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Water as Weapon: IS on the Euphrates and Tigris

The Systematic Instrumentalisation of Water Entails Conflicting IS Objectives

Tobias von Lossow

In the course of its territorial expansion, Islamic State (IS, ISIL or ISIS) has brought under its control strategically significant water resources and large parts of the water infrastructure in Syria and Iraq. It has seized several important dams on the Euphrates and Tigris as part of its expansion strategy and, particularly since 2014, has used water as a weapon in a number of ways. This practice has disastrous consequences, and it is virtually impossible for external actors to prevent it. And yet, even IS's room for manoeuvre is limited since a functioning water and electricity supply in the areas that it has captured is of existential importance for the militia. However, the anti-IS coalition's intensified military interventions since the Paris attacks put the militia under severe pressure. Should IS be forced into extensive withdrawals, then whole regions will be at risk of dramatic and widespread flooding.

Ever since IS first gained control over important water resources in Syria and Iraq, it has been using water to further its military and political aims. Capturing large dams and reservoirs on the Euphrates and Tigris is a crucial part of IS's expansion strategy, along with seizing oil fields, because it enables IS to control the region's most important water resources (see map, p. 3, and overview, p. 5). The heavy fighting it has engaged in over individual dams, and the heavy casualties it has incurred, demonstrate the significance of these facilities for IS.

Almost the entire Syrian part of the Euphrates basin is in the IS sphere of influence. Syrian rebels, joining IS in the course of the conflict, conquered all of the country's major dams from late 2012 on: the Tishrin Dam, Euphrates Dam and Baath Dam. From 2014 on, IS expanded its control over the Iraqi areas of the upper reaches of the Euphrates and Tigris with its lightning-quick advances in Iraq. Within about a year, IS had occupied all strategically significant dams there, with the exception of the Haditha Dam. It has been unable to keep control of all of these facilities. However, several major dams are still in the militia's hands, including those at Falluja and Ramadi.

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IS and water as weapon

For tactical and strategic reasons, water frequently plays a significant role in violent conflicts and wars. Sensitive components of the water infrastructure, such as treatment plants, piping systems, pumping stations or reservoirs can become targets for military violence and be destroyed. However, the use of water as a weapon – in the sense of military tool – is much more complex and primarily serves to put pressure on the population and the opponents' political leadership. Drastic interventions in water and electricity supplies are meant to break resistance and gain the support of the population by force, or else drive it out. The aim can also be to destroy agriculture and food production, and render whole areas uninhabitable. The strategic dimension of water in conflict situations is most evident with rivers because control over the resources in the upper reaches makes it possible to gain influence over, or inflict targeted damage on, larger and more distant areas, without necessarily directly attacking, occupying or controlling them militarily.

There are essentially three ways of using water resources as a weapon: by making sure that *too little* water is available, or *too much*, or water of *insufficient quality*. IS has repeatedly used all three variants and has had an impact at the local, regional and national level.

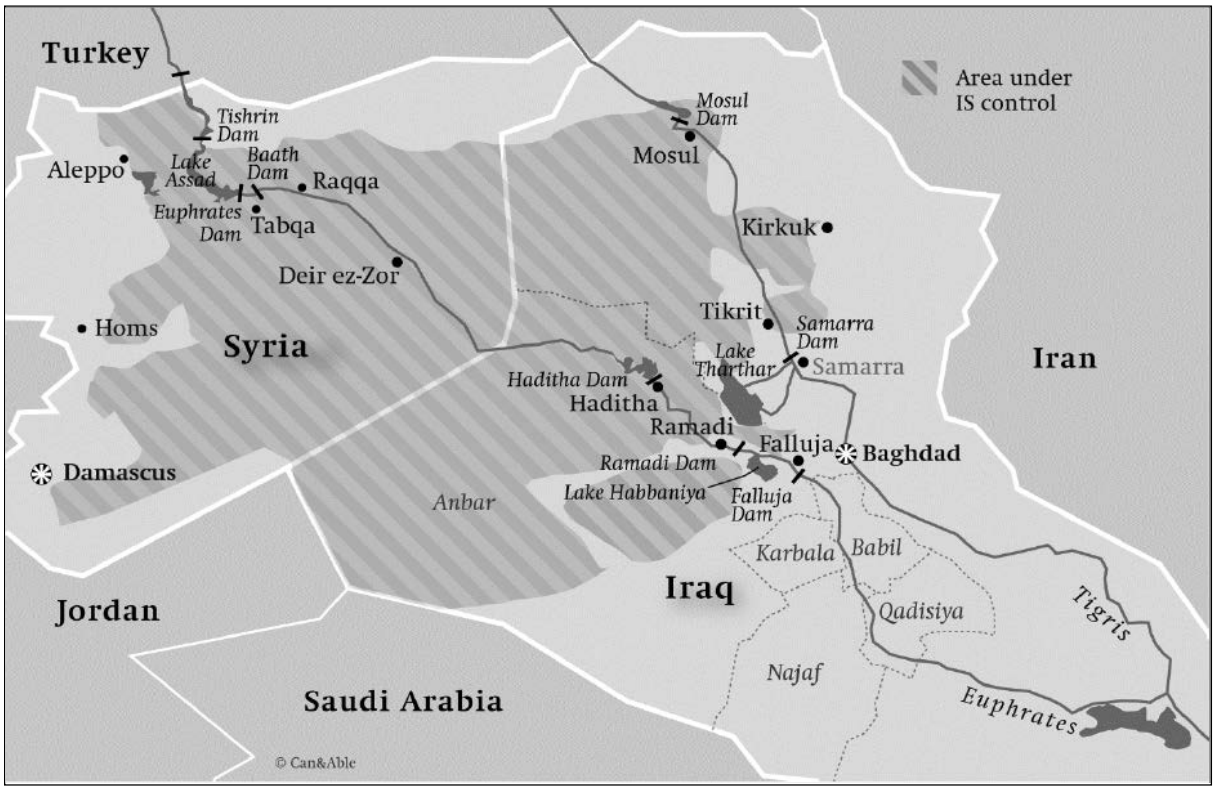
Too little water: Targeted water and electricity shortages can be created in certain areas, or existing supply problems exacerbated, if pipes and cables are cut, or if water supplies are kept back, withdrawn or diverted at a dam. Whoever has control over a dam can cause downright droughts over large swathes of land downstream. In Syria as well as Iraq, IS has time and again cut off water and electricity supplies to individual districts, towns or whole provinces. For instance, Qaraqosh, a town in northern Iraq with a predominantly Christian population, was completely isolated in June 2014, with an IS embargo additionally interrupting trade connections to the outside world. After seizing the Ramadi Dam in May 2015, IS intermittently reduced the outflow of the Euphrates by up to 50 percent by diverting water into Lake Habbaniya. It thus gained control over water supplies for the governorates of Babil, Karbala, Najaf and Qadisiya, and drastically limited the supply to Anbar Province.

After capturing the large dams at Falluja, Mosul, Samarra and Ramadi, IS not only interrupted local water supplies but also deprived distant Shiite areas in the lower reaches of the Euphrates and Tigris of water by damming and diverting it. In order to achieve this repeatedly stated goal of IS, water from the Euphrates was additionally diverted upstream in Syria. This meant, at the same time, that IS also struck at one of Iraq's most important agricultural centre.

Too much water: Whoever has control over water can also flood areas – either upstream of a dam, by damming and diverting the water, or downstream, by releasing large volumes of water at once. In April 2014, after IS had the Falluja Dam floodgates closed, the retained water flooded large areas upstream and submerged Iraqi government facilities on the banks. The water was diverted over an irrigation channel into a side valley, inundated extensive areas up to 100 km away, and put the town of Abu Ghraib under up to 4 metres of water. Between Falluja and Abu Ghraib over 10,000 houses and around 200 square kilometres of fertile farmland were destroyed; almost the entire harvest was wiped out; and livestock was killed. Up to 60,000 locals who had lost their livelihood in the flood were displaced.

Insufficient quality: Finally, water can be used as a weapon by soiling or poisoning water resources. This practice can relatively easily be "exported" to other regions since an attack of this kind causes great damage with comparatively simple means. In December 2014, IS deliberately contaminated drinking water with crude oil in the Balad district of Salahaddin Governorate, south of Tikrit. There were also reports of poisoned water supplies from Aleppo, Deir ez-Zor, Raqqa and Baghdad. In one of its video mes-

Map
IS and the Euphrates and Tigris Dams



sages, IS called on its followers to poison the drinking water of its enemies elsewhere as well. In July 2015, IS members acted on this appeal even on European soil. An attack on the water supply in Pristina, which was only prevented just before execution, was intended to contaminate the largest water reservoir uphill of the city.

Tactical uses for the military

At the same time, water as an instrument of war has direct tactical uses for the military. Water can be instrumentalised both defensively and, as part of plans to expand or attack, offensively. For example, in autumn 1914, during the First World War, Belgium opened locks on rivers, canals and – at high tide – even towards the sea near Nieuwpoort so as to flood the contested Yser plain. This succeeded in driving back the German units advancing to the Atlantic coast. In the Second Sino-Japanese War, by contrast, a 1938 attempt by the Chinese leadership failed dramatically to drive the steadily advancing Japanese army into the waves of the Yellow River by breaching a dam in Henan Province. Whilst the Japanese soldiers largely managed to escape, the flood wave forged its way unimpeded to the sea, causing up to 800,000 civilian casualties.

As these examples show, areas are often flooded defensively, to stop advancing enemy forces. Such an act can also be used for offensively, to attack enemy positions. Initially IS retained water behind the Falluja Dam, thus driving off the Iraqi troops on the reservoir banks upstream of the dam. By releasing the dammed water two days later, IS prevented a rapid advance onto its own positions by follow-on units of the Iraqi army. In Diyala Governorate, too, the militia repeatedly flooded villages to foil Iraqi troop advances.

Partially or totally depriving contested areas of water can reduce the water supplies of enemy troops. This simultaneously increases the range of movement of one's

own fighters. It also suspends the specific function of rivers as natural borders and cancels the strategic importance of bridges: a few days after the Ramadi Dam floodgates had been closed, IS units on the northern side of the river were able to cross downstream of the dam at low water levels and attack the Iraqi troops controlling the southern bank.

A powerful threat

Regardless of whether, how and to what extent water is actually deployed as a weapon, the very question of who controls this vital resource has a strong psychological impact. This is especially true for arid regions such as the Middle East, which has just suffered its greatest drought in 60 years. Moreover, extensive parts of the dilapidated Syrian and Iraqi water infrastructure have largely collapsed following delayed modernisation measures, violent conflicts and targeted destruction – about half of the Syrian infrastructure since the outbreak of the civil war. At the same time, the majority of the population depends on agriculture and relies on irrigation for its fields, especially in the summer months.

Critical water resources being in the hands of a radical and brutal militia that seems capable of anything is a frightening idea not just against this particular backdrop. Moreover, the strategic reach of water as a weapon makes it possible to keep threat levels high in the long term without actually deploying the weapon – a logic similar to that of the atom bomb. As long as IS is in command of important dams on the Euphrates and Tigris, and thus controls water distribution over large swathes of the country, it has the potential to inflict great damage. And whenever water is actually deployed as a weapon, the damage caused is long-lasting because destroyed pipes, ruined harvests or contaminated water resources will continue to have an impact even if IS is forced back militarily. Additionally, the consequences of such a deployment are virtually impossible to calculate since the damage caused by extensive flooding cannot be limited either in its intensity or in its geographical spread.

It was IS's temporary capture of the Mosul Dam in August 2014, in particular, that set off alarm bells around the world. After all, around 45 percent of the Iraqi electricity supply and the bulk of the water supply to the Kurdish regions depend on this dam, the largest in the country. The concern was that IS might use the country's largest reservoir to let Shiite southeastern Iraq, a key agricultural region, dry out rapidly. The feared worst-case scenario was that IS might blow up the dam – a highly sensitive and fragile construction in any case – or let it burst. A flood wave about 20 metres high would then to all intents and purposes have wiped out the city of Mosul, before travelling on at a speed of 3.5 metres per second and hitting Baghdad, 200 kilometres downstream, with a wave height of five metres. Total casualties in this scenario were estimated at 500,000. However, a few days later, IS lost control over the Mosul Dam to Iraqi security forces and Kurdish Peshmerga fighters, with US close air support.

In the meantime, an existential threat had arisen in connection with the Haditha Dam. Nearly all of Baghdad's water supply and around three-quarters of Iraq's electricity derive from these two dams. Supported by US air attacks, Iraqi forces did manage to hold the Haditha Dam, the country's second largest, but IS continues its push to capture it. It has besieged the dam for 18 months and has repeatedly subjected it to heavy offensives and series of suicide attacks.

Limited scope for intervention

The United Nations (UN) has been observing with concern the increasing use of water as a weapon of war in conflicts around the world, including Syria and Iraq. It has repeatedly and severely condemned IS's practice, referring to the human right to water.

However, the international community's ability to intercede is limited, and largely

Overview
Important dams on the Euphrates and Tigris, starting upstream (author's own table)

Name/location	Primary use/significance	ISIS- or IS-controlled	Currently controlled by
Dams in Syria			
Tishrin Dam near Manbij (Euphrates)	▸ hydropower: max. capacity 630 megawatt (MW)	11/2012–12/2015	Kurds/Syrian opposition
Euphrates Dam near Tabqa / Tabqa Dam with *Lake Assad* (Euphrates)	▸ hydropower: max. capacity 824 MW; irrigation ▸ reservoir: Lake Assad, volume is 11.7 km³ at about 2/3 full ▸ supply: largest dam in Syria; supplies approx. 5 mio. people with water, and Aleppo and other towns with electricity	since 2/2013	IS
Baath Dam at Raqqa (Euphrates)	▸ hydropower: max. capacity 81 MW ▸ supply: 60% of Syria's water supply	since 2/2013	IS
Dams on the Iraqi upper reaches			
Dam at Mosul (formerly *Saddam Dam*) (Tigris)	▸ hydropower: max. capacity 1050 MW; offsets fluctuations in water levels; flood protection ▸ reservoir: volume is 12 km³ at about 2/3 full ▸ supply: largest dam in Iraq; 45% of Iraqi electricity supply	7–16/8/2014	Peshmerga/ Kurds
Dam at Haditha (Euphrates)	▸ hydropower: max. capacity 660 MW ▸ supply: 30% of Iraqi electricity supply; together with Mosul Dam, provides almost all of Baghdad's water and electricity	–	Iraqi troops
Dam at Samarra, Tharthar Dam (Tigris)	▸ hydropower: max. capacity 84 MW; irrigation; flood protection ▸ supply: controls Baghdad's water supply, canal to Lake Tharthar	4/2014–autumn 2015	Iraqi troops
Dam at Ramadi (Euphrates)	▸ irrigation; flood protection ▸ canal to Lake Habbaniya; connected to Samarra Dam by Tharthar Canal	since 5/2015	IS
Dam at Falluja, *Nuaimiya-Dam* (Euphrates)	▸ irrigation; offsets fluctuations in water levels	since 4/2014	IS

ineffective except for military interventions. It is basically reduced to verifying information and accusations. Indeed, the use of water as a weapon and interference with a state's vital water supply do represent a clear violation of international law, which is why the UN Security Council (SC) might be able to concern itself with water for the first time in its history. However, the measures that the SC usually applies fail with IS: being ostracised by the community of states, appeals or sanctions have no traction with IS. In any case, the highest level of escalation, namely a military intervention, has already been reached, albeit outside the UN framework.

This military intervention by the US-led anti-IS coalition has been effective on the water issue when nothing else has, preventing IS from gaining control over all impor-

tant dams on the Iraqi upper reaches of the Euphrates and Tigris. In particular, the air strikes carried out by the US have been aimed repeatedly – and, in certain phases on a daily basis – at supporting the Iraqi army or Kurdish units in defending dams, as was the case for instance with the Hadi-tha Dam in September 2014 and July 2015. Equally, when recapturing the Mosul Dam in August 2014, the Iraqi and Kurdish units received massive and decisive close air support from the US President Barack Obama justified this operation with the catastrophic consequences that a breach of the Mosul Dam would have. He thus accounted for the de-facto expansion of the original US mandate, which merely provided for protecting minorities. IS positions near the Ramadi Dam have also been bombed repeatedly since July 2015. Air strikes have been further intensified in autumn 2015 and anti-IS forces that retook the city of Ramadi in December are currently close to liberating the dam from IS.

The importance of water for IS

Even though the possibilities for exerting external influence on IS are limited, the militia's use of the water supply is nonetheless subject to a number of constraints. In the first instance, IS uses water resources and hydropower *to supply fellow fighters and the population of the areas it has conquered* – as well as its own base of operations. That is why, after capturing the Syrian dams, it kept them operating. At the Euphrates Dam in Tabqa, electricity production was even markedly increased at first so as to supply the population of neighbouring regions for several hours a day, including the town of Raqqa where IS has its command centre. Besides, large quantities of water are needed for extracting and processing crude oil, sales of which continue to provide the militia with its financial basis. Even though revenues dropped for some months, IS earns up to 40 million US dollars a month from oil.

Additionally, in areas which had previously been cut off from water and electricity supplies to a great extent, IS is able to *recruit new followers* – mostly because over the past decade those in power in Syria and Iraq have failed to construct a nationwide basic supply of water and electricity. IS thus fills a void in regions that had been deliberately undersupplied or largely left to their own devices. After capturing the city of Mosul in June 2014, IS initially cut off water and electricity supplies. When it resumed supplying after a few days, many of those who had fled returned for precisely that reason. Under these conditions, parts of the Sunni population in particular increasingly perceived the IS occupation as a liberation.

Ensuring a basic supply of water and electricity also serves IS's higher purpose in the region: *to establish a caliphate* that provides public services. Only if IS is capable of offering a water supply to the local population in a region that has been groaning under droughts, shortages and dilapidated piping systems for decades, might it be able to hold the territories it has conquered, secure and legitimise its power, and consolidate the proclaimed caliphate. To underpin this long-term aim structurally, the milita now uses experts to manage the captured water resources, and carries out occasional repairs to the water infrastructure.

Besides increasing support for IS among the population, providing water and electricity also has a more immediate merit: it is a *source of financial revenue*. After supplies had been halted, certain districts and villages were offered a resumption of water and electricity against payment. In Raqqa, for instance, business people have to pay water and electricity rates. In Deir ez-Zor and surroundings almost four percent of IS revenues are generated by electricity rates.

However, any lasting use of water resources creates a problem for IS. It might control dams and electricity production, but it does not have the capacities or expertise for professionally operating these complex facilities or for permanently managing the hydrological systems. For example, when operating a dam the amount of rainfall, the flow rate and the interaction of surface

waters and groundwater systems have to be taken into account. The rapid drop of water levels due to the increased electricity generation at the Euphrates Dam showed IS its limits. Within a few days, the level of Lake Assad dropped by six metres. As a result, several water pumping stations supplying Aleppo, among other places, were put out of use. Groundwater levels in the surrounding area dropped too, forcing IS to ration the additional electricity produced for Raqqa. At the Falluja and Ramadi Dams individual floodgates had to be opened time and again because the water intermittently threatened IS positions and areas it had already captured. Because IS lacks the necessary expertise, it has occasionally taken on the specialists already in the post, who in some cases continue to receive their usual salaries from the Syrian or Iraqi government.

Between terror and state-building

The use of water as a weapon in violent conflicts is nothing new. In the past, the region's scarce resources were repeatedly instrumentalised under Bashar al-Assad in Syria and Saddam Hussein in Iraq, who used water supplies to put pressure on specific regions or population groups and deliberately disadvantage them. For instance, in the 1990s Saddam Hussein had the marshes in the south of the country drained to punish locals there for an uprising against his regime.

Equally, in the current conflict in Syria, all parties are using water as a weapon. Aleppo, for example, has been cut off from water and electricity supplies several times: by various rebel groups, IS and the government, depending on which party happened to be attacking the city. Even the Iraqi government deploys water against IS, accepting dramatic consequences. When IS was retaining water at the Falluja Dam, the Iraqi government openened the gates of the Haditha Dam upstream to put increased pressure on IS in Falluja – thus contributing to the flooding there as well.

Nevertheless, IS has raised the strategic deployment of water as a weapon to new heights by making targeted, systematic, consistent and at the same time flexible use of it. Its approach at the Falluja Dam in April 2014 (see above, pp. 2 and 3) is an exemplary demonstration of IS's military use of water for defensive as well as offensive purposes, in a number of different ways within a matter of days, which exacerbated the region's existing water supply crisis and caused substantial damage.

Simultaneously – and in keeping with the image it has of itself – IS is just as interested in taking over state functions and thus in a sustainable use of resources. IS therefore has conflicting objectives, which make strikingly clear that the organisation views itself both as a jihadist terrorist organisation and as a state-like entity. On the one hand, it demonstrates short-term strength and power, and spreads fear and terror, by drying out or flooding swathes of land and depriving individual areas of their livelihood by disrupting water, electricity and food supplies. On the other hand, its massive interference in the water infrastructure and supply also hits potential supporters of IS in the civilian population – unlike blowing up World Heritage Sites. Above all, in the long run such interference reduces IS's credibility and legitimacy in its own ranks. As long as IS exists as a state-like entity with a territory that it controls, the feared worst-case scenario of a symbolic dam explosion is not a strategic option for IS. Such a manoeuvre would, after all, thwart the further development and consolidation of the caliphate. Accordingly, in addressing the water issue over the past few months, IS has increasingly backed state-building measures and has had pipes repaired, water tanks built and wells drilled – primarily in Syria. In other words, at the moment the region's water resources mostly serve to make plausible a transformation of the jihadi militia into a quasi-state.

However, the intensified interventions of the international anti-IS coalition since the Paris attacks put IS under great pressure.

Should IS be militarily decisively pushed back and existentially weakened, then the threat represented by the masses of water behind the dams would rise markedly, especially in Iraq. If IS loses large swathes of its territory, and thus also the populations there, then it runs the risk of failing to consolidate the caliphate. In keeping with its ideology, IS would at that point believe itself to be on the threshold of apocalypse, engaged in a final battle with its enemies. In such an event, the worst-case scenario of a Euphrates or Tigris dam being blown up, or all floodgates being opened, would apply, with consequences both dramatic and virtually impossible to calculate – the proverbial sinking of the regions concerned. If IS is driven back towards its Syrian heartland, there is a very real danger that it will cause widespread floods before the fiercely embattled dams fall to its enemies, as a last display of power. Ultimately, the risk of IS deploying water as a weapon in its most devastating form in Syria and Iraq grows if and when the militia is subjected to massive attacks and forced to withdraw from large areas.

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