

The Implications of the Reverberating Effects of Explosive Weapons Use in Populated Areas for Implementing the Sustainable Development Goals

SDG Goal 6: Ensure availability and sustainable management of water and sanitation for all

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This factsheet is an extract from a longer UNIDIR report on [Reverberating Effects of Explosive Weapons Use](#).

Targets:

6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all (...)

The effects of explosive weapons undermine progress towards achieving sustainable water management. Damage to water supply systems can prevent water being piped into homes, and damage to water treatment plants can reduce the quality of water supplied. As a consequence, people either have to buy, or have to be given, bottled drinking water. People are forced to adapt their hygiene practices to the limited water supply. Damage to sanitation systems risks polluting areas or water supplies with human waste. Affected populations are at increased risk of disease. The poor and vulnerable are more severely affected by the increased cost of obtaining safe water and are at higher risk of disease.

The regular use of explosive weapons usually prevents any investment in water supply systems. Ageing water supply systems are more prone to break down and less resilient to damage inflicted by explosive weapons. Displacement and the associated population movements have pushed ageing water systems in the Middle East to the limit.

Water supply is achieved through a functioning system of water collection, processing and distribution. Sanitation requires preventing human contact with hazardous waste by ensuring proper disposal of sewage and wastewater. Explosive weapons interrupt the water supply chain at important points thereby reducing the quantity and quality of available water. When explosive weapons destroy the waste disposal system, there may be devastating consequences on human health. Functioning water supply and sanitation systems need adequate and well managed water resources, functioning processing plants to ensure water quality, and efficient water distribution systems to deliver good quality water and avoid loss through leakage. Water supply and sanitation systems require good management and maintenance. In many countries, water supply is organized as a public service. In others, private companies provide the service under government regulation. If piped water supply is interrupted, bottled water has to be trucked in, either by commercial suppliers or humanitarian organizations.¹

The ICRC has recently documented the connection between water, conflict and explosive weapons.² The Strategic Foresight Group published a detailed report on water and violence in the Middle East in 2014.³

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Damage from explosive weapons to water collection, processing and distribution systems

The use of high-intensity, explosive weaponry has repeatedly damaged water and sanitation systems in several countries of the Middle East in recent years. There are no reports that other weapon types have ever caused a comparable level of damage. Damage to water infrastructure has occurred at water pumping stations, water treatment facilities, and at points in the pipe distribution system. Electricity blackouts caused by explosive weapons-related damage can also interrupt water supply by bringing the pumping system to a halt. Explosive weapons use may also cause destruction that leads to water resources becoming contaminated (see Goal 11). During the Second World War, British bombers targeted German dams,⁴ but there are no recent reports of dam infrastructure being bombed. Instead, armies have sought to control the area around dams to control water supplies downstream.⁵

Damage to **water pumping stations and wastewater treatment facilities** can often affect large populations. For example, damage to the water pumping station in Deir ez Zor (in November 2015) reportedly deprived 100,000 people of water,⁶ whereas the combined impact of the damage to wastewater treatment plants around Aleppo and Damascus, in the Syrian Arab Republic, is estimated to have affected 3.4 million people in 2015, according to ICRC figures.⁷

The impact of damage to **pipe distribution systems** depends on where the damage occurred in the distribution network. Damage to a central distribution line can affect a large area. The damage to the water pipelines from Orontes to Hama and Homs, Syrian Arab Republic, in 2014 cut off water to both cities for weeks, affecting around 1.5 million people.⁸ According to Oxfam, the first seven weeks of airstrikes in Yemen damaged 40 per cent of the clean water supply system in Jajjah and Al Hodeidah governorates, and thereby deprived an estimated 3 million people of clean water.⁹ Damage to branch-line pipes can also affect very large numbers of people. In Aleppo, the 2014 bombing of the water pipeline affected three of the four major pipes¹⁰ and thereby affected some 2 million of the city's 2.3 million inhabitants.¹¹ In Baghdad in 2003, around 40 per cent of the water network was destroyed through bombing and half of the city, some 1.9 million people, lost access to a running water supply.¹²

Interrupted water supplies cause an increase in the cost of living owing to the price of bottled water, loss of economic productivity through the additional time spent securing water, and forced adaptation of hygiene practices. This puts vulnerable people at greater risk of infectious diseases. In Aleppo, kidney infections, typhoid and salmonella were reported.¹³ Untreated sewage may contaminate groundwater.¹⁴ Additional well digging to tap into new supplies may lower groundwater levels.

The reverberating effects of explosive weapons on water supply systems

In the Middle East, water and sanitation systems have for years been under strain from lack of rain, growing population, over-extraction and mismanagement.¹⁵ The investment required to upgrade water systems fails to materialize where investors fear that systems may be destroyed by explosive force.¹⁶ In 2005, the Government of the United States earmarked funds for investment in Iraq's water systems, but security concerns halted the process.¹⁷ A decade later, the United Nations Office for Coordination of Humanitarian Affairs reported that more than 7 million people still depend on bottled water trucked in to populations as water supply systems remain unrepaired.¹⁸

Poor maintenance leads to water loss through leakages. In Damascus, Syrian Arab Republic, the water supply system loses up to 70 per cent of water through leakage.¹⁹ Moreover, large-scale population movements across the Middle East of people seeking safety from the violence have put the ageing water systems of host communities under extreme strain.²⁰

In summary, destruction of water supply systems can contribute to higher indirect mortality because the lack of clean water can lead to higher incidents of serious disease. Areas affected by explosive weapons use in populated areas remain marginalized from infrastructure investment. The capital intensive investment required to replace and repair adds greatly to the reconstruction bill.

Endnotes

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- ² ICRC, Bled Dry – How War in the Middle East is Bringing the Region to the Brink of a Water Catastrophe. An ICRC Report, March 2015, p. 5.
- ³ Strategic Foresight Group, Water and Violence: Crisis of Survival in the Middle East, 2014.
- ⁴ Dan Snow, “The Dambusters Raid: How effective Was It?”, *BBC*, 15 May 2013.
- ⁵ Alex Milner, “Mosul Dam: Why the Battle for Water Matters in Iraq”, *BBC*, 18 August 2014; Amotz Asa-El “Iraq, Syria Forced to Turn to Sea for Drinking Water”, *Market Watch*, 9 July 2014.
- ⁶ Christiaan Triebert, “Syria’s Bombed Water Infrastructure: A OSINT Inquiry”, *Bellingcat*, 11 December 2015; “Syrian Forces Hit Islamic State in Raqqa, Destroy Water Plant”, *Reuters*, 18 August 2014.
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- ⁹ Oxfam International, “Two-thirds of People in Conflict-Hit Yemen Without Clean water”, press release, 26 May 2015.
- ¹⁰ Suhaib Anjarini, “Syria: Drinking Water and War Profiteers in Aleppo”, *Al Akhbar English*, 15 June 2014.
- ¹¹ Strategic Foresight Group, Water and Violence: Crisis of Survival in the Middle East, 2014, p. 9.
- ¹² Strategic Foresight Group, Water and Violence: Crisis of Survival in the Middle East, 2014, p. 9.
- ¹³ Naline Malla and John Davison “Water a ‘Weapon of War’ in Syria’s Divided Aleppo”, *Reuters*, 15 October, 2015.
- ¹⁴ ICRC, Bled Dry – How War in the Middle East is Bringing the Region to the Brink of a Water Catastrophe. An ICRC Report, March 2015, p. 15.
- ¹⁵ ICRC, Bled Dry – How War in the Middle East is Bringing the Region to the Brink of a Water Catastrophe. An ICRC Report, March 2015, p. 5.
- ¹⁶ “Water: Structural Demand Growth Creates Investing Opportunities”, Fidelity International, 3 April 2016.
- ¹⁷ “Water Supply Held Back by Lack of Investment and Insurgency”, *Irin*, 7 July 2005.
- ¹⁸ Iraq. Humanitarian Response Plan (HRP), United Nations Office for the Coordination of Humanitarian Affairs, June 2015, p. 41.
- ¹⁹ ICRC, Bled Dry – How War in the Middle East is Bringing the Region to the Brink of a Water Catastrophe. An ICRC Report, March 2015, p. 5.
- ²⁰ ICRC, Bled Dry – How War in the Middle East is Bringing the Region to the Brink of a Water Catastrophe. An ICRC Report, March 2015, p. 4.