training, and ensuring their safe involvement in operations was not easy. Similarly, international assistance (e.g., USAR teams from abroad) had to be coordinated so that it effectively supported local units and did not cause chaos in management.
- Unpredictability and scope of threats: Conflict situations can change rapidly, and responding units must be prepared to respond to unusual scenarios. From large wildfires caused by fighting, to industrial

accidents secondary to attacks, to the potential use of prohibited weapons of mass destruction, the spectrum of threats is broader than in peacetime. For example, the possibility of an accident at the Zaporizhzhya nuclear power plant due to fighting has forced rescue services to prepare for a possible evacuation and radiation monitoring on a massive scale, which is an unprecedented task in Europe in recent decades. This unpredictability requires a considerable degree of flexibility and improvisation from fire departments.

These challenges and risks show that the work of fire and rescue units in armed conflict is extremely demanding in all respects. Despite this, these units demonstrate a high degree of adaptability and determination, making them a key element of society's defense and resilience in the face of war.

4. Recommendations for increasing preparedness and resilience

Based on the findings, several recommendations can be formulated that could help improve the preparedness of firefighting units for action in armed conflict and increase their resilience:

- Improving communication and information exchange between agencies and the military: It is essential to establish effective channels for sharing up-to-date information on the situation on the battlefield, planned operations, and the location of rescue teams. Joint operations centers or interconnected communication networks will help prevent incidents where rescuers are unaware of military actions and vice versa. Clear procedures for civil-military cooperation should be established in peacetime.
- Equipping firefighters with protective equipment for combat conditions: Standard equipment must be supplemented with ballistic protection (helmets, bulletproof vests) and, if necessary, equipment for working under fire (e.g., armored fire trucks in the most dangerous zones). It is also advisable to equip units with advanced technologies – drones for safe reconnaissance, satellite navigation with maps of dangerous areas, modern CBRN detectors, etc.
- Regular training in simulated war scenarios: Firefighting units should undergo exercises that simulate situations typical of conflicts, such as mass fires after bombing, interventions with limited resources, coordination with the army, evacuation under threat of attack, etc. Such training will help identify weaknesses and automate procedures so that actual deployment runs as smoothly as possible.
- Strengthening capacities for pyrotechnic and chemical protection: Given the scale of the threats, it is advisable to increase the number of specialized teams focused on demining and decontamination, or to deepen cooperation with military specialists. Investing in technology (bomb disposal robots, mobile laboratories for chemical analysis) will increase the safety of interventions.
- Introducing mental health care into the standards of emergency response units: Every firefighting unit deployed for long periods of time under stress should have access to a psychologist or trained peer consultant. After stressful events, it is advisable to carry out crisis interventions and debriefings to reduce the risk of chronic post-traumatic stress. Care should also include the possibility of rotating personnel from frontline areas to the rear for temporary rest.
- Raising public awareness and resilience: Public education is also part of crisis preparedness. It is recommended to continue awareness campaigns that explain to citizens how to respond to various types of threats (e.g., where to take shelter during shelling, how to prepare an evacuation bag, how to filter water in an emergency, etc.). Informed and prepared citizens are less vulnerable and also place less strain on the rescue system in times of crisis.
- Ensuring a legislative and financial framework: The state should develop civil defense plans in peacetime that clearly define the role of fire and rescue services in the event of war and allocate sufficient resources for their equipment and training. Investing in "dual-use" equipment that can be used in both peacetime and wartime (e.g., heavy rescue equipment, field hospitals) pays off. Interdepartmental cooperation (interior, defense, health) should be part of national security planning [14].

The implementation of these measures would help firefighting units to fulfill their mission even more effectively, even in the most demanding conditions of armed conflict. This would strengthen the overall resilience of the state and its ability to protect the population from the consequences of war.

5. Conclusions

Experience from recent conflicts clearly shows that firefighting units are an irreplaceable component of national defense and resilience. Through their work on the "home front" saving lives, extinguishing fires, clearing debris, and maintaining public morale, they contribute significantly to society's ability to survive the devastating effects of war. Firefighters and rescue workers in armed conflict demonstrate courage and dedication on a daily basis as they perform tasks beyond their normal duties under constant threat.

In order for this role to continue to be successful, it is necessary to learn from these experiences. National defense planning must take into account not only the military, but also a robust civil protection system, the backbone of which is the fire and rescue services. Investments in their equipment, training, and staffing directly translate into the country's ability

to manage crisis situations. Similarly, international cooperation and the sharing of know-how, whether through conferences, joint exercises, or civil protection mechanisms, strengthen global preparedness to face new types of threats.

The specific tasks of firefighting units in armed conflict are not merely a theoretical category, but an everyday reality in places such as Ukraine and Israel. It is our duty to provide these "silent heroes" with all possible support and resources so that they can continue to save lives and property even in the most difficult conditions. In doing so, we also protect the values we hold dear as a society: humanity, solidarity, and the determination to defend the innocent in the face of destruction. I believe that the insights presented in this article will contribute to a better understanding of this issue and inspire further steps to improve the preparedness of our emergency services for the challenges of the current geopolitical situation.

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