Destruction of critical civilian infrastructure and the impact on essential urban services

Michael Talhami, Urban Services Adviser, Water & Habitat Unit, ICRC
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General Messages

• **Essential civilian services** are not immune to the impact of armed conflict (water, wastewater and energy).

• **Critical infrastructure** and the interdependencies between services must be carefully understood if a prolonged disruption of an essential service(s) is to be avoided.

• More can be done to **protect civilian objects** and **mitigate the humanitarian consequences** (i.e. public health, displacement and livelihoods) on the civilian population.

• It is necessary to address the **root causes** and not just the consequences.
Ensuring Access to Essential Civilian Services during times of Armed Conflict

Understanding the scale of the interventions and the individual components that make up service provision...

All essential services depend on ...

... people

... hardware

... consumables

Provision of services is more than just infrastructure!
Interdependencies between services

• Any single point of failure is a potential vulnerability in terms of service disruption.
Is all infrastructure critical when seeking to avoid or mitigate a prolonged disruption in service delivery?

What are the defining characteristics?
Three levels of essential infrastructure

**Upstream infrastructure:**
- Power plant
- Desalination plant
- Wastewater treatment plant

**Midstream infrastructure:**
- Water reservoir / tank
- Water supply pumping stations
- Wastewater lifting stations

**Downstream infrastructure:**
- Distribution networks

Population Served

<table>
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<th>High</th>
<th>Low</th>
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A function of scale in terms of service area and population served
Further Complexity: Physical Positioning

ABOVE GROUND LEVEL

Water Distribution Network

Borehole and Pumping Station

Elevated Transmission Line

GROUND LEVEL
Essential Civilian Services: Disruption Time

The initial effect of the use of explosive weapons in populated areas can trigger humanitarian consequences that affect a much larger part of the population than those in the immediate vicinity of the impact zone.
Reverberating Effects

The impact on and within essential civilian services as well as the resulting humanitarian consequences are often **reasonably foreseeable** (in space and time).

- People are affected by armed conflict in populated areas, with reverberating effects that go far beyond the visible signs of destruction.
- Reverberating effects are immediate (short-term), but can also take on a cumulative nature over time (long-term).
HUMANITARIAN CONSEQUENCES
Exponential impact on the civilian population

Humanitarian Consequences: Public Health (e.g. waterborne disease)
Humanitarian Consequences: Damages to residential buildings

- Other than a lack of access to essential services, uninhabitable structures can force displacement and exacerbates stress on essential services and natural resources elsewhere.

Scale of destruction: Household Level

Scale of destruction: Neighborhood Level
Humanitarian Consequences: Displacement

- Scale of displacement from urban areas

Displacement – Refugees in Host Communities

Displacement – Refugees in Camps
Concluding Messages

Specific characteristics and vulnerabilities of essential civilian infrastructure and services in populated areas deserves particular attention and care during conduct of hostilities.

• Provision of service(s) is more than just infrastructure (people, hardware and consumables).

• Critical infrastructure and the interdependencies between services must be carefully understood if a prolonged disruption of an essential service(s) is to be avoided.

• The initial effect of the use of explosive weapons in populated areas can trigger humanitarian consequences that affect a much larger part of the population than those in the immediate vicinity of the impact zone (i.e. reverberating effects).

• The impact on and within essential civilian services as well as the resulting humanitarian consequences are often reasonably foreseeable (in space and time).
For more information...

You can download the ICRC Urban Services Report at:

You can download the ICRC Bled Dry Report at:

You can download the ICRC Expert Meeting Report at:

You can download the International Review of the Red Cross article at: