



# KEEPING THE LIGHTS ON AND THE TAPS RUNNING

PROTECTING AND FACILITATING SAFER ACCESS FOR ESSENTIAL  
SERVICE PROVIDERS IN ARMED CONFLICT



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This report was inspired by the commitment of essential service providers who, in the most difficult of circumstances, continue to strive daily – and often for years – to keep water and power running for populations who, like them, are suffering the terrible consequences of armed conflict.

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**Cover photo:** Northern Gaza. Repair work on an underground water pipe damaged by shelling. Photo credit: ICRC/ Yusef Al-Mush'harawi/ 2021

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Syria, Daraa al-Balad. Staff and volunteers of the Syrian Arab Red Crescent collaborate with essential service providers to install









# INTRODUCTION

## Background: The effects of armed conflict on the provision of essential services to urban populations

Civilians in urban centres rely on a complex network of systems and infrastructure for their essential needs, such as water, electricity and sanitation. Other critical services such as health care, food production and distribution, education, heating, communications and forensic facilities also rely on those systems.

Armed conflict can damage or disrupt the interdependent systems providing these essential services directly, indirectly or through its cumulative effects. Such disruptions can deprive civilians of their basic needs, with devastating knock-on effects. They can cause public health problems such as the spread of illnesses and ultimately lead to deaths among civilians,<sup>1</sup> with children at particular risk.<sup>2</sup> Long term disruption to services – which is exacerbated in protracted armed conflicts – can destroy livelihoods, make cities unliveable and trigger displacement, with an immense cost for hundreds of thousands of inhabitants – sometimes for millions.<sup>3</sup>

The International Red Cross and Red Crescent Movement (the Movement) has witnessed first-hand the immense and unacceptable humanitarian consequences of war on cities and their populations.

## The vital role of essential service providers

All urban services require three critical and interdependent elements in order to function:<sup>4</sup>

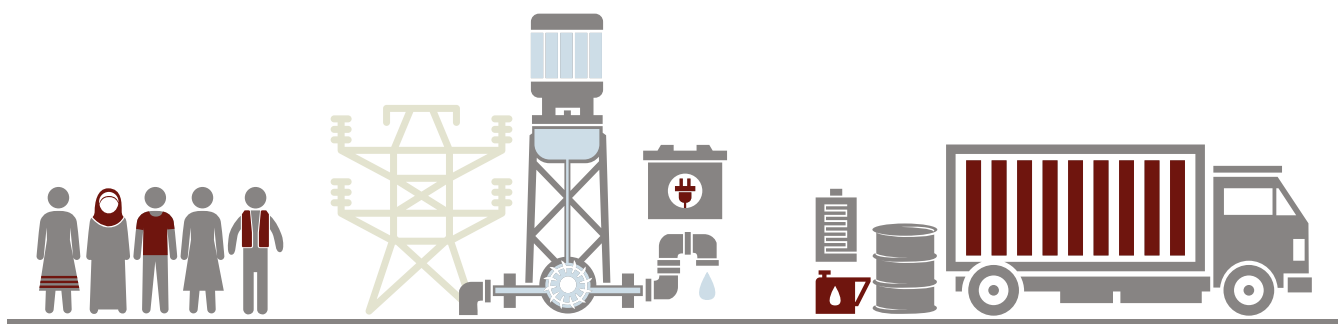
- **People** – especially operations and maintenance staff, plus private-sector contractors to carry out repairs
- **Hardware** – e.g. infrastructure, equipment and heavy machinery
- **Consumables** – e.g. fuel and disinfectants

## All essential services depend on ...

... people

...hardware

... consumables



Source: ICRC, ICRC Expert Meeting: Preventing and Mitigating the Indirect Effects on Essential Services from the Use of Explosive Weapons in Populated Areas, Geneva, April 2024

Disruption occurs when the functioning of any one of the critical elements is compromised, e.g. when infrastructure is damaged or when hostilities harm the personnel needed to keep a service in operation, or otherwise prevent them from doing their jobs. All three components are interrelated. For example, ensuring that a water treatment plant is not affected by military operations also protects the staff working inside the plant.

Furthermore, critical infrastructure will only benefit civilians if essential services personnel can safely access their places of work to ensure the systems' safe and continuous functioning, operating and maintaining the services and repairing infrastructure as necessary. The complexity of large urban systems and their reliance on qualified staff to ensure service delivery mean that no other actor can ensure the functioning of power and water/sanitation systems. If normal services fail, civilians will have to resort to other sources, which may be less safe. If no alternative sources are available, people will be forced to displace.

In many cases, however, personnel in the electricity, water and sanitation sectors have only been able to “keep the lights and heating on and the taps running” at great cost to themselves, including injury and death. This adds to the already intense pressures on infrastructure and governance systems during prolonged crises, such as ensuring parts and consumables are readily available to ensure the continuity of service delivery. The dedication of essential services personnel in the riskiest of places – war zones – remains largely unrecognized; their contribution often goes unnoticed by the public, and more importantly, may be overlooked by parties to armed conflict and even by humanitarian agencies.

Ensuring better respect and protection for essential service providers, so they can continue their work during conflict, is vital not only for the safety of personnel but also to ensure that the quality and quantity of power and water continue to attain at least minimum levels during crisis

situations, as these services are central to the protection and livelihoods of all civilians.

## Some definitions

### **Essential urban services**

In its 2015 report on urban services during protracted armed conflict, the ICRC described essential urban services as those services that are vital to ensure the subsistence of the civilian population, typically including electricity, health, water, wastewater treatment, solid waste disposal, food production and food distribution.<sup>5</sup>

Essential services also include market systems that provide essential items, communications, medical infrastructure, financial systems and transportation for people and goods. In short, all the interrelated systems on which people depend to meet their needs and live safely in urban environments.

### **Essential services personnel**

Essential services personnel are the employees of public, private or public-private statutory entities in the electricity, health, water, wastewater treatment and solid waste disposal, food production and distribution, communications, financial, transportation or related sectors. Their tasks include operation, maintenance, repair and assessment.

### **Essential service provider**

The term essential service provider refers to both essential services personnel and the public, private or public-private statutory entities that employ them.

## Scope

The scope of the present study is more limited than that of the above definitions and it does not cover all essential services.

- The study does not cover health services, as they benefit from special protective rules under international humanitarian law (IHL), e.g. as regards use of the distinctive emblems. See also [International legal and statutory frameworks](#). In this report, therefore, the term “essential services personnel” refers to the personnel of non-medical essential service providers.<sup>6</sup>
- It limits its scope almost exclusively to electricity, water and wastewater services. These are services with which the ICRC and other components of the Movement have vast experience, particularly through their water and habitat specialists.

As a result, the study does not address safer access for other sectors, such as the food, agriculture, forensic, demining and telecoms sectors, despite their importance. While telecommunications are important for civilians, differences between telecoms on the one hand and power and water services on the other mean that the companies and authorities responsible for telecommunications repairs often operate without the need for external support.

For the purposes of this report, “essential services personnel” therefore include technicians, operators, engineers, managers, administrators and lab technicians working in the electricity (sometimes referred to in this report as power), water and wastewater sectors.

However, some or all of the findings and recommendations may be relevant to other essential services personnel.

## Purpose and objectives of this study: greater protection and support for essential service providers

The key objectives of the study are as follows:

- **Focus on essential service providers:** Build on previous Movement action to protect essential urban infrastructure and ensure the supply of critical consumables, by enhancing understanding and awareness of the challenges and safety needs of the entities and people crucial to operating and maintaining water, wastewater and electricity services.
- **Take stock of experience:** Gather and analyse the experience of the ICRC, National Societies and other humanitarian actors of facilitating the protection of and safer access for providers of essential services during armed conflict. The study examines a variety of actions in a number of contexts, focusing on Ethiopia, Gaza,<sup>7</sup> Iraq, Sudan, Syria, Ukraine and Yemen between 2014 and 2023.
- **Provide “food for thought”:** Describe action taken in the past to ensure safer access for essential service providers and identify action that Movement components and others could take in the future.
- **Encourage action:** Formulate actionable recommendations for consideration by all Movement components – and others – aimed at enhancing their expertise and the action they take to support essential service providers, as an essential part of their efforts to protect civilians in war and respond to humanitarian needs.





Aden governorate, Mansoura district.  
Damage on sewerage system.

Photo credit: ICRC/ Bertrand Lamon/ 2015

## Methodology

This study and its findings are based on:

- a detailed review of literature, including internal documentation of the ICRC and National Societies<sup>8</sup>
- key informant interviews with 44 staff of the ICRC, National Red Cross and Red Crescent Societies, water service providers in Gaza, Syria and Ukraine, and United Nations water, sanitation and habitat specialists, conducted online by the Norwegian Red Cross consultant between July and October 2023<sup>9</sup>
- email communications with other people such as researchers and humanitarian workers.

The study recognizes that action to protect essential services takes place within a variety of international legal and statutory frameworks, which it briefly reviews (see [Chapter 1](#)). These include:

- international humanitarian law
- Movement Statutes
- other Movement instruments and guidance, such as the rules relating to the use of the red cross and red crescent emblems (the emblems), the Movement's Fundamental Principles, and the humanitarian principles to which many other humanitarian actors adhere.

# EXECUTIVE SUMMARY

## Key findings

### 1. Protecting and supporting essential service providers is an essential element of humanitarian action.

This study confirms the critical and irreplaceable role of essential services personnel in maintaining vital electricity, water and sanitation services for the civilian population. It also highlights the complexities of the urban systems with which they work, and the significant challenges they face in carrying out their functions during armed conflict, particularly when hostilities are taking place in a large urban context.

It underscores the crucial importance of the Movement – and other humanitarian agencies – continuing to develop effective and robust partnerships with essential service providers. This entails listening attentively to their needs, understanding their structures, capabilities and challenges, and providing steadfast support.

The Movement and other humanitarian actors must see helping to ensure the continuous functioning of essential services during armed conflict as a key component of humanitarian action to protect civilians in war and respond to humanitarian needs.

### 2. A range of multidisciplinary interventions are available and necessary to increase protection of and support to essential service providers.

The study shows that a range of steps have been taken in conflict situations to facilitate safer access for essential service providers. These measures have often reduced the risks to personnel and hence the suffering of populations who would otherwise be deprived of such services.

Action undertaken by the ICRC and National Societies to facilitate safer access for water, sanitation and power providers includes:

- liaising with parties to conflicts as a neutral intermediary, to notify, negotiate and coordinate the safe movement of service providers
- where necessary and feasible, escorting essential service providers and remaining in proximity during their work. This usually involves the ICRC or National Society displaying its logo for enhanced visibility while accompanying the essential service provider
- helping essential service providers carry out risk assessments and enhance their emergency preparedness, by such actions as providing first-aid training, pre-positioning emergency stocks, improving passive security and establishing coordination mechanisms
- providing material support that contributes to safer access, by:
  - increasing the visibility of essential services personnel, e.g. by enabling essential service providers to make their vehicles clearly identifiable or by issuing safety clothing
  - reducing the need for movement and hence reducing exposure, e.g. by installing control systems that allow for remote operation of critical infrastructure
- building environments conducive to IHL compliance through prevention, protection and humanitarian diplomacy, to raise awareness of the risks and challenges that essential services



Rif Dimashq Governorate, Harasta. ICRC and Syrian Arab Red Crescent staff members work on a project aimed at improving access to electricity for residents.

Photo credit: ICRC/ Afaf Mirzo/ 2021





personnel face and of their need for respect and protection

- acting as a neutral intermediary to support negotiations between parties to establish protected zones around critical infrastructure.
3. The Movement, and a range of other actors, can make a difference and should invest more in (a) understanding the challenges of essential service providers and (b) developing their capacity to support their work, both before and during armed conflicts.

The actions reviewed in this study indicate that there is much more that can and should be done to support essential service providers and enable them to carry out their vital work. The action already taken should provide food for thought as to how Movement components and others can provide such support and should stimulate thinking about how they could take similar measures elsewhere.

While the Movement already has valuable experience in this field, it can continue to strengthen its expertise and enhance its action, so as to better protect civilians in war. This would entail a conscious effort to:

- prioritize resources
- increase the synergies between legal, protection and assistance efforts
- increase support for National Societies in situations of tension or conflict that are able to assume a role in this field.

Because the personnel of water, sanitation and electricity providers do not benefit from special (enhanced) protection under international humanitarian law, or from a universally-agreed distinctive sign, further legal, policy and diplomacy work is needed to increase understanding of the humanitarian nature of



their work and to explore ways of enhancing their protection. This could include considering the feasibility and possible protective impact of one or more new, nationally or internationally-agreed distinctive signs.

All actors – especially parties to armed conflict – must devote greater attention to the role of essential service providers and the importance of their being able to carry out their functions safely. This study contains recommendations to support, expand and improve action in this field. Those recommendations are addressed to components of the Movement, other humanitarian actors, political authorities, humanitarian and development funders and essential service providers themselves.





## Recommendations

### To the International Red Cross and Red Crescent Movement (and other humanitarian actors)

1. Recognize the importance of essential service providers as a means of understanding the operational environment.

Possible measures to achieve this include the following:

- Develop effective relationships with essential service providers in situations of tension, to understand their needs and capacities, and their systems for resilience and for the protection of their personnel.
- Monitor and assess the effects of the conflict on essential services and personnel. This would include assessing respect for IHL.

2. Work with essential service providers to draw up operational plans for ensuring safe access for essential services personnel.

The drafting of such plans should:

- be inspired by the actions reviewed in this study
- take place before the onset of hostilities, or as soon as possible after fighting breaks out
- be multidisciplinary (i.e. involving multiple specialist departments, such as water and sanitation, protection, legal, etc.)
- include all relevant actors (Movement components, United Nations, essential service providers, authorities, etc.).

Planning might include the following:

- Building environments conducive to IHL compliance through prevention, protection and humanitarian diplomacy. Measures to achieve this include highlighting both the need to accord essential services personnel the protection to which they are entitled as civilians and their critical role in supporting dignified human life and ensuring public health. That aim can be achieved through both public statements and confidential discussion and interventions.
- Acting as a neutral intermediary to identify and propose measures to support safer access for essential service providers, such as:
  - notifying, negotiating and coordinating with parties to the conflict to ensure safe passage for essential movements of service providers
  - where necessary and feasible, accompanying essential service providers during their movements and work.
- Supporting essential service providers' emergency preparedness and crisis response. This may include:
  - conducting first-aid training
  - enhancing physical protection
  - developing visibility plans and coordination mechanisms
  - examining how a provider's emergency preparedness and response fit into the local, regional and national emergency response plans of governing bodies.
- In appropriate contexts, supporting as a neutral intermediary the implementation of negotiated agreements between the parties concerned for protected zones around critical infrastructure. The ICRC can also provide technical and legal advice on protected zones and their implementation.

- Engaging dedicated staff and assigning focal points in situations of conflict who will be responsible for:
  - monitoring the impact of the conflict on essential services
  - proposing practical measures (inter alia based on those described above)
  - supporting the coordination of measures with Movement components, humanitarian actors and essential service providers.
- 3. Participate in Movement efforts to raise awareness, strengthen Movement coordination and response mechanisms and continue research on safer access for essential services personnel.

Measures to achieve this could include the following:

- Documenting and sharing experience of action taken in support of essential service providers and lessons learned, to strengthen learning and development.
- Engaging with efforts pursuant to various Movement resolutions related to urban warfare.<sup>10</sup> These include the Movement's Action Plan 2022–2027 on War in Cities, and "war in cities" components of the 2024 International Conference of the Red Cross Red Crescent Movement and future international forums. Engagement may include making and promoting pledges related to respect for and protection of essential service providers, including joint pledges with national authorities.
- Supporting essential service providers' efforts during crises through complementary public health campaigns regarding the vital work of essential service providers and regarding water safety should the normal water supply be disrupted.



Deir ez-Zour, Syria. A SARC team facilitates the safe access of essential service providers to maintain the city's main water line in an area separating two conflicting parties after a temporary ceasefire was announced.

Photo credit: SARC/ 2014



4. Undertake and/or support additional research on measures to strengthen support for and protection of essential service providers.

This might include the following:

- Conducting further study on the current practices of essential service providers as regards visibility and identification, including use of the civil defence sign.
- Holding international or national meetings at which representatives of essential service providers discuss safer access for personnel and share best practices regarding emergency preparedness and response during armed conflict.
- Producing a compilation of emergency preparedness plans that could serve as models.
- Exploring ways of enhancing the protection of essential service infrastructure and of personnel providing specific essential services such as water. This should include considering the feasibility and possible protective impact of one or more new, nationally or internationally-agreed distinctive signs.

## To political authorities and humanitarian and development funders

1. Promote respect for and implementation of UN Security Council Resolution 2573.

This resolution calls for efforts to protect “objects indispensable to the survival of the civilian population and civilian infrastructure that is critical to enable delivery of essential services”, including (a) “protection of civilians operating, maintaining or repairing these objects, as well as their movement for the purpose of maintaining, repairing or operating such objects”

and (b) “allowing and facilitating safe passage of equipment, transport and supplies necessary for the reparation, maintenance or operation of such objects”.

2. Ensure that ministries and public entities develop plans to ensure that they respect and protect essential services personnel and reduce the risks to their safety in the event of hostilities.

These plans should ensure that essential service providers are included in emergency management response planning and exercises.

3. Set up robust domestic legal and policy frameworks to ensure continued operation of essential services and to protect essential services personnel during armed conflict.

As part of such efforts, consider the feasibility and possible protective impact of one or more additional nationally or internationally-agreed distinctive signs.

4. Endorse and implement the Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the use of Explosive Weapons in Populated Areas.<sup>11</sup>
5. Ensure that resources to strengthen the resilience of essential services and to protect essential services personnel – especially in urban warfare – are made an integral part of humanitarian and development funding.

## To essential service providers

1. Where it is safe and appropriate to do so, make information on the location of critical infrastructure and the networks on which services depend publicly available.



2. Establish or strengthen channels of communication with civilian and military authorities such as the ministries of water resources and defence, before and during hostilities, to facilitate the protection of infrastructure and staff during hostilities.
3. In situations of tension or potential hostilities, identify measures that can be taken to provide physical protection to facilities and personnel, and make known needs for material, communications or other support for such measures.
4. Explore ways of enhancing the protection of essential service infrastructure and of personnel providing specific essential services such as water and sanitation. This should include considering the feasibility and possible protective impact of one or more new, nationally or internationally-agreed distinctive signs.
5. In case of hostilities, provide to the extent possible, updated information to authorities, armed forces, humanitarian actors and civilians on the status of critical infrastructure, material needs and requirements for protection of personnel.
6. Establish – in advance of hostilities where possible – channels of communication with trusted humanitarian actors able to communicate with parties to the conflict, with the aim of facilitating the operation, maintenance, supply and protection of infrastructure and personnel.
7. Where necessary and feasible, develop plans and protocols to enable the escorting of essential services vehicles and personnel by trusted impartial humanitarian organizations through areas of potential hostilities or across front lines.

8. Share experiences and lessons learned in protecting facilities or personnel with other service providers nationally and internationally, and with humanitarian actors working in this field.

Parties to armed conflict have legal obligations regarding the protection of essential services and staff, as detailed in the next section. For specific recommendations to weapon bearers on the measures they should take to protect civilians against the disruption of essential services, please see in particular the ICRC recommendations on preventing and mitigating the indirect effects on essential services from the use of explosive weapons in populated areas.<sup>12</sup>









Gaza, Al-Shaaf neighborhood. At sundown, residents light a fire in the ruins.

ICRC/ Wassim Nassar/ 2014



# 1. International legal and statutory frameworks

## Protection of essential services under IHL

Protecting essential services and their personnel requires that parties to conflict respect IHL. A previous ICRC report<sup>13</sup> sets out relevant IHL rules in detail, and the list below is merely a summary of the key points.

The rules of IHL and other bodies of law most relevant to the protection of essential services providing electricity, water and wastewater treatment include:

- rules on the conduct of hostilities, including the principles and rules on distinction, proportionality and precautions in attack, and special protections for certain kinds of objects
- the responsibility of parties to conflict to ensure adequate supplies of food and water to the civilian population
- rules on access for humanitarian relief, which are designed to ensure that people affected by armed conflict are not deprived of supplies essential to their survival or made to starve.

Under IHL, each of the three components of any essential civilian service (people, hardware and consumables) is in principle covered by the general protection afforded to civilians and civilian objects and benefits from a presumption of civilian status. The fundamental IHL principles governing the conduct of hostilities – distinction, proportionality and precaution – therefore apply.<sup>14</sup>

Essential services infrastructure in urban areas is particularly vulnerable to damage from

hostilities even if it is not intentionally targeted. IHL limits the amount of incidental harm to civilians and damage to civilian objects that is legally acceptable in the course of an attack on a lawful target. Foreseeable incidental harm to civilians must not be disproportionate compared to the anticipated military advantage.<sup>15</sup> Parties are also required to take all feasible precautions to avoid – or at least minimize – the impact of military operations on the civilian population. In assessing the expected incidental civilian harm when applying the rules of proportionality and precautions in attack, both the direct and indirect (or reverberating) effects must be taken into account, insofar as they are reasonably foreseeable in the circumstances.<sup>16</sup>

The use of explosive weapons in urban warfare is one of the main causes of harm to civilians in today's armed conflicts. The ICRC has called for states and all parties to armed conflict to avoid the use of explosive weapons with a wide impact area in populated areas, owing to the significant likelihood of indiscriminate effects.<sup>17</sup>

Duties to take all feasible precautions to protect the civilian population and civilian objects apply not only to attacking forces but also to defenders. Such precautions might include not locating fighters or other military objectives in the vicinity of water infrastructure (e.g. not allowing combatants to shelter within it), marking such infrastructure or establishing protected zones around it with the agreement of all parties.<sup>18</sup> See [Calling for protected zones for critical infrastructure \(Ukraine, 2017\)](#).

Certain persons and objects benefit from special (heightened) protection under IHL. These include medical personnel and objects, humanitarian infrastructure and personnel, installations containing dangerous forces such as dams, dykes



**Rescuers of the Lebanese Red Cross navigate through rubble left by the 2006 conflict between Lebanon and Israel.**

Photo credit: Lebanese Red Cross/ 2006



and nuclear power stations, and the natural environment.<sup>19</sup> Starvation of civilians as a method of warfare is prohibited, and this prohibition applies to water as well as food.<sup>20</sup> As a corollary to that prohibition, it is specifically prohibited to attack, destroy, remove or otherwise render useless objects indispensable to the survival of the civilian population.<sup>21</sup> The list of “objects indispensable to the survival of the population” in the treaty provisions is not exhaustive, but it explicitly includes foodstuffs, crops, drinking water installations and drinking water supplies. Such protection also extends to items of energy infrastructure critical to the effective operation of other indispensable objects.<sup>22</sup> Even if such an object is used in direct support of military action, no actions against it are allowed that may be expected to leave the civilian population with

such inadequate food or water as to cause its starvation or force its movement.<sup>23</sup>

When the needs of the population would not otherwise be met, the parties to the conflict must allow and facilitate rapid and unimpeded passage of humanitarian relief for civilians in need, which is impartial in character and conducted without any adverse distinction, subject to their right of control. Humanitarian personnel – which includes the personnel of Movement components – must be respected and protected.<sup>24</sup>

International human rights law continues to apply during armed conflict and is also relevant, as it confers the right to an adequate standard of living, to the highest attainable standard of physical and mental health and to life itself.<sup>25</sup>

Taken together, these provisions protect:

- access to sufficient, safe, acceptable, physically accessible and affordable health services, food and water
- access to adequate and safe sanitation that is conducive to survival and subsistence
- public health and the environment.<sup>26</sup>

## **Non-medical essential services personnel are currently protected only by the general protection afforded to civilians**

Essential services personnel are protected by the fundamental rules of IHL, like any other member of the civilian population. Civilian personnel operating, monitoring, maintaining, assessing, repairing or renovating water or power systems must be respected and protected. They must not be attacked.<sup>27</sup>

Apart from the components of the Movement, only the armed forces' medical services and authorized civilian medical services ("medical mission") are entitled to use the protective emblem of the red cross or red crescent to facilitate identification of medical personnel, transports and facilities during armed conflict.<sup>28</sup> The legal framework governing use of the distinctive emblems under the Geneva Conventions is complemented by the Movement's internal "Regulations on the Use of the Emblem of the Red Cross or the Red Crescent by National Societies"<sup>29</sup> and by other internal doctrine.

IHL also protects civil defence personnel and facilities. Such personnel are entitled to protection while carrying out civil defence tasks and IHL provides for a distinctive sign to identify them (an equilateral blue triangle on an orange background).<sup>30</sup> Civil defence tasks can include the emergency repair of indispensable public utilities and the preservation of objects essential for survival.<sup>31</sup> However, in the contexts examined

for this study, civil defence organizations did not provide or maintain water or electricity services.

Unlike the medical mission, civil defence and humanitarian relief personnel, essential services personnel providing water and electricity do not currently enjoy any special or heightened protection. This contrasts with the fact that the medical mission itself and other services and civilians in general all depend upon essential services such as water, electricity and sanitation, particularly in towns and cities.

## **UN Security Council Resolution 2573 (2021)**

UN Security Council Resolution 2573 is an important recent development, calling for efforts to protect "objects indispensable to the survival of the civilian population and civilian infrastructure that is critical to enable the delivery of essential services". Importantly, it explicitly mentions:<sup>32</sup>

- A "protection of civilians operating, maintaining or repairing these objects, as well as their movement for the purpose of maintaining, repairing or operating such objects"**
- B "allowing and facilitating safe passage of equipment, transport and supplies necessary for the reparation, maintenance or operation of such objects".**

The inclusion of these operative paragraphs referring explicitly to people and consumables/equipment, while not amending existing IHL, represents a significant step forward, which it is hoped will gain further traction.<sup>33</sup>



Anbar Province, Heet. The ICRC, in cooperation with Anbar water directorate, rehabilitated the water treatment plant that serves Heet and surrounding villages.

Photo credit: ICRC/ Hussein Amal/ 2018



## 2. Key challenges affecting essential service providers' access and safety

This chapter sets out the typical characteristics of essential service provision in the water/sanitation and electricity sectors and explains how these characteristics and other aspects of armed conflict expose essential services personnel to particular risk. It also identifies additional challenges they may face that are specific to their work during armed conflict.

### The strengths and resilience of essential service providers

The personnel of electricity and water/sanitation service providers are civilians, operating within the civilian environment and sharing the risks and hardships faced by the rest of the civilian population during armed conflict. As always in armed conflict, local communities are first responders and first agents of their own protection. Despite the technical and security complexity of maintaining services as usual during conflict, essential service providers often stay and work, managing to restore and maintain at least a minimum quantity and quality of water and power for the population. In doing so, operators deploy adaptation and coping mechanisms, demonstrating operational and personal resilience.<sup>34</sup>

There is much thinking on technical aspects but the social aspects are also important. Because engineers are used to working with the technical matters, they have the social aspects inside them but they just don't see it. They need to admire what they're doing. It's not just fixing things. They have an attachment to this

*place, a capacity to problem-solve, a self-organization. They should be proud of themselves. They are not "just engineers". They are heroes – the heroes who saved the city.*

Former ICRC water and habitat specialist, July 2023

Essential services personnel may be accustomed to undertaking their technical work across political and conflict lines. In many contexts, they arrange their own access in all but the most contested areas. Indeed, they may have better access than the ICRC or the National Society.

Many essential services personnel are very experienced at making do owing to a history of sanctions (such as staff who have been working in Iraq since the 1990s). Junior staff learn from more senior staff.

There may already be close working relationships between the water and power providers. In contexts such as Syria, Ukraine and Yemen, armed conflict divided former essential service colleagues across front lines and/or into new or parallel entities as control of territory changed. Although this complicated things, it did not generally prevent continued communication and collaboration, at least at a technical level. This was crucial, as water systems crossed such lines. In Ukraine, however, such collaboration became more difficult following escalation of the conflict in 2022.

### Characteristics of essential services provision that contribute to risks

While essential service providers are experienced professionals and can often manage many things



themselves, armed conflict brings challenges related to the nature of their work. The Movement and other humanitarian actors should therefore support them, in particular by seeking to facilitate safer access for them.

The operation and routine maintenance of critical water and electricity services requires the movement of materials and both the movement and the regular presence of very large teams of personnel – sometimes tens of thousands of people. The work does not just consist of emergency repairs; certain facilities require a continuous staff presence.

Some critical components of essential services (e.g. power stations, supply routes and water/wastewater treatment plants) are often located outside the city limits. Unless workers are housed near the facility, they will need to commute for their shifts, and they will in any case need to move around to undertake repairs – despite the fighting.

The nature of large power and water networks as vast, interconnected systems spanning the urban and peri-urban space means that certain elements of the infrastructure are spread across exposed areas and that pipelines and power lines will almost inevitably cross the front lines between the warring parties. Facilities may be located near water sources or rivers that become de facto front lines between parties. This means that facilities may fall under the control of different armed actors, requiring service providers to negotiate safe access (often with multiple parties), pass through checkpoints or security screening and deal with additional administrative procedures, for movement between locations and the transportation of spare parts and consumables.<sup>35</sup> They may have to repeat these negotiations as front lines and control by parties shift. Repeated damage to infrastructure during crisis situations, which almost by definition occurs most often at front lines, can therefore place immense pressure on essential service providers.

Some services require materials that are dangerous in themselves. One example is chlorine

gas. While it was used as a weapon during World War I, its value as a water disinfectant means that many countries continue to rely heavily on it. Risks to essential services personnel and nearby civilians related to the transport and storage of chlorine gas increase during hostilities.

Finally, the use of certain machinery for digging, or replacement pipes and other equipment, might be misinterpreted from a distance as hostile activity or military assets, especially when work is being carried out in remote areas.

## **Specific risks for essential service providers during armed conflict**

**The characteristics of essential service provision in combination with an armed conflict expose essential services personnel to specific risks.**

Some of these risks seriously affect service provision but are not intentionally directed against personnel or their work. Examples include the presence of explosive remnants of war on roads leading to a power station. However, action is also sometimes taken with the intention of preventing access to or repair of infrastructure, such as deliberately placing improvised explosive devices around or inside a water station.

**Direct harm from attacks and crossfire:** Critical infrastructure for water, sanitation and power systems is regularly targeted deliberately, or otherwise affected by airstrikes, indirect fire and other fighting, especially when explosive weapons with wide area effects are used.

In many conflicts, workers have become casualties of direct attacks and crossfire when working at plants or repairing infrastructure in remote areas, or have faced risks when attempting to cross front lines or work in areas in proximity to hostilities. This has led to death and injury, and damage to vehicles, equipment and other property. For example, the Coastal Municipalities Water Utility (CMWU) in Gaza reported losing ten of its staff during hostilities in 2014. The Ukrainian water service provider, Voda

Donbassa (Donbas Water), reported having 11 workers killed and 26 wounded during their work since 2014 (as of October 2023).

■ *Because you had a lot of infrastructure on the contact line, notably some water treatment plants, many times shelling was flying above the plant or landing inside the premises of the plant. That was very difficult for the staff.*

ICRC water and habitat advisor, August 2023

Fighting and weapon contamination may make it difficult for workers to commute to their place of work or to carry out routine operations, maintenance and repairs. Once they do reach a facility, they may become trapped there for days.

■ *“Did it happen sometimes that operators were stuck in the plants because fighting erupted around them?”*  
*“Yes, yes, yes, yes. I’d like to say yes for ten minutes!”*

Interview with a former engineer of the Damascus Water Supply & Sewerage Authority (DAWSSA), August 2023

Not all plants have passive security such as perimeter walls or bunkers. In several contexts, workers felt exposed to risks from crossfire or snipers and were reluctant to attend certain stations. This was especially the case when multiple airstrikes had previously hit a particular facility. Technical workers might be hesitant to return to the site, even to assess damage, owing to fear of further strikes. An ICRC delegate recounted how a water worker in Lebanon had to take shelter in a manhole underground at the water facility when shooting erupted. Similarly, having experienced such incidents, workers might only feel safe enough to travel to certain locations with escorts (see [Escorting and presence](#) in Chapter 3).

**Presence of weapon bearers in facilities:** The locations or characteristics of infrastructure facilities may make them attractive to the warring parties, either because they are in a militarily advantageous location, such as on a high point (e.g. in the case of a treatment plant or central reservoir), or because they provide convenient shelter for troops and their equipment. Such use can render infrastructure vulnerable to damage from attacks, increase the risk of incidental harm to staff or render premises off-limits because they are occupied by military personnel.

**Mines and explosive remnants of war:** Whether on the road to a person’s place of work, around a pipeline needing repairs or at the infrastructure itself (e.g. if a party leaves unexploded munitions behind when fleeing an area), mines and explosive remnants of war have been a key risk inhibiting workers in contexts including Iraq, Syria, Ukraine and Yemen. Parties have often left facilities booby-trapped after using them.

■ *The huge problem was whenever you needed to access the pipes for repair, first you had to call on the demining authorities. I remember visiting some places where we were told, okay, you walk on this track and you don’t step aside, not a metre aside, you walk really on this track. It’s scary – when you visit once, you’re very careful. But when it’s your daily working environment, you can imagine for the staff.*

ICRC water and habitat advisor, August 2023

The presence of mines and explosive remnants of war means that even once a front line shifts, access to repair a previously inaccessible pipeline could still take years because of weapon contamination. Some areas are simply inaccessible for repair purposes until clearance has been carried out.



There was a certain pipeline leaking water across the border for years, but it was in the middle of a minefield, so unless the mines were cleared, we were just never going to get to it. And it's going to be a massive problem, all the minefields along the border areas, and all the cluster munitions.

ICRC water and habitat coordinator, September 2023

**Restrictions on movement:** The multiple armed groups operating in some areas, and the checkpoints of different parties, can place personnel at risk of harassment, arrest or detention.

As municipal employees, essential services personnel may be perceived by opposition groups as part of the government. Or workers who stay in a city after it falls into the hands of an armed opposition group might be perceived as supporters of that group.

After the conflict, the water staff faced problems of being suspected as connected to Islamic State. Many lost jobs or were demoted owing to these political issues. Some personnel left in 2015 precisely so that they could not be accused of collaboration with Islamic State. So they lost everything.

Former ICRC water and habitat specialist, July 2023

Over the last ten years (to 2024), warring parties have besieged or encircled urban areas to isolate and contain the enemy. Defending a city can also lead to siege-like restrictions. The restrictions of a siege seriously inhibit the movement of essential service providers and of the consumables, parts and equipment they need for their systems. In some contexts, sieges have continued for years.

The problem is, you don't know with whom you're speaking inside the besieged area. There's a lot of groups, and they're sometimes fighting among themselves. When we entered that area, we had more than five different groups working individually. This was very complicated.

Former DAWSSA engineer, August 2023

In some cases, parties have cited security-related reasons for not wishing to grant the service provider access to carry out repairs. In other instances, parties may deliberately cut off power or water to exert pressure on the enemy and/or the civilian population. Interviewees gave many examples of parties using water and power as part of their warfighting – making service provision a political issue rather than a technical one, and leading to a lack of access for essential services personnel.

## Additional challenges for essential service provision during armed conflict

### Impact of conflict on revenues and resources:

Many essential service providers rely on customer payments for part or most of their revenue. Protracted conflict means higher expenditure and less revenue. More repairs are required, there are more losses through water leaks or power cuts owing to damage, less water or power is sold as people leave dangerous areas, industry closes down, or access restrictions or disruptions to banking services make customer billing more difficult. This can translate into difficulties paying staff and very limited cashflow for the consumables needed for water treatment or repairs to pipes and pumps. Urban water providers use large quantities of electricity for pumping water and sometimes have trouble paying for this, as occurred in eastern Ukraine.

Al-Hasakah Governorate, Qamishli. Together with the Syrian Arab





**Red Crescent and the public establishment for transporting and distribution of electricity, ICRC staff are carrying out maintenance work at a power station that supplies water pumping stations, health establishments and shops.**

Photo credit: ICRC/ Diman Ameen/ 2024





COMITE INTERNATIONAL  
GENEVE

الجمعية الدولية للصليب الأحمر  
International Red Cross and Red Crescent



**Personnel problems:** For financial and conflict-related reasons, service providers often face huge challenges in retaining skilled staff with knowledge and experience of local/national systems, and in recruiting and training new staff.

The conflict may kill and injure personnel, force them to flee to safer areas or prompt them to emigrate. More experienced staff retire over time, taking with them decades of knowledge. Recruitment and retention may be poor because of the dangerous work and low pay (especially during the periods of inflation common during armed conflict). In Syria and elsewhere, it was hard for service providers to attract and retain younger staff, and some workers resigned in favour of higher-paying work. Some workers stopped receiving salaries because of severe reductions in cash flow or customer payments, or because financial systems were no longer operating. Foreign nationals working in such services often leave the country when war breaks out.

Service providers can also be affected by slowed or completely stalled capacity-building and professional development programmes. This can affect the transmission of knowledge from senior to junior colleagues and the provision of technical training to staff. Such training is essential if a provider is to introduce new technology, which will often be more energy efficient and resilient.

Finally, the service provider's workforce may be drained by conscription or mobilization, creating gaps if there is no system of exemptions that would allow essential services personnel to remain in their functions.

**Access to equipment, consumables, services and information:** The destruction of service provider facilities in the fighting – especially offices – can result in significant losses of information such as plans, blueprints, manuals, archives and other documents.

**Most of the countries and authorities we work with still rely heavily on paper archives. I recall when the building of the Ministry of Water Resources in Damascus found itself on one of the front lines and had to suddenly be evacuated. The emergency evacuation and the damage to the building from the fighting led to incalculable losses of documentation that had to be left behind.**

ICRC water and habitat advisor, September 2023

Looting also leads to the loss of equipment and consumables, resulting in increased workloads for essential service providers and, in serious cases, to the collapse of services.

Sanctions, embargoes and other restrictions on trade, importation and delivery of goods into a country or across a front line may mean that consumables, spare parts or other equipment are no longer easily available. In contexts with such restrictions, many items used by water and power utilities are considered “dual use”, and require additional administration for authorizations. Items like chlorine gas for water disinfection, the gas masks required to protect personnel from it, demining equipment and personal protective equipment (PPE) such as protective vests may be subject to particularly stringent restrictions or classed as military items.



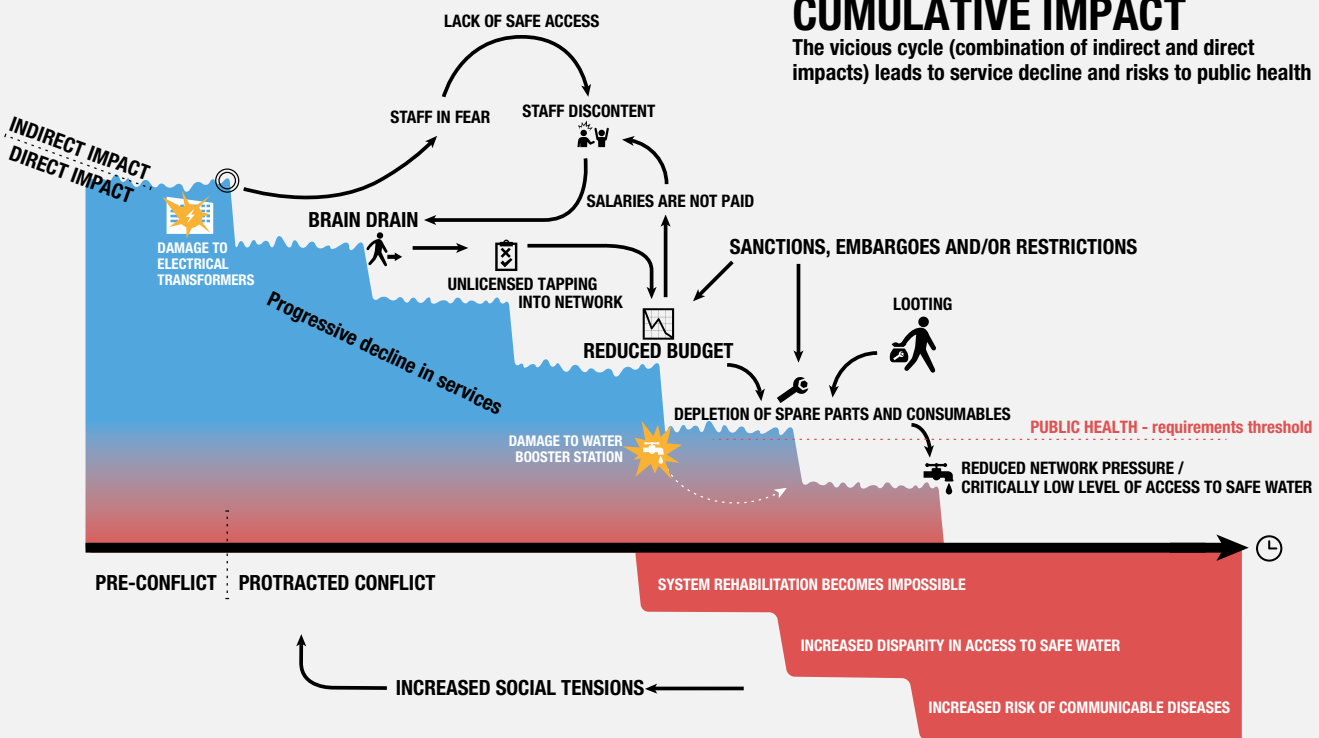


Tripoli, Nahr el Bared Palestinian camp.  
Rehabilitation of water reservoir.

Photo credit: ICRC/ Jordi Raich/ 2008

## CUMULATIVE IMPACT

The vicious cycle (combination of indirect and direct impacts) leads to service decline and risks to public health



Source: "ICRC, Urban Services During Protracted Armed Conflict: A Call for a Better Approach to Assisting Affected people. Geneva, October 2015."

**You can't imagine in the water sector, it is not like housing where you need only five or six items – concrete, steel, wood, etc. In the water sector, we're talking about hundreds of items that were not allowed.**

Senior manager, CMWU, Gaza, 2 October 2023

Fuel, communications services and cash and banking services are not always available. In Tigray, restrictions prevented the entry of spare parts, certain consumables and cash. When Mosul was under the control of the Islamic State group, it was difficult for engineers to get to work each day owing to a lack of fuel; they had to walk, cycle or car-pool.<sup>36</sup> Such constraints degrade staff safety because:

- lack of fuel affects movement and transportation, which hinders access

- absent or unreliable communication services impede communication between operators and offices and may require additional movements, for example to make in-person cash deliveries when electronic transfers cannot be made across a line of contact.

Water authorities also mentioned a lack of PPE or even distinctive work clothes (see also [Increasing the visibility of service providers](#) in Chapter 3).

**Dealing with new authorities:** In several contexts, changes in control of territory and the related movement restrictions led to service providers being under divided control or having to operate under new authorities. In some settings, when control of territory fell to a non-state actor, some workers moved to the government-controlled areas while others remained in their usual place of residence under the non-state actor's control. In some cases, installations in opposition-controlled areas lacked equipment, tools, vehicles and technical staff. In



Aleppo. The ICRC and the Syrian Arab Red Crescent deliver water by truck to the temporary collective shelters where people found refuge after the earthquake that struck the country in February.

Photo credit: ICRC/ Stephen Ryan/ 2023



eastern Ukraine prior to 2022, for example, the water personnel operating in non-government-controlled areas needed support from the ICRC regarding vehicles, as most vehicles had remained on the government-controlled side of the line of contact when control of the territory covered by the water service provider was divided.

For example, for a city like Damascus, the main water source is outside of this governorate. It is mainly in the rural areas. And what we have in Damascus is the governmental parties. Engineers, designers, etc. are located in Damascus. The system in rural Damascus is controlled by the other party, but the expertise is here.

Former SARC Water Department engineer, October 2023

In Damascus, new or parallel bureaux for water and sanitation were established, each reporting to the authority in control of its area and operating the water and sanitation systems in that area. In some cases, the state was still paying salaries for workers in areas it no longer controlled.

Sometimes, in the hard-to-reach areas, you couldn't find qualified people and they were obliged to employ some of the locals in order to at least carry out basic operations. But there is no control, no monitoring, no means to ensure water quality. Ensuring water quality is difficult in such a situation.

Former DAWSSA engineer, August 2023

When territory changes hands, responsibility for water and power services is sometimes given to people appointed by the party newly in control. This happened in Mosul under the Islamic State group, making some staff feel unsafe where the new managers lacked the necessary technical or managerial knowledge.<sup>37</sup> A change in leadership could also lead to personnel being demoted, fired or needing to flee for their safety, if they are perceived as connected to the opposing side. In one context, women were no longer allowed to work for the service provider.<sup>38</sup>

**Cumulative effects of protracted armed**

**conflict:** As a conflict continues, personnel need to respond to fluid situations caused by the fighting, sometimes including rapid and significant changes in system requirements. For example, the pressure on services may be increased by massive population growth when fighting forces people to seek refuge in urban areas, or by other demographic changes.

In recent years, the COVID-19 pandemic presented an added complication, as did natural disasters such as the 2023 Turkey/Syria earthquake, which also affected the water and electrical infrastructure and caused displacement. The effects of climate change are imposing additional long-term constraints on the provision of services.<sup>39</sup>

Whatever its cause, lack of access brings the risk of serious disaster.

■ *At one point just before the rainy season, the technicians need to be ready to release the water in the dam to prevent flooding during the rainy season. They were really struggling to get there to release the water, expecting the rainy season to come. They did manage it in the end, but it was very late and they were stressed about this and the previous strikes.*

ICRC water and habitat specialist, July 2023

At a certain point in a protracted crisis, maintaining essential services can become simply too difficult and the damage can become too expensive to reverse. The cumulative, long-term effects of the issues mentioned above can result in the gradual collapse of electricity, water and sanitation services, leaving civilians without essential services.

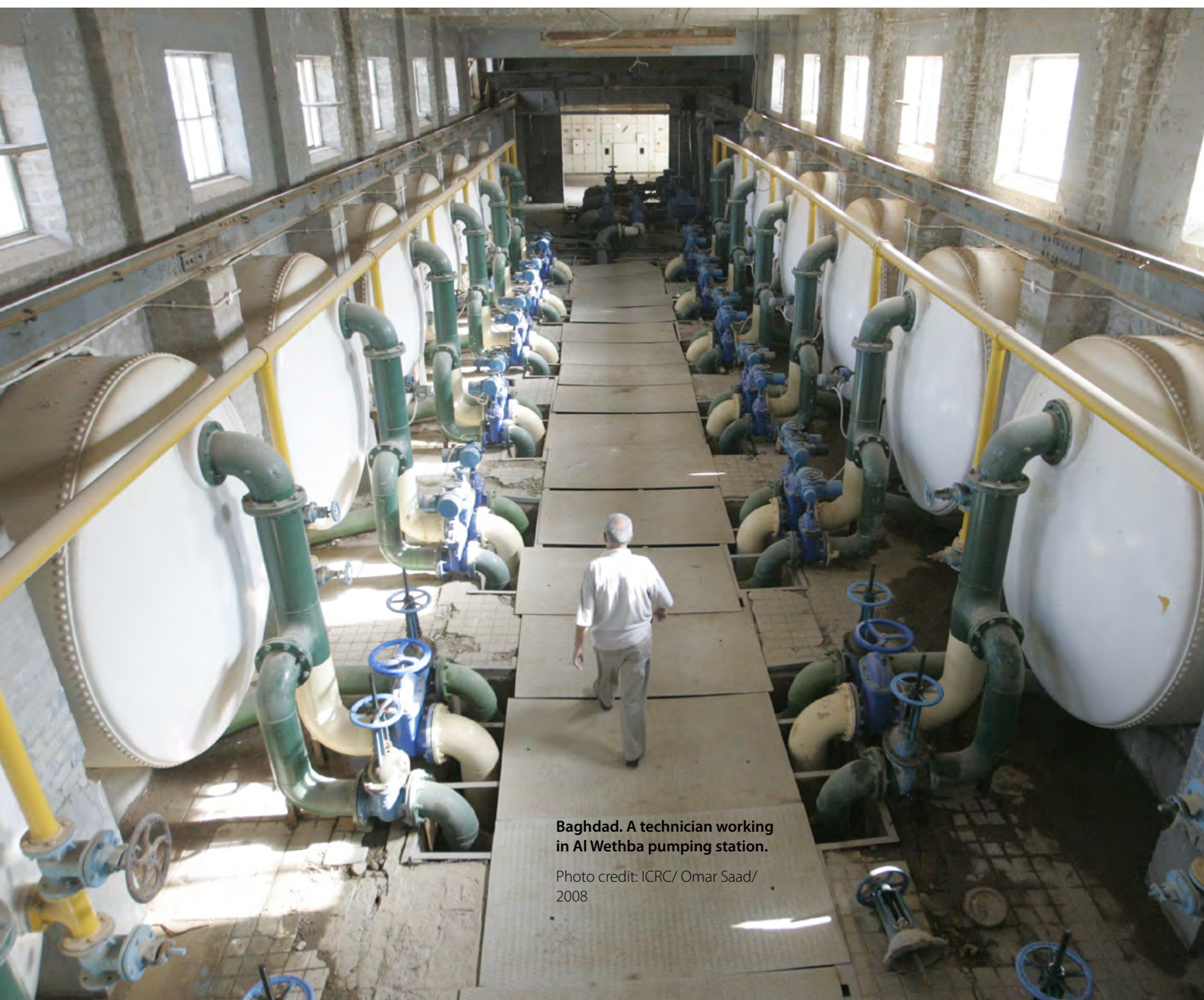


# 3. Experience of facilitating safer access for essential service providers

The ICRC and the National Societies protect and assist conflict-affected communities. This includes providing or repairing essential services such as water and sanitation, and negotiating and working with local authorities and civil society bodies to have essential services restored.

While essential service providers are experienced professionals and can often manage many things themselves, an armed conflict poses multiple challenges to their work (see [Chapter 2](#)). This

chapter discusses some of the experiences of the ICRC, National Societies and other humanitarian actors in supporting essential services personnel, specifically by seeking to facilitate safer access through technical advice, risk analysis, emergency preparedness, direct provision of material support or action as a neutral humanitarian intermediary.



Baghdad. A technician working in Al Wethba pumping station.

Photo credit: ICRC/ Omar Saad/ 2008

# Measures to facilitate safer access for essential service providers

- Liaise with parties to the conflict as a neutral intermediary, e.g. negotiating humanitarian pauses or safety guarantees for access, or making urgent representations when essential services personnel are in danger.
- Escort and remain in proximity to essential services personnel during their movements and work, while displaying ICRC or National Society logos.
- Support enhanced visibility efforts of essential service providers, e.g. by providing distinctive clothing or signage for vehicles.
- Support risk awareness and preparedness by such measures as:
  - Supporting the design of emergency response, drawing up coordination plans, pre-positioning emergency stocks, undertaking drills
  - Supporting passive security efforts and pre-positioning first-aid kits and other essentials in shelters and facilities
  - Providing training in first aid
  - Providing awareness training on the risks of mines and explosive remnants of war.
- Provide other support, such as:
  - Facilitating the importation or cross-line movement of consumables, spare parts and other equipment
  - Supporting the automation of critical infrastructure, to allow remote operation and monitoring
  - Conducting technical training
  - Providing food parcels.
- Clear or arrange for the clearance of mines and explosive remnants of war.
- Conduct high-level humanitarian diplomacy and global policy work.
- Maintain confidential, bilateral dialogue on humanitarian concerns with parties to the conflict and other authorities.
- Make public statements advocating respect for and protection of essential services personnel.



## Liaising with parties as a neutral intermediary

**Negotiation of humanitarian pauses to improve/facilitate access:** In Syria, acting as a neutral intermediary, the ICRC and the Syrian Arab Red Crescent (SARC) sought security guarantees to facilitate the access of personnel to operate, maintain, assess and repair civilian infrastructure. Pauses in fighting also allowed the delivery of diesel for generators, disinfectant chemicals and other materials and equipment.

The ICRC facilitated access in Gaza, Sudan, Ukraine, Yemen and elsewhere, and both the ICRC and the SARC did so in Syria (see [Gaza](#), [Khartoum](#) and [Aleppo](#)). As one ICRC water and habitat coordinator explained regarding Syria, “the armed opposition group would consider the water board as associated with the government of Syria, so going there alone would not allow them to perform the needed repairs. The ICRC and the SARC facilitated their movement to the pumping station or facilities in the areas outside Syrian government control”.

This type of action is often easier where there are relatively stable front lines.

**Nagorno-Karabakh:** The ICRC regularly arranged for repair crews and operators to access groundwater wells adjacent to the line of contact. This included specifying how many people and vehicles would be travelling, for what purpose, and how much time they would need to carry out the task. It also involved displaying clear markings on the vehicles and making sure people could return safely.

**Ukraine (before 2022):** The ICRC helped transport water samples across the line of contact for quality testing.

**Yemen:** In 2018 and 2019, the ICRC acted as a neutral intermediary to arrange access for contractors so they could undertake crucial repairs to the wastewater treatment plant serving Hodeida, to prevent major sewerage problems in the city and reduce the risk of cholera. The plant was located only a few kilometres from the front

line encircling Hodeida and from mined areas, so obtaining the necessary security guarantees for access to the plant took three or four months. The ICRC explained the importance and planning of the work, passed on details of the contractor’s vehicles and equipment and sought protocols for mutual focal points with the parties in case of security problems. These measures, together with facilitation by the local water authorities, enabled the contractor to carry out the work successfully.

**Colombia:** In Buenaventura, the ICRC acted as a neutral intermediary, enabling an energy company to enter areas that had become inaccessible because of armed groups, and to redesign the public lighting system at important locations.<sup>40</sup>

**Haiti:** Between 2005 and 2006, despite high levels of armed violence, the ICRC and the Haitian Red Cross were able to work in Cité Soleil because of their contacts with all the authorities and actors concerned, including gang leaders. They enabled the water board, CAMEP, to restore a basic water supply for the 200,000 inhabitants by making it safe for them to return to Cité Soleil and operate without being a target of violence, after they had been forced to abandon the area when it became too dangerous.<sup>41</sup>

However, facilitation of security guarantees/safe access by an impartial humanitarian organization such as the ICRC is not always necessary. In one context, fighting during the seizure of a city by an armed opposition group had destroyed the transformer supplying power to the main water pumping station. The ICRC was available to mediate access for the repairs, but water service staff managed through their own connections to discuss the matter with the armed opposition group and obtain access to the transformer so they could repair it. The ICRC’s role was limited to understanding the situation, being available as backup if needed and providing fuel for a generator to power the water pump until mains electricity was restored.

# Operation and delivery of supplies for water pumping stations, Aleppo, Syria, 2012-2016

The city of Aleppo was not directly affected by fighting until July 2012, when armed opposition groups suddenly took control of the eastern part of the city, with the western part remaining under the control of the Syrian government. The city remained divided until 2016.

Aleppo has two water pumping stations: Bab al-Nayrab in the eastern part of the city and Suleiman al-Halabi, which serves almost two-thirds of the city – mainly the western part, which was still under Syrian government control – and is located on what was then the front line. Access to Suleiman al-Halabi was difficult because of its position and because there were multiple armed groups in the vicinity.

When the armed opposition groups entered the city, the management of the water board and most of the personnel moved to the western, government-held part of Aleppo. While the armed opposition groups controlled the water infrastructure, they did not necessarily have the knowledge required to operate it, and had to rely on expertise from those water staff who were still living in the eastern part of Aleppo.

Water infrastructure was also damaged in the fighting over the years, and the water supply was sometimes cut off deliberately, leading to multiple water crises.

As part of its humanitarian action, the SARC crossed into the eastern part of the city almost daily, to carry out assessments, conduct training or deliver materials. This included facilitating access for water service personnel and delivering fuel (supplied by UNICEF) to the pumping station. The crossing lines were stable from July 2012 until December 2016, but the missions were not always successful – some were called off because the parties failed to respect ceasefire arrangements.

The SARC took the lead in collecting information from the service providers, checking what they needed to do and coordinating access and pauses in the fighting with the parties on the ground. The SARC would escort the service provider staff through the official corridor between the two parties, wearing their usual red uniforms and carrying a red crescent flag for enhanced visibility. They would remain with them during their work and escort them back across the line to their office or depot. One video, for example, shows the delivery of fuel in trucks bearing the SARC logo, with one SARC volunteer in each truck.<sup>42</sup>

There were five of us – three water board workers and two SARC volunteers. We moved forward in single file, with one metre between each person. A SARC volunteer went at the front and back, with the water board staff in the middle, so they were protected by us. We were providing safe access to the service providers. We not only set up a safe corridor but also escorted them there and back. We accompanied them because this gave them more security and made them feel safer.

Former SARC employee, September 2023



**Mapping critical infrastructure:** Humanitarian organizations have also provided information to parties on objects such as civilian infrastructure, warehouses and other premises in areas of active hostilities, including their precise locations so they can be placed on “no-strike” lists. This information is often compiled with the assistance of power and water providers.

To avoid exposing such objects to further risk, especially that of direct attack or misuse by parties to the conflict, humanitarian organizations should be careful only to pass on this information when it is appropriate and safe to do so.

As part of its neutral humanitarian role, the ICRC monitors the impact of hostilities on critical infrastructure and services and follows up confidentially with parties to the conflict and with other authorities.

**Emergency hotline contact with parties:** Where there are suitable relationships with the warring parties and the authorities, the ICRC makes rapid contact concerning essential service providers in immediate danger. Such emergency notifications require experienced staff and clear protocols to ensure efficient and effective communication.

**■** *We developed a few real-time actions for when something started to erupt close to a facility and we'd get a call from a water company saying, “Something's just been hit, there's fighting ongoing.” If we got that call, we could immediately phone both sides and say, “You're fighting over critical infrastructure; there's staff there.”*

ICRC water and habitat coordinator, September 2023

## Escorting and presence

**Escorting in convoy:** Where the ICRC or a National Society is involved in negotiating access for service providers, it generally (though not always) provides staff and vehicles to escort them. Such escorts were provided in all the contexts reviewed for this study, but precisely how this was done varied between contexts.

**Gaza (prior to October 2023):** The CMWU knew that it was desirable to have an ICRC vehicle and flag next to its personnel while working, from its experience issuing its own notifications and obtaining security guarantees. A repair team came under fire in 2008 while repairing a water pipe damaged during shelling, despite the necessary contacts having been established. Because of both that incident and CMWU casualties sustained during the 2014 hostilities, the director felt that the presence of the ICRC as an intermediary facilitating safer access with the Israel Defense Forces and moving in convoy with CMWU personnel played a crucial role in ensuring their safety.

**Ukraine (prior to February 2022):** Interviews revealed that the following measures made it safer for essential service personnel to carry out repairs close to the line of contact or in the buffer zones, with fewer incidents occurring than during smaller repairs where the ICRC was not involved:

- humanitarian pauses in the fighting, sometimes known as “windows of silence”
- ICRC escorts
- displaying the ICRC roundel:



To help affected people in Khartoum have access to clean drinking water, the ICRC facilitated safe access for the Electricity Company's workers to repair the power lines that connect the substations and stations to Bahri water treatment plant.

Photo credit: ICRC/ Jalal Basharat/ 2023



A Voda Donbassa Manager described the ICRC's presence as a protective factor for the service. As in Gaza, personnel in Ukraine had previously experienced security incidents:

**At the beginning, the first few times, even though we had permission from both sides, the workers were shelled. So, after that, we requested that someone was present like the ICRC or the OSCE.**

Senior manager, Voda Donbassa, October 2023

### **Maintaining a physical presence**

Generally, the ICRC (and the SARC where relevant in Syria) would travel in their vehicles, in convoy with service provider personnel or contractors in their service vehicles, and remain physically present on site while they were working, at least for larger repairs. In one context, the ICRC negotiated directly at checkpoints for the passage of the water board's technician where required.

In Ukraine, the OSCE's Special Monitoring Mission to Ukraine (SMM) also facilitated and monitored "windows of silence" for thousands of maintenance and repair operations at infrastructure sites along the line of contact in the Donetsk and Luhansk regions.<sup>43</sup> There was some cooperation between various organizations





for these escorting tasks. For example, in eastern Ukraine, prior to 2022, the ICRC provided escorts for staff rotations at the Donetsk Filtration Station on the line of contact during “hot” periods of fighting. When things calmed down, the OSCE’s SMM took over, monitoring the daily bus transfer of workers to and from the station.<sup>44</sup>

In other operations, the ICRC was present directly at the site of the repairs, while the SMM was located somewhat further away.

**■** *I was involved several times in operations where the ICRC was supporting the authorities by providing materials and tools, while*

*the OSCE was acting as a “mirror”, patrolling on the other side of the line of contact. But we were also there just to enhance this protection and to raise the visibility of a humanitarian mission and humanitarian project that benefited civilians, very often on both sides of the line of contact.*

ICRC water and habitat specialist, September 2023

### **Displaying the ICRC roundel or National Society logos**

Such escorting and presence almost always involved displaying the ICRC roundel or the National Society logo (which incorporates the red cross or red crescent emblem) on vehicles and clothing for added visibility, in line with the Movement’s usual practices for such situations.

**Yemen:** The ICRC roundel was used in support of water technicians working in remote areas. They were at grave risk of being targeted and killed, because from a drone, borehole digging equipment can look like a rocket launcher of the type used by fighters in that area. When ICRC contractors were undertaking this work, the ICRC would notify the parties in advance, a large ICRC flag would be laid out on the ground, and ICRC vehicles also bearing the roundel usually remained in the vicinity.

Large ICRC flags are also sometimes fixed over heavy machinery or generators during transport.

Gaza, Johr Al Deek, "Roma Point", Middle area. Help of the ICRC for electricity repairs.

Photo credit: ICRC/Yassein Ashour/ 2014





## Electricity network repairs, Khartoum, Sudan, 2023

In April 2023, fighting broke out in Khartoum between the Sudanese Armed Forces and the Rapid Support Forces. The clashes affected power and water services, including the Bahri water treatment plant, which normally supplied water to over 1.5 million people. Technicians were unable to access the infrastructure to undertake repairs.

The ICRC wished to make an assessment, but access was difficult because Bahri is located on the river Nile, which had become a front line in some areas.

In July, ICRC engineers and engineers of the Khartoum water authority and electricity company managed to access the Bahri plant for an initial technical assessment. Bahri's generator had also been disabled by damage, and it would be impossible to repair it until the power lines supplying the plant – which had also been damaged in the fighting – were reconnected.

The ICRC facilitated safe access for workers of the Sudanese Electricity Company to repair the cables by notifying the parties of the planned work and the routes that would be taken, and obtaining security guarantees. When personnel travelled to and from the plant, the ICRC led the convoy in a vehicle flying the ICRC flag, wearing red ICRC vests, and then parked next to the repair site. The technicians travelled in their own vehicles and worked in yellow high-visibility vests.

While electricity workers could safely access some parts of Khartoum without ICRC support,

ICRC facilitation helped them access contested areas. The presence of the ICRC also made it possible for the power company to access their warehouse for the first time since the war started.

■ *They collected all sorts of tools, and then actually started fixing electricity poles. And we spent the day there. We almost managed to reach the only remaining segment but it was in the contested area, and we knew there were snipers and we didn't feel confident that the necessary safe conditions existed at that moment. The electricity company fully understood that. For the remaining weeks, they intended to work on the whole line up to the point where they needed us to go with them. And then we would go and try that part again.*

ICRC Head of Operations, Khartoum, September 2023

This enabled locally-run operations by setting things up so that the workers were extremely visible, and then letting them get on with their work. Once the power lines were restored, the plan was to then return with the water authority to Bahri water treatment plant.<sup>45</sup>

Hasakeh Governorate, Allouk, water station. The ICRC and the Syrian Arab Red Crescent contribute to the repair works of the station in order to increase access to water for Hasakeh residents.

Photo credit: ICRC/ Diman Ameen/ 2021



## Increasing the visibility of essential service providers

Essential service personnel often wear overalls, sometimes with a high-visibility (high-vis) vest. Some display the water or power company logo on their clothing and vehicles. In certain contexts, public service vehicles are identifiable by their logo and number plate.

**Gaza:** Following the 2014 hostilities, the ICRC worked with water and power services to enhance their protection, helping them make their personnel, vehicles and other assets more visible. Vehicle registration numbers were displayed in large numerals on the sides and roof. Those registration numbers were listed in the catalogue of vehicles supplied to the IDF, as part of an emergency preparedness plan that also included enhanced identification of staff and assets, together with coordination mechanisms regarding movements (see **Gaza**).

**Ukraine (prior to 2022):** Partly based on its experience in Gaza, the ICRC launched a visibility programme with water provider Voda Donbassa. In Ukraine, it was not uncommon for service providers' clothing and vehicles to be military-looking, in some cases using camouflage pattern fabrics and colours rather than plain colours and high-vis vests. Some of their vehicles bore a small logo, but not all. Following a number of security incidents, the ICRC discussed with Voda Donbassa how to improve their visibility and hence enable them to work more safely. One of the proposals was to mark their vehicles more clearly.

- The ICRC arranged for vehicle stickers showing the Voda Donbassa logo and “water utility worker” or “Donbas Water” in large characters, together with metal panels about 200 cm long and 60 cm high with similar wording, which could be displayed when they were close to a front line.



- Vehicles were painted a different colour.
- The ICRC provided a few hundred orange high-vis vests for repair teams and operators in facilities near the line of contact.

It had been intended to also provide beacons and special signs for vehicles as part of this project, but escalation of the conflict in 2022 made that impossible.

In both Gaza and Ukraine, the purpose of the visibility initiatives was not to advertise the water service through its logo, but to make it clear that these were civilian vehicles and personnel carrying out public water or power work. The logic was that clearer visibility would help the parties identify essential service personnel and assets, and distinguish them from combatants and military objects. The aim was also to ensure that the parties had more information available when planning and conducting attacks, enabling them to better fulfil their precautionary duties under IHL regarding civilians and civilian objects.

For Voda Donbassa, the most important means of enhancing safety were security guarantees from the warring parties, the presence of the ICRC and its contacts with all parties. However, high-vis clothing and vehicle markings on vehicles were also seen as important secondary factors, because they made it clear to the parties that these staff were water service workers.

Voda Donbassa reported that it was hoping to arrange appropriate, standard working clothes/uniforms for its staff, to identify them more clearly. Similarly, an interviewee formerly with the Damascus water authority commented that humanitarian organizations often have luxury clothing and vehicles compared with local utilities, and that water authorities do not necessarily have a logo or uniform for their staff, even though these were considered important to signal to everyone that their work is meant to help:

**At the end of 2016, the armed group at the main spring supplying Damascus with water decided to start communicating with the Syrian government and the water authority in Damascus. We went there with all the technical group just to get the water back on to Damascus. Unfortunately, because we didn't have any logos, nothing on our vehicles, they captured us and held us there for two days. That was a horrible two days for me and the other staff.**

Former DAWSSA engineer, August 2023

## Emergency preparedness programme, Gaza, 2006–2023<sup>46</sup>

The ICRC began supporting the water sector in Gaza through the CMWU in 2006. Initially, the ICRC prioritized the renovation, repair and upgrading of critical water, wastewater and electrical infrastructure. Support was later expanded to include enhancing service providers'

emergency preparedness and their response capability, as repeated hostilities were affecting essential services personnel working on the ground.

Gaza, Rafah. A public  
well operator.

Photo credit: ICRC/ Alyona  
Synenko/ 2019









Following hostilities in 2014, a detailed emergency preparedness programme was developed, involving the ICRC, the CMWU, the Gaza Electricity Distribution Company (GEDCO) and the Palestinian authorities. The programme assigned codes to all facilities based on their location, and vehicle registration numbers were recorded in a catalogue and displayed clearly on the vehicles. These details were shared with the parties to the conflict.

The ICRC provided signs for the sides and roofs of water, wastewater and electricity service provider vehicles. This was accompanied by the CMWU logo – a blue water drop – on vehicles and warehouses, and a red lightning bolt for GEDCO. Staff also usually wore a work vest with the logo (small on the front, large on the back), and a hat or helmet with the logo.

The CMWU had previously been using a single warehouse, but it now set up five decentralized warehouses, one for each governorate, pre-stocked and strictly for emergency use, to prevent unnecessary travel in a crisis. Emergency response simulation exercises also took place. The programme was later expanded to thirteen warehouses, so that prepositioned stocks would allow for a more rapid response in all parts of Gaza.

The ICRC worked closely with local partners to assess water, sanitation and power issues and prioritize action. In its role as a neutral intermediary, the ICRC facilitated safer access for service providers performing repairs and basic operation and maintenance. This coordination was extremely robust. In its coordination efforts with several actors, including the Coordination and Liaison Administration at the Erez Crossing, the ICRC provided details as to how many people would be travelling, making sure they would be identifiably marked and giving the exact routes they would be taking. The vehicle registration numbers were the main reference. If it was not possible to follow the agreed routes, the team would stop and re-coordinate before moving on.

The ICRC had started such support earlier. In 2007 and 2008, for instance, farmers and agricultural corporations could ask the ICRC for help negotiating safe access with the IDF, so they could repair damage to land or to irrigation pipelines. The ICRC passed on the exact coordinates of the location and accompanied the repair team while displaying a visible ICRC logo and maintaining phone contact with the Israeli military authorities. The ICRC continued to conduct such operations in support of farmers needing to access land in sensitive areas near the border for planting and harvesting.

The emergency preparedness programme and related efforts such as the Gaza Resilience Programme (see also [Automation of parts of the system](#)) have been an important part of efforts to protect essential services and reduce the risk of their collapse. Ten CMWU staff were killed on duty during the 2014 hostilities, for example, but there were no CMWU deaths and no major damage during the 2021 and 2022 fighting.

This was a sophisticated programme, in a specific context where the various actors – the Israel Defense Forces, the ICRC, the various factions and the local authorities – all knew each other well. One risk of such a well-developed system is that any minor digression from the agreed protocols can become very serious. The catalogue of vehicle details had to be regularly updated, for instance, and regular drills were also important but were not always possible or prioritized. Moreover, the coordination mechanisms did not always withstand the pressures of intense hostilities.<sup>47</sup>



## Risk awareness and emergency preparedness

**Passive security measures:** Essential service providers may need support with passive security and risk preparedness to continue their work. East Mosul (Iraq) – the first part of the city to be retaken by government forces in early 2017 – had 14 pumping stations. Workers were not attending two of those locations, even though the ICRC had cleared weapon contamination. Operators explained that this was because there was no concrete wall around the infrastructure at those two stations, in contrast to other locations. While fighting had stopped in East Mosul, it continued across the river in West Mosul until July 2017, and staff still felt exposed to crossfire and snipers.

In a number of contexts, the ICRC has improved passive security to enhance staff safety at their places of work. Measures include ensuring that facilities on a front line have bunkers where staff can take shelter, boarding up windows or fitting them with anti-blast film, and equipping bunkers with survival materials, for example at Donetsk Filtration Station.<sup>48</sup>

**The design of the facilities was from Soviet times and they had bomb shelters. At night, all water service operations are carried out from the bomb shelters. The operators are only allowed to move around in the open during the day. At night, they remain in the facility, inside the thick walls. We supplied food parcels, plus cooking plates and other equipment, to make it more comfortable to stay there for a few days if it is not possible to evacuate.**

ICRC water and habitat specialist, Ukraine delegation, September 2023

One ICRC water and habitat delegate made the general remark that “If they have a car that starts when it’s supposed to start and doesn’t need to be pushed because it has a flat battery, for example, those are small secondary components we can think of regarding safety.”

**First-aid training and materials:** For Voda Donbassa in Ukraine, one reported “plus” of partnering with humanitarian organizations was the training that the ICRC provided on first aid, trauma aid and risk awareness/safer behaviour regarding mines. The ICRC also provided the water authority with first-aid kits. In at least one context, the ICRC issued essential service providers with PPE during the COVID19 pandemic and included water operators in training otherwise being undertaken for hospital staff.

A point of debate arose when service providers requested military-grade PPE such as Kevlar vests and helmets, or armoured vehicles. ICRC interviewees expressed their sympathy with these requests but because such items could also be used by fighting forces, it was considered that they could not be provided as part of humanitarian assistance or support for safer access.

### **Pre-positioning of emergency materials:**

The ICRC has worked with authorities to improve essential service providers’ emergency preparedness, by donating and pre-positioning materials, as in Gaza for instance (see [Gaza](#)). This can reduce movements in crisis situations, e.g. to and from warehouses.

**Support for communications:** The ICRC also helps essential service providers maintain communications where required. Examples include providing portable battery-charging packs so that personnel can continue to communicate and coordinate their operations during power cuts and shortages, or where telecommunications are disrupted by hostilities or access restrictions, to ensure requests for water disinfectant can be passed to a head office without delay.

**Automation of parts of the system:** To ensure that essential services personnel can remotely operate systems, and to reduce their exposure during hostilities, the ICRC installs centrally controlled systems that allow remote operation of critical infrastructure.

In Ukraine, for instance, the ICRC and UNICEF helped water services install a system for remote monitoring and operation of such infrastructure as water meters and pumps near the front line, using mobile phone signals. Water meters that both sides could read remotely also aimed to alleviate disputes between the parties and support the collection of revenue.

In Gaza, the Gaza Resilience Programme boosted emergency response by performing detailed mapping of networks, making it easier for operators to work remotely, and incorporating system redundancy to improve service continuity. The ICRC also helped install automatic switches on the power grid in Gaza in 2020.<sup>49</sup> Installing solar panels or wind turbines can also reduce reliance on generators – and hence on fuel deliveries – although such equipment is vulnerable to physical damage.

## Other forms of support for essential service providers

**Ensuring access to consumables and equipment:** As a neutral intermediary, the ICRC has helped get consumables, spare parts and equipment across front lines or have them treated as humanitarian goods exempted from sanctions. In Ukraine, for example, the ICRC enabled delivery of an excavator and vehicle spare parts to non-government-controlled areas, as most service provider vehicles were on the government-controlled side. This ensured that the water service provider had an operational vehicle fleet.

In 2023, the ICRC undertook the complex administrative procedures required to import demining equipment and PPE into northern Yemen. Those items were nominally classed as

military equipment under importation rules, but in this instance they constituted much-needed humanitarian goods for the Yemen Mine Action Centre, which required them to carry out demining in connection with ICRC-funded projects such as water pipes and schools.

**Supporting retention of staff and of technical knowledge/experience:** Examples include the following:

- Providing employees and contractors with food parcels when salaries were delayed (e.g. in Tigray and Ukraine), paying salaries or providing other financial incentives.
- Paying for consumables, so that the service provider could put funds earmarked for consumables towards salaries and could continue to generate some revenue.
- Contributing to payment of a water service provider's power bills, to maintain water supplies.
- Deploying humanitarian diplomacy to persuade authorities to retain the expertise and local knowledge of water service personnel when territory changed hands and a new authority became responsible for water, or to re-employ them if they had been dismissed.
- Providing technical training.
- Supporting the service providers' protection- or hostilities-related dialogue with civilian and military authorities, e.g. by establishing contact for service providers with relevant interlocutors to negotiate access or discuss security, or facilitating such dialogue as a neutral intermediary.



Lugansk, Starobilsk, near Severodonetsk. The deputy head of Lugansk Energy Association, welcomes an ICRC employee in the company's district office.

Photo credit: ICRC/ Jessica Barry/ 2015





## Removal of mines and explosive remnants of war

The ICRC weapon contamination (WeC) programme seeks in particular to support other humanitarian action (water and habitat, health, forensics, etc.). The ICRC's WeC team has enabled access for essential service providers by surveying and clearing areas, and/or helping to liaise with local demining agencies.

**Ukraine, 2015–2016:** The Donetsk Filtration Station (DFS) in eastern Ukraine is a key piece of civilian water infrastructure serving approximately 1,500,000 people on both sides of the line of contact that existed prior to the 2022 escalation of the conflict. Access to the DFS passes through Yasynuvata / Yasinovataya, which

had been a zone of confrontation and was also dotted with checkpoints that DFS personnel had to pass through to reach the plant. In addition to the risk of crossfire, the route had been damaged by shelling and contaminated with sharp metal fragments and explosive remnants of war. In addition, the sides of the road and the area surrounding the DFS were mined. To supplement passive protection measures at the plant, the ICRC provided signs reading “Danger! Mines!”, which the military authorities put up around the site. The ICRC facilitated two humanitarian ceasefire agreements, under which the parties to the conflict agreed to suspend fighting so that the DFS could be repaired and the water supply





restored. During these ceasefires, demining experts removed a large quantity of explosive remnants of war from the surrounding area.<sup>50</sup>

Also in Ukraine, a Voda Donbassa manager explained how state deminers marked the territory where water personnel could and could not go, as part of their demining. If the work continued over multiple days, those demining checks needed to be repeated every morning.

In some contexts, ICRC WeC specialists work closely with National Societies to help mitigate the risk posed by mines and explosive remnants of war. This includes enhancing the National

Society's capacity to develop and implement risk awareness and safer behaviour programmes and to conduct non-technical surveys. National Societies therefore play an important role in reducing the risks posed by mines and explosive remnants of war in situations including the provision of essential services.



Ukraine, Posad-Pokrovske. Ordnance scrap and a mine warning sign.

Photo credit: ICRC/ Stephanie Xu/ 2023

## Al-Qutai'e water pipeline, Hodeida, Yemen, 2018–2021

During the Red Sea Coast offensive in 2018, the pipeline bringing water from the Al-Qutai'e well field in Al-Marawi'ah district into Hodeida city was damaged, causing a 40 per cent reduction in the quantity of water available to the city population. In 2019, the local authorities sought the ICRC's support to enable the local water and sanitation corporation to access the area. Initially, the request was for the ICRC to help negotiate with the various parties for a ceasefire that would allow safe access to the area for repairs. This was subsequently expanded to include the ICRC accompanying the technicians using its vehicles and flags.

A key challenge was that from 2018, a front line between the Yemeni government and coalition forces on one side and Ansarullah on the other encircled most of Hodeida city, leaving only one entry/exit point, in the north. The repair mission would have had to cross a dangerous, mined front line, making it too hazardous for the ICRC and the water corporation. An alternative was to attempt access from the other side of the front line, with water corporation staff based in government-controlled territory in the south, working jointly with operators from Hodeida familiar with the pipeline. Discussions continued for over a year, but it proved difficult for the parties to trust each other to respect security guarantees and not instrumentalize them for strategic purposes.

■ *It was complicated to negotiate with so many people at the same time, and ultimately this repair mission was not manageable at that time.*

ICRC head of sub-delegation, August 2023

Once the front line shifted south in November 2021, the previous buffer zone became accessible in principle, but mines continued to pose a huge risk and delayed repairs. The ICRC supported the efforts of YEMAC deminers to clear the area for water personnel and provided material support for the repairs themselves. As of August 2023, this remained an ongoing project.

■ *In terms of perceptions of delays, people did not understand how this is a very complicated process. It needs many layers to convince a lot of people to ensure that you will get a green light for such an operation. They think you can push to go in the next day and start these activities, but it took longer. It was full of landmines. We still had not completed the work a year and a half after the front line shifted. I was thinking how we could do that during the fighting, negotiate a ceasefire for two or three days, this would not be easy at all. It would be an impossible mission.*

ICRC deputy head of sub-delegation, August 2023



## Humanitarian diplomacy and global policy work

### Engagement in multilateral humanitarian diplomacy

The ICRC has made representations at the highest levels of multilateral diplomacy, on topics such as the establishment of protected zones around critical installations in eastern Ukraine (see [Calling for protected zones for critical infrastructure \(Ukraine 2017\)](#)) and the negotiations for Security Council Resolution 2573 (2021)<sup>32</sup> on protection of civilians in armed conflict, where the ICRC successfully advocated for broadening the content to include the

protection of essential services indispensable to the survival of the population, including the protection of operators and their movements to and from their places of work.

The ICRC has also made presentations at meetings related to water provision and armed conflict, at the United Nations and other high-level forums. This raises awareness of these issues among the diplomatic, humanitarian and human rights communities, who can use the ICRC's policy work and legal expertise in their own advocacy.



A volunteer of the Ukrainian Red Cross participates in a panel on the effects of explosive weapons in populated areas in Oslo.

Photo credit: Norges Røde Kors/ 2024

## Calling for protected zones for critical infrastructure, Ukraine, 2017

In addition to the general protection provided by the rules regulating the conduct of hostilities, IHL offers the possibility for belligerents to create protected zones by agreement. Guaranteeing that such zones have been demilitarized can minimize the risk of critical infrastructure being transformed into lawful targets and can protect infrastructure and essential services personnel from being harmed incidentally.

There were no successful examples of such zones in the contexts examined for this study. However, the ICRC did attempt to establish protected zones to protect vital water installations in eastern Ukraine through high-level humanitarian diplomacy, acting as a neutral intermediary.

Concerned by the number of times that critical infrastructure near the line of contact in eastern Ukraine had been hit, and the major risks that would result from a complete or even partial shutdown of these systems, given the size of the population they served and the lack of alternatives, the ICRC saw a need for several installations to receive enhanced protection. In 2017, the ICRC facilitated negotiations that lasted over a year, between Ukraine, the opposition

entities in Donetsk and Luhansk and the OSCE, aimed at establishing agreed protected zones in eastern Ukraine around certain priority water pumping and filtration installations, a water pipeline and a well field along the line of contact.<sup>51</sup> Implementation of these zones would have required agreement between the parties for the complete demilitarization of those sites (i.e. they would have had to be free of military personnel and equipment), clear identification and marking of the areas and supervision of the parties' compliance with the agreement. Monitoring was to be carried out by the OSCE's Special Monitoring Mission to Ukraine.<sup>52</sup>

Political agreement was indeed reached during the 2017 Minsk talks for the establishment of protected zones around two water installations, the Vasilevka First Pumping Station and the Donetsk Filtration Station. However, the ceasefire was quickly violated, and in practice, the protected zones were never established.<sup>53</sup>



## Issuing public statements

Public statements by the ICRC and UNICEF have explicitly mentioned essential services personnel, not just the protection of water infrastructure.<sup>54</sup> Examples include the following:

- A 2014 ICRC news release referred not only to the bombing that was devastating Gaza's fragile water infrastructure, but specifically mentioned how fighting was preventing technicians from carrying out essential repairs and stated that the deaths of several municipal water technicians had led Gaza's water service provider to suspend all field operations until the safety of its staff could be guaranteed.<sup>55</sup>
- In 2019, the ICRC called on all parties "to ensure safe access to conduct any necessary repairs" to the Allouk pumping station in north-east Syria.<sup>56</sup>
- A June 2023 news release about Khartoum explained that "[p]ower and water stations have been seriously damaged, and technical personnel have been unable to access them safely and make the necessary repairs."<sup>57</sup>

Essential service providers have also issued press statements regarding the impact of conflict on their services and on the civilian population.

In November 2023, Virunga Énergies, an electricity provider in the Democratic Republic of the Congo, issued a communiqué regarding power cuts to the city of Goma caused by fighting between the armed forces and the M23 armed group, explaining that its workers could not currently access the damaged zone for repairs owing to the fighting. It also listed the humanitarian consequences: disruption of the water supply to a refugee camp and power cuts affecting public lighting and hospitals, possibly leading to unnecessary deaths.<sup>58</sup>

## Confidential bilateral dialogue with parties

ICRC delegations engage in confidential bilateral dialogue with authorities, especially parties to armed conflict, through oral and written communications that explicitly include the question of safe access for service providers and parties' responsibilities under IHL.

Those representations have addressed such topics as:

- creating a protected zone to allow repairs to water pipelines
- allowing sufficient fuel to reach generators powering water pumps
- addressing the problem of military presence in a water pumping station threatening both the lives of personnel and water supplies
- allowing adequate access for water personnel to ensure proper functioning and carry out maintenance
- ensuring that water personnel enjoy the respect and protection to which civilians are entitled.

Prevention and protection efforts, whether in the context of confidential bilateral dialogue or as part of other forms of humanitarian diplomacy, are supported by monitoring of the humanitarian situation and evidence-based approaches. In one context, a member of ICRC personnel had the specific task of monitoring and collecting data regarding the impact of hostilities on essential service provision, including the safety of service provider personnel.



**Toshkivka, Ukraine. Repair of one kilometer of pipelines with the support of ICRC.**

Photo credit: ICRC/ Olena Loshakova/ 2018







# 4. Operational considerations from the Movement's experience of facilitating safer access for essential service providers

This study has shown that measures to facilitate safer access for essential services personnel have helped reduce the risks they face. Ultimately, such support boosts the capacity of personnel to respond in an emergency, thereby reducing the suffering of civilians. However, it sometimes proves impossible to reach agreement between the parties regarding access for essential service providers. Things do go wrong, despite notifications and security guarantees facilitated by the ICRC or a National Society.

This final chapter reflects on operational considerations and highlights lessons learned from the Movement's efforts to support essential service providers.

These points have also informed the key findings and recommendations in the [Executive summary](#).

## Perceptions of neutrality and acceptance are essential for safe access

A key factor, especially in negotiating safe access and escorting essential service providers, is the perception by parties of the role of the ICRC as a neutral intermediary and, more broadly, of the neutral humanitarian role of the Movement. In a number of the contexts examined in this study, the presence of vehicles marked with the roundel of the ICRC or the logo of the National Society (incorporating the red cross or red crescent emblem) was considered to provide safer access for essential service providers. These measures were also reported to have made essential services personnel feel more secure.

In some contexts, the presence of foreign Movement staff in combination with use of the emblem was reported as enhancing security or feelings of security. However, the participation of such staff in field missions sometimes slowed down the approval process.

The degree to which Movement logos are accepted, the protection they provide and the impact they have depends on the context. While displaying the ICRC roundel or a National Society logo on vehicles and flags was generally considered to increase visibility and recognition and therefore safety, there were exceptions.

**Parts of Syria and Yemen:** Certain armed groups either misunderstood these symbols or did not accept them.

**Ukraine:** The Movement's neutral and impartial approach has come under pressure in this conflict and the emblem is not currently (2024) considered to confer as much protection or to make as much of a contribution to safer access as it does in other contexts. Ukrainian Red Cross premises and staff have come under attack and many volunteers have been killed.

In certain regions of the world or when working with certain communities, it has been decided not to use logos incorporating the emblems.

## Safe access cannot be guaranteed and awareness of residual risks is crucial

Because of the risks involved, local management teams of the ICRC or National Society must take careful decisions on a number of issues in each context. This includes identifying which parties



to negotiate with, as notifications to arrange access can backfire; a party could use information obtained during such negotiations to maximize the impact of an attack, for instance.

In one context, a situation evolved such that a party to the conflict revoked authorizations part way through a dangerous cross-line mission, even though all the necessary green lights had previously been received. Incidents have also occurred in which ICRC and SARC cross-line missions have been shot at, or there was shooting in close proximity.

Material support activities also require careful risk analysis and adjustment. Two examples:

- Enhancing workers' physical safety through improved passive security measures at their workplaces raises the risk – and therefore poses a dilemma for the Movement – that combatants might become more interested in those locations, as they offer a better location for fighting or shelter.
- Since many essential service systems in the contexts studied use old software and are not secured by design, one risk (albeit perhaps remote) of automating parts of essential service systems, such as installing automated valves and cameras for monitoring vandalism, is that they could be used to gain a military advantage. For example, they might be manipulated/shut off or the cameras used for surveillance. Overly sophisticated technology can also be problematic because of the training and maintenance required. Moreover, while automation may be possible in cities, it will be more difficult on a major regional scale. Technology should enhance resilience, not reduce it; systems that can be managed both remotely and manually provide useful redundancy. However, while automation does involve certain trade-offs, it may at least reduce physical movement and the risk of harm to personnel.

One must continually assess such risks, adjust the assistance to the context and, if required, support the service provider by taking other appropriate security measures.

## **Increased attention should be paid to the visibility of essential service providers and the potential value of a distinctive sign**

Given the importance of increasing the visibility of essential service providers during conflict (see [Increasing the visibility of service providers](#) in Chapter 3), and the fact that essential services such as water and power are as important for public health as medical care, because they are essential for the prevention of disease, one must consider the desirability and effectiveness of one or more new, internationally-recognized distinctive signs for the water or power sectors and their personnel. For example, one could envisage a sign such as a blue water drop for water services, to be displayed on bibs, helmets, armbands, vehicles and buildings. It would also be possible to adopt such signs on a national basis in the absence of an internationally-agreed sign, as indicated below.

Several water providers use a distinctive sign as part of their service logo.<sup>59</sup> In Gaza, for example, the CMWU uses a blue water drop, and the Gaza Electricity Distribution Company (GEDCO) a red lightning bolt.

Apart from nationally or internationally-agreed distinctive signs, other signs are used in practice, such as the word PRESS on the protective vests or helmets of media personnel in conflict zones. This is an informal, pragmatic practice and not a distinctive sign provided for or recognized under IHL. IHL explicitly mentions the protection of journalists as civilians.<sup>60</sup> However, like essential services personnel, media personnel enjoy no special protection under IHL and there is no universally recognized protective symbol for them to use in armed conflict.<sup>61</sup>



Marked vehicles of the Gaza Electricity Distribution Company (GEDCO) and the Coastal Municipalities Water Utility (CMWU) in Gaza.

Photo credit: ICRC/ 2016

The question of a distinctive sign or signs for the infrastructure and personnel of particular essential service sectors merits further consideration, and this study recommends that the International Red Cross and Red Crescent Movement – and other humanitarian agencies – examine this question (see also [Recommendations](#) in the Executive summary).

This should include further analysis of essential service providers' current visibility practices and the possible effectiveness and risks of such a sign or signs. Further consideration of the most appropriate policy and legal frameworks will also be required should plans for any such distinctive sign or signs progress in future.

## Investment in sustainable partnerships is needed

Relationships are essential for all humanitarian action, the aim being to prioritize support and partnership rather than substitution wherever possible. This study highlights the fact that essential service providers are natural partners for the Movement's humanitarian efforts.

**The strengths and needs of each partner need to be well understood:** By working with local authorities where appropriate and supporting

essential service providers being respected and protected by others, the ICRC and National Societies benefit from their local knowledge of systems and risks, encourage community ownership and enhance local capacity, all of which is in the interests of civilians.<sup>62</sup>

Essential service providers can also benefit from Movement engineers bringing new methods and ideas, and from the experience of Movement components undertaking neutral and impartial action in complex conflict situations, including negotiating humanitarian access with parties to conflict.

Similarly, working with National Societies enhances ICRC access, because National Society volunteers are locals who know and understand their communities and the political situation. However, few National Societies already had experienced engineering departments at the onset of conflicts affecting them. It may be necessary to help the National Society expand its capability in this area, and partnership with both the ICRC and essential service providers can be mutually beneficial. The key example here is the ICRC's support for expansion of the SARC's water and renovation capability, starting in around 2013. This included training and advice on the Movement's Fundamental Principles and humanitarian negotiation with armed actors and



the authorities. These efforts facilitated response in areas where the ICRC's own direct access was restricted and enhanced the SARC's ability to support communities in the future.

However, the risks for National Societies may differ from those for the ICRC, as National Societies do not benefit normally from any privileges and immunities and, while independent, are nevertheless auxiliaries to governments. As a neutral intermediary, the ICRC is particularly experienced in engaging with all parties to an armed conflict, and this includes negotiating access with non-state armed groups. While some National Societies also carry out this type of humanitarian liaison, exposing National Society staff (or indeed local ICRC staff) directly to local military or other armed actors to facilitate coordination can put them at risk during and potentially long after the hostilities have ended. In some contexts, it is a criminal offence to engage in dialogue with non-state armed groups or to provide them with assistance.

Whether it is the ICRC, the National Society or the essential service provider that has the best access and enjoys the highest degree of acceptance will depend on the context. Suitable sharing of tasks (within the limits imposed by each actor's respective mandate) can allow each entity to work as appropriately and as effectively as possible.

**Beware of encouraging transfer of risk:**

Understanding a partner's circumstances and approach also involves paying attention to their motivations. In Ukraine, for example, a powerful general sentiment of resilience in the face of conflict was observed, in which service providers considered the continued provision of power and water to be socially and politically important. ICRC staff observed that service provider personnel therefore seemed more willing to take risks than they might have been previously. Support and encouragement for a partner's work must align with the Movement's duty of care and the "do no harm" principle, and should not transfer risk at levels the ICRC or National Societies would not accept in their own work.

**Managing expectations and prioritizing**

**resources:** Supporting and accompanying essential service providers has sometimes prompted them to ask for more of the same. This was the case in Khartoum in 2023, for example. In Gaza, too, prior to the escalation of hostilities in October 2023, service providers increasingly requested escorts during fighting. At times, the ICRC had no further capacity to provide such escorts. ICRC water and habitat staff sometimes spent considerable time on the phone notifying movements of essential services personnel.<sup>63</sup>

Repeated requests for services such as liaising with parties to the conflict and escorting personnel are a sign that facilitating safer access is proving effective. However, it may also be a sign of ongoing needs or of a deterioration in the conflict situation, and hence of a need for additional resources to meet the demands.

It is important to provide for such expectations when planning operations and to manage them carefully when they arise, while ensuring that the resources required for priority activities are available.

To respond effectively, both the Movement and others must strive to better understand how essential service providers are structured, their operational models, the way they work and the risks they take, and prioritize support to them, in line with the findings and recommendations set out in the [Executive summary](#).

# Endnotes

- 1 M. Zeitoun and M. Talhami, “The impact of attacks on urban services II: Reverberating effects of damage to water and wastewater systems on infectious disease”, *International Review of the Red Cross*, No. 915, 2020, pp. 1293–1325; R. Tabor et al., “Disruption to water supply and waterborne communicable diseases in northeast Syria: a spatiotemporal analysis”, *Conflict and Health*, Vol. 17, Issue 4, 2023; A. Abbara et al., “Weaponizing water as an instrument of war in Syria: impact on diarrhoeal disease in Idlib and Aleppo governorates, 2011-2019”, *International Journal of Infectious Diseases*, Vol. 108, 2021, pp. 202–208; M.C. Tarnas et al., “Association between air raids and reported incidence of cholera in Yemen, 2016-19: an ecological modelling study”, *The Lancet Global Health*, Vol. 11, Issue 12, 2023, pp. e1955–e1963; Harvard Law School International Human Rights Clinic and PAX, “Operating under Fire: The Effects of Explosive Weapons on Health Care in the East of Ukraine”, May 2017, pp. 41–48.
- 2 ICRC, *Childhood in Rubble: The Humanitarian Consequences of Urban Warfare for Children*, ICRC, Geneva, 2023, pp. 28-29; United Nations Children’s Fund (UNICEF), *Water Under Fire Volume 3: Attacks on Water and Sanitation Services in Armed Conflict and the Impacts on Children*, UNICEF, New York, 2021; A.A. Asgedom et al., “Unimproved water and sanitation contributes to childhood diarrhoea during the war in Tigray, Ethiopia: a community based assessment”, *Scientific Reports*, Vol. 13, Issue 7800, 2023.
- 3 ICRC, *War in Cities: Preventing and Addressing the Humanitarian Consequences for Civilians*, ICRC, Geneva, 2023, pp. 69–70; M. Zeitoun and M. Talhami, “The impact of explosive weapons on urban services: Direct and reverberating effects across space and time”, *International Review of the Red Cross*, Vol. 98, No. 901, 2016, pp. 53–70; O. Shumilova et al., “Impact of the Russia-Ukraine armed conflict on water resources and water infrastructure”, *Nature Sustainability*, Vol. 6, 2023, pp. 578–586; ICRC, *Urban Services During Protracted Armed Conflict: A Call for a Better Approach to Assisting Affected People*, ICRC, Geneva, 2015.
- 4 ICRC, *Urban Services During Protracted Armed Conflict: A Call for a Better Approach to Assisting Affected People*, ICRC, Geneva, 2015, p. 18.
- 5 This is a non-exhaustive list, to which education is often added. See ICRC, *Urban Services During Protracted Armed Conflict: A Call for a Better Approach to Assisting Affected People*, ICRC, Geneva, 2015, pp. 18–19.
- 6 The protection of health services is addressed in other Movement documents. See, for example, the ICRC’s Health Care in Danger initiative: <https://healthcareindanger.org/>; ICRC Advisory Service on IHL, *Respecting and Protecting Health Care in Armed Conflicts and in Situations Not Covered by International Humanitarian Law*, ICRC, Geneva 2021.
- 7 All information about essential service provision in Gaza was collected prior to the escalation of violence in October 2023 and relates to that period.
- 8 This study has benefitted from decades of effort and experience. See, for example, ICRC, *Childhood in Rubble: The Humanitarian Consequences of Urban Warfare for Children*, ICRC, Geneva, 2023; ICRC, *Explosive Weapons With Wide Area Effects: A Deadly Choice in Populated Areas*, ICRC, Geneva, 2022; ICRC, World Bank and UNICEF, *Joining Forces to Combat Protracted Crises: Humanitarian and Development Support for Water and Sanitation Providers in the Middle East and North Africa*, 2021; ICRC, *Bled Dry: How War in the Middle East Is Bringing the Region’s Water Supplies to the Breaking Point*, ICRC, Geneva, 2015.
- 9 An ICRC colleague provided interpretation for the consultant’s interview with Voda Donbassa.
- 10 See Resolutions of the Council of Delegates of the International Red Cross and Red Crescent Movement, “War in cities”, CD22/R6, Geneva, June 2022 and “Strengthening the resilience of urban communities: Our way forward”, CD/22R11, Geneva, June 2022.
- 11 For further details on the political declaration made at the Dublin Conference in 2022, see: Ireland Department of Foreign Affairs, “Protecting Civilians in Urban Warfare”: <https://www.gov.ie/en/publication/585c8-protecting-civilians-in-urban-warfare/>.
- 12 See ICRC Expert Meeting, *Preventing and Mitigating the Indirect Effects on Essential Services from the Use of Explosive Weapons in Populated Areas*, 3, 5 and 9 October 2023: <https://www.icrc.org/en/document/addressing-indirect-effects-explosive-weapons>.
- 13 See ICRC, *Urban Services During Protracted Armed Conflict: A Call for a Better Approach to Assisting Affected People*, ICRC, Geneva, 2015, Annex D. Other useful sources setting out applicable law include ICRC, *Starvation, Hunger and Famine in Armed Conflict – An Overview of Relevant Provisions of International Humanitarian Law*, ICRC, Geneva, 2022; E. Giorgou and A. Zeith, “When the lights go out: the protection of energy infrastructure in armed conflict”, in ICRC, *Humanitarian Law & Policy Blog*, 20 April 2023.
- 14 Protocol I Additional to the Geneva Conventions (AP I), Arts 48, 51, 52 and 57; ICRC Study on Customary International Humanitarian Law (Study on Customary IHL), Rules 1, 5–7, 9–12, 14–19, 21: <https://ihl-databases.icrc.org/en/customary-ihl>.
- 15 AP I, Art. 51(5)(b); Study on Customary IHL, Rule 14: <https://ihl-databases.icrc.org/en/customary-ihl>.
- 16 See ICRC, *Explosive Weapons With Wide Area Effects: A Deadly Choice in Populated Areas*, ICRC, Geneva, 2022, pp. 85, 96 ff.
- 17 ICRC, *Explosive Weapons With Wide Area Effects: A Deadly Choice in Populated Areas*, ICRC, Geneva, 2022.



- 18 AP I, Arts 59–60; Study on Customary IHL, Rules 22, 36–37: <https://ihl-databases.icrc.org/en/customary-ihl>.
- 19 Geneva Convention IV (GC IV), Arts 18–20, 55–56; AP I, Arts 12–13, 15, 21, 55–56; Protocol II Additional to the Geneva Conventions (AP II), Arts 9, 11, 15; Study on Customary IHL, Rules 25, 28–30, 42, 44: <https://ihl-databases.icrc.org/en/customary-ihl>. A special sign (three orange circles in a line) also protects works and installations containing dangerous forces. See AP I, Annex I: Regulations concerning identification, as amended on 30 November 1993, Art. 17. See also ICRC, Protecting Health Care – Guidance for the Armed Forces, Annex A – Legal Framework, ICRC, Geneva, 2020, Annex 1; A. Zeith and E. Giorgou, “Dangerous forces: the protection of nuclear power plants in armed conflict”, in ICRC, Humanitarian Law & Policy Blog, 18 October 2022; ICRC, Guidelines on the Protection of the Natural Environment in Armed Conflict, ICRC, Geneva, 2020.
- 20 GC IV, Art. 55; AP I, Art. 54; AP II, Art. 14; Study on Customary IHL, Rule 53 and also Rule 131 regarding satisfactory conditions in displacement: <https://ihl-databases.icrc.org/en/customary-ihl>. See also ICRC, Starvation, Hunger and Famine in Armed Conflict – An Overview of Relevant Provisions of International Humanitarian Law, ICRC, Geneva, 2022; UN Security Council Resolution 2417 (2018).
- 21 AP I, Art. 54; AP II, Art. 14; Study on Customary IHL, Rule 54: <https://ihl-databases.icrc.org/en/customary-ihl>.
- 22 E. Giorgou and A. Zeith, “When the lights go out: the protection of energy infrastructure in armed conflict”, in ICRC, Humanitarian Law & Policy Blog, 20 April 2023.
- 23 AP I, Art. 54(3)(b); Study on Customary IHL, Rule 54: <https://ihl-databases.icrc.org/en/customary-ihl>; Y. Sandoz, C. Swinarski and B. Zimmermann (eds), Commentary on the Additional Protocols, ICRC, Geneva, 1987, paras 2108–2112 and 4807. Furthermore, even if such an object is used for the sustenance of military forces, it retains special protection unless it is used exclusively for military forces, a very rare occurrence: see AP I Art. 54(3)(a) and Commentary on the Additional Protocols, paras 2108–2112 and 4806.
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- 25 International Covenant on Economic, Social and Cultural Rights, Arts 11–12. See also Convention on the Rights of the Child, Art. 24; Convention on the Rights of Persons with Disabilities, Art. 28; Convention on the Elimination of all Forms of Discrimination against Women, Art. 14.
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- 27 Unless and for such time as they take a direct part in hostilities. See Study on Customary IHL, Rule 6: <https://ihl-databases.icrc.org/en/customary-ihl>.
- 28 “Protective” use means using the emblems as a visible sign in armed conflict for the protection given to the medical services of the armed forces and to certain humanitarian organizations. “Indicative” use refers to National Red Cross and Red Crescent Societies using the emblems to identify themselves as part of the Movement. See ICRC, “The Emblems”, 29 October 2010: <https://www.icrc.org/en/doc/war-and-law/emblem/overview-emblem.htm#:~:text=The%20protective%20and%20the%20indicative,armed%20forces%20under%20international%20law>.
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- 30 AP I, Annex I: Regulations concerning identification, as amended on 30 November 1993, Chapter VI “Civil Defence”. See ICRC Fact Sheet: Civil Defence in International Humanitarian Law, Geneva, 2021.
- 31 AP I, Art. 61.
- 32 UN Security Council Resolution 2573 (2021), para. 9.
- 33 See also M. Talhami and M. Zeitoun, “Armed Conflicts Spread Contaminated Water and Disease: Here’s How to Better Protect Civilians”, Just Security, 17 March 2023.
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- 49 See also ICRC in Israel & OT @ICRC\_ilot on X, 14 October 2020 1.27AM: [https://twitter.com/ICRC\\_ilot/status/1315992614924169217](https://twitter.com/ICRC_ilot/status/1315992614924169217).
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- 53 ICRC, “Ukraine: ICRC welcomes agreement on safety zones”, 21 July 2017, <https://www.icrc.org/en/document/ukraine-icrc-welcomes-agreement-safety-zones>; UNICEF, “Ukraine Humanitarian Situation Report No. 61”, July 2017, p. 2.
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- 58 Virunga Energies, “Communiqué No. 15. Incident sur la 2ième ligne moyenne tension”, 6 November 2023: <https://energies.virunga.org/communiqués-de-presse/>.
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