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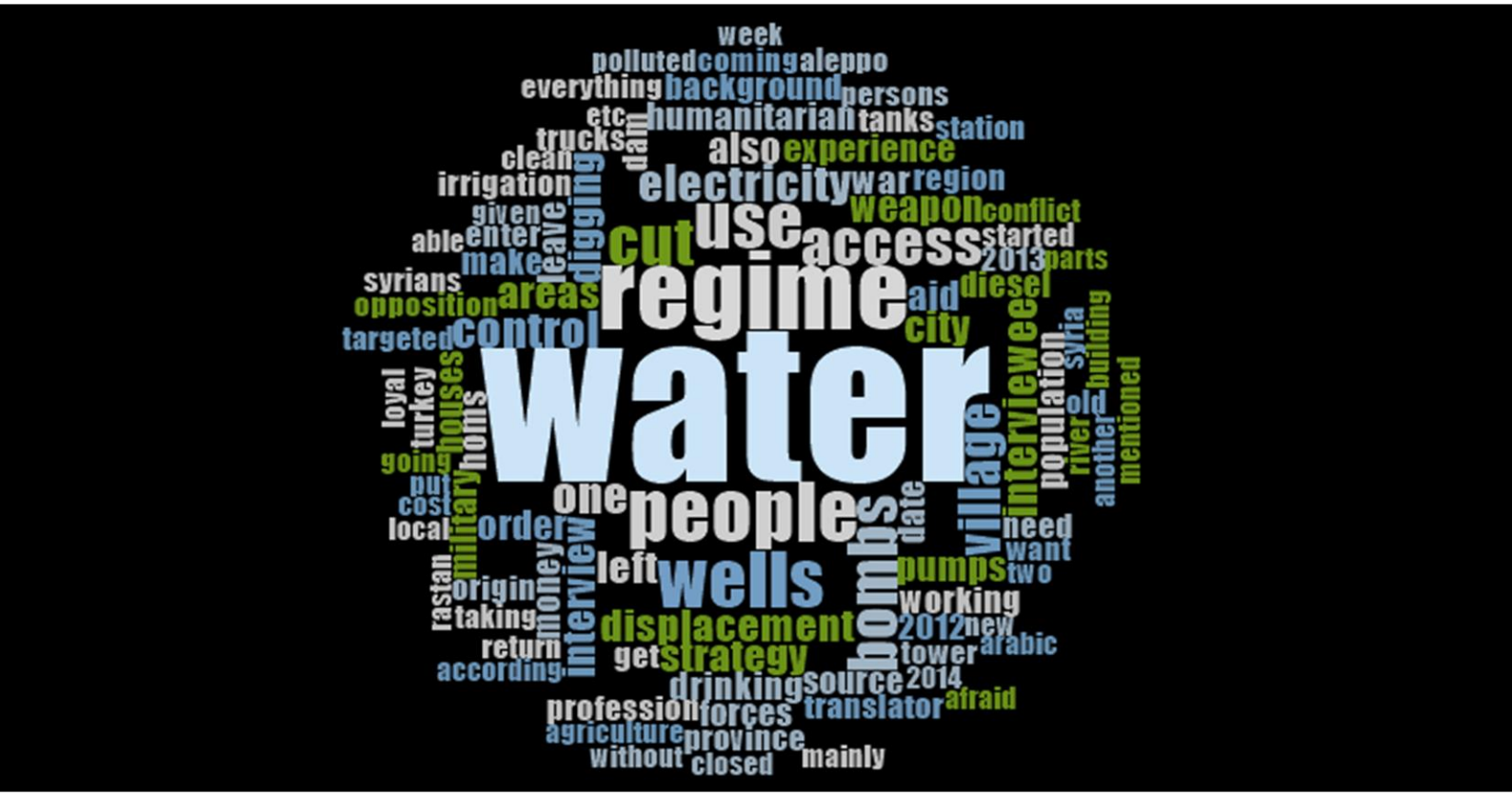
The Weaponization of Water in the Syrian Conflict

The Targeting of Civilians



DISSERTATION

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Abstract

While the use of water as a weapon is nothing new, its use in Iraq and Syria by the Islamic State has fed numerous unjustified fears and theories. Combining academic and non-academic articles, satellites imageries, as well as first-hand data from interviews, the present case-study analysis of Syria reveals that civilians were targeted by the regime's use of water as a weapon. Different ways to impede water access were identified, the control of irrigation water and the destruction of water towers among others. Preventing access to water appears to be a key component of the regime's siege strategy, as deprived from water the population is left with two alternatives: make allegiance to the regime or leave. The limitations of the humanitarian principle were revealed by the Syrian case. IHL and humanitarian organizations' failures imply that civilians had to find their own ways to access water.

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I would like to thank my parents and my sister, whose courage and strength of spirit have always been a source of inspiration to me. Finally, thank you to my friends Charlotte, Fanny and Sylvain, for accepting to read my thesis, providing feedback and increasing the number of readers of this dissertation at the same time.

A big thank to all the persons that made the fieldwork possible, with the whole Geo Expertise's team, translators, as well as all Syrian interviewees that agreed to engage with me on such an important topic. Each interviewee made a key contribution to this research. It is now my duty to make their voices heard. While this thesis is a first step, it will not be the last.

Acronyms/Abbreviations

HRL	Human Rights Law
ICRC	International Committee of the Red Cross
IDPs	Internally Displaced Persons
IHL	International Humanitarian Law
IO	International Organization
IS	Islamic State, or ISIS or ISIL
NGO	Non-Governmental Organization
Protocol I	Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts
Protocol II	Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts
SARC	Syrian Arab Red Crescent
SN4HR	Syrian Network for Human Rights
SOHR	Syrian Observatory for Human Rights
UN	United Nations
US	United States

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Introduction

The weaponization of water is nothing new, but with the Iraqi and Syrian conflicts, there has been an "evolution in the methods, means, and frequency of attacks on civilian water infrastructure and in the types of groups involved in conflict"(Gleick 2019, 1743). According to the United States (US) Office of the Director of National Intelligence "the use of water as a weapon will become more common during the next 10 years with more powerful upstream nations impeding or cutting off downstream flow. Water will also be used within states to pressure populations and suppress separatist elements" (The Office of the Director of National Intelligence 2012, 4). Panic is growing around the world, specifically concerning the targeting of dams. In the past years, the fear created by the captures of the Tabqa and Mosul dams by the Islamic State (IS) justified military interventions bypassing the United Nations (UN) Security Council and the international community. The capture of the Mosul dam by IS in August 2014 provided the primary motivation for US airstrikes in Iraq (Von Lossow 2016b). The potential of this weapon on the battlefield in support to a military attack has been emphasized, even if mainly focused on IS, but civilians have often been left out of the picture. Considering the role of other belligerents and civilians in the weaponization of water appears to be essential to provide adequate answers and avoid the instrumentalization of the fear to serve militaries agendas.

There are currently only a few legal provisions mentioning water in conflict, suggesting the existence of a gap between the reality of conflicts and the protection provided by International Humanitarian Law (IHL). The legal provisions currently in place have been unable to prevent the weaponization of water from happening in Iraq and Syria. Therefore, the weaponization of water raises fundamental questions related to the protection of civilians in armed conflicts. Understanding the objectives and strategies linked to the weaponization of water are essential to grasp the place of civilians in it, in order to protect them correctly. Human Rights Law (HRL) is also challenged by the use of water as a weapon. The right to water has been recognized in 2010 by the Resolution 64/292 from the UN General Assembly and is currently part of the global agenda with the Sustainable Development Goal 6 aiming to ensure availability and sustainable management of water and sanitation for all (UN General Assembly 2010). National laws are also increasingly referring to it. However, while being progressively legally recognized, the enforcement of the human right to water might be challenged by the use of water as a weapon. The continuity of the obligation to respect this right during armed conflicts should be addressed. Ensuring water access during a conflict, apart from answering the immediate water needs, is also important because of the long-term consequences associated with the use of water as a weapon. Indeed, the actions, successes and failures of humanitarian aid organizations to answer immediate water needs of populations will have effects that will last even after the end of the conflict. This means that not only

humanitarian aid organisations are concerned by the use of water as a weapon but development ones too. The war recovery and future development programs might be impeded as "the humanitarian consequences of diminished water supply due to weaponization are likely to last longer into the future, whatever the immediate outcome of the war" (King 2015, 160). The propagation of waterborne diseases in conjunction with massive displacements could lead to a country-wide impoverishment (Gleick 2019).

While there are hundreds of articles from news that are referring to the use of water as a weapon in the Syrian conflict, claiming that it is one particularity of the conflict, the definition of the notion still lacks clarity. The result is that the phenomenon is often mixed with wars on water. An article called 'In Syria, everyone uses water as a weapon of war', from *The Arab Weekly* news website, illustrates this confusion. Despite the title, the article explains how the Syrian conflict "has become known as the war for water as competing powers in the region scramble for control of a rapidly diminishing resource" (Blanche 2017). The academic literature, while being considerably limited, is not spared by the multiplicity of definitions. Expanding the knowledge on the weaponization of water is urgent and the aim of this thesis is, with a case-study on Syria, to investigate: To what extend do civilians constitute a privileged target of the weaponization of water in the Syrian conflict? Syria has been less researched than Iraq and the emphasis on IS resulted in the absence of information on other actors' use of water as a weapon. Studying the Syrian case will not only increase the knowledge on this specific conflict, but raises fundamental questions related to the protection of civilians in armed conflicts, essential for both IHL and humanitarian organizations. As above mentioned, it will also have broader implications for international security, international development, and HRL.

The dissertation will start with a methodological part, followed with a literature review summarizing the key findings as well as the issues at stake within the scholarly debate. The topic having been low researched so far, the knowledge gap will be highlighted. The core of the analysis will be structured into three parts, each part answering a different sub-research question. The first chapter will investigate: *How has water been weaponized in Syria?* The deconstruction of the myths on the weaponization of water will be completed with a typology of the different (identified) means to weaponized water. The second chapter will demonstrate the strategy at stake behind the use of such a weapon against civilians, answering: *What role does water have in a larger strategy?* Identifying the objectives will be key. The final chapter will discuss different answers that have been provided thus addressing: *Which responses have been provided to the weaponization of water, and what are their strengths and weaknesses?* A conclusion will close the dissertation and mention wider implications linked to the perception of civilians in conflict.

Methodology

A case-study

This qualitative research is both an intrinsic and instrumental case-study on Syria. Intrinsic, as I am interested in the Syrian case *per se*, as IS is said to have unusually "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" (Von Lossow 2016a, 7). Syria is presented as an extraordinary case of weaponization of water. Nonetheless, there is currently a limited amount of information on this topic, particularly on other actors than IS, which justifies the investigation of the Syrian case-study on its own. Instrumental, as the knowledge acquired on the means and strategies surrounding the weaponization of water, as well as the potential lessons learnt from the present case, might provide guidance for future conflicts. Concerning the temporal delimitation, the conflict period, meaning from 2011 until today (May 2019) was chosen. Some pre and post-conflict elements will be mentioned, while not being at the core of the analysis. In terms of spatial delimitation, the analysis will address the use of water as a weapon inside Syria, and not transboundary cases such as the reduction in the flow of transboundary watercourses by neighbouring countries.

Sources

A combination of primary and secondary data was employed. Regarding secondary sources, academic articles were used to situate the topic in the scholarly terrain and provide theoretical roots for the analysis. For elements that have not been researched by scholars, articles from the news and reports from organizations were employed. A few legal texts coming from IHL were also used in order to capture the (in)adequacy of current regulations regarding the weaponization of water and the protection of civilians. This thesis is truly interdisciplinary not only because of the variety of sources and methods chosen, but also because of the diversity of fields from which the sources are coming from: international security, law, development, and environment. The necessity to collect primary data emerged from the limited information available. Indeed, while searching for academic literature, I had to admit that not a lot has been written on the topic of study. The information was very general and most of it focused on a specific region (east) and actor (IS). Also, academic articles relied on non-governmental organizations (NGOs) and international organizations (IOs) reports and newspapers, which have already a filter. Therefore, they do not capture the entirety of the issue, and despite the importance of giving voice to local people, there are only a few testimonies. The new data collected through semi-structured interviews will allow a comparison with the knowledge that is already available in order to confirm, contrast or complement it. Satellite imagery was used to support the findings from the interviews. To sum up, the investigation of the weaponization of water in the eastern part of the country will be

supported with academic and non-academic literatures, while for the western part it will mainly be a combination of non-academic literature, primary data from interviews and satellite images.

Unit of analysis

According to the purpose of this research, as well as the data available, three main actors will be at the core of the analysis. The unit of analysis used in this dissertation is not the individual, but the groups to which individuals are affiliated:

- The pro-government forces, also called regime, regime forces or loyalists
- The Islamic State, or Islamic State of Iraq and the Levant, also known as the Islamic State of Iraq and Syria or Daesh (based on its Arabic acronym)
- The civilian population

While the two first actors are belligerents, the group of civilians distinguishes itself by its non-combatant characteristic. Contrary to popular belief, they are not passive casualties, as the 'total' character of the war and the weaponization of water result in them being specific targets. The role of this non-homogenous and complex group will be further detailed in the dissertation. References to the opposition forces, also called rebels or anti-government groups, will be made to situate civilians: in opposition or regime-controlled areas. However, as I have not identified any example of rebels using water as a weapon, neither from the secondary or primary information sources, this angle will not be covered in the dissertation. It does not mean that it did not occur, and further research on this element would allow a more comprehensive analysis of the weaponization of water in Syria.

Primary data

1. Data collection

The unit of observation for the primary data collection is individuals. Primary data was collected through semi-structured interviews in March-April 2019. In total, twenty interviews were held with Syrian refugees currently living in Turkey near the Syrian border[1]. The areas of information investigated were very broad. The five following categories guided the interviews:

a. Background: city of origin, profession, date of displacement

b. Experience of use of water as a weapon

c. Opinion about the strategy

d. Access to water during the war

e. Experience with humanitarian aid

[1] 19 in Reyhanli and 1 in Karajan

Semi-structured interviews allowed flexibility in terms of duration, as well as with the order of the themes discussed. The categories facilitated the coding and analysis after the data collection and ensured that the same general areas of information are collected from each interviewee. Interviews took place in different locations, depending on the preference of the interviewee: Geo Expertise offices, at the workplace or the house of the interviewees. Because of the sensitivity of the information collected, to respect interviewees' confidentiality and to establish an informal trust-relation so that people felt comfortable to share their experiences, there was no tape-recording and no name was noted. Written notes were taken during interviews and an oral consent form was required after the explanation of the purpose of the research (see *Appendix*). The persons interviewed were not chosen in the purpose of being representative. Their selection was partly based on convenience, requiring them being introduced to me and agreeing on being interviewed. Without my two translators, it would not have been possible to conduct interviews in the first place as they acted as guarantor of me being trustworthy and introduced me to their respective networks. Two different starting points (the two translators) for a snowball sampling were initiated, with interviewees recommending other persons. Apart from these two starting points, I was also able to find some individuals on my own. While choosing interviewees, a selection was made to ensure that interviewees came from a variety of places in Syria in order to ensure the diversity of experiences and to avoid ending up with ten interviewees coming from the same village.

2. Presentation of the results

The geographical focus of interviews is the Western part of Syria. Below, in *Illustration I*, the exact mapping of the interviewees' cities of origin is represented with red dots. The list of the cities of origin, which is important as their experience of the use of water as a weapon depends on where they come from, is detailed in *Illustration 2*. The interviewees come from the Western part of the country, mainly from villages that lied in opposition-controlled areas and were attacked by the regime. The repartition of interviews from those areas is great, as they come from different provinces, including some of the regions that undergone the longest sieges and heaviest attacks of the regime, such as Damascus, Ghouta in Aleppo, Homs north-western countryside as well as Homs city. In the dissertation, the corresponding number of the interview will be used to refer to the sayings of an interviewee in the analysis, for example *I18*. Interviewees had different background: agronomist, builder, chemist, civil engineer, farmer, journalist, lawyer, military general, student, teacher, water engineer. Therefore, some of them had more to say about the water needs for agriculture, while other could share their daily struggle to access drinking water; some could comment on the military tactics, while other mention the legal framework at stake in Syria.

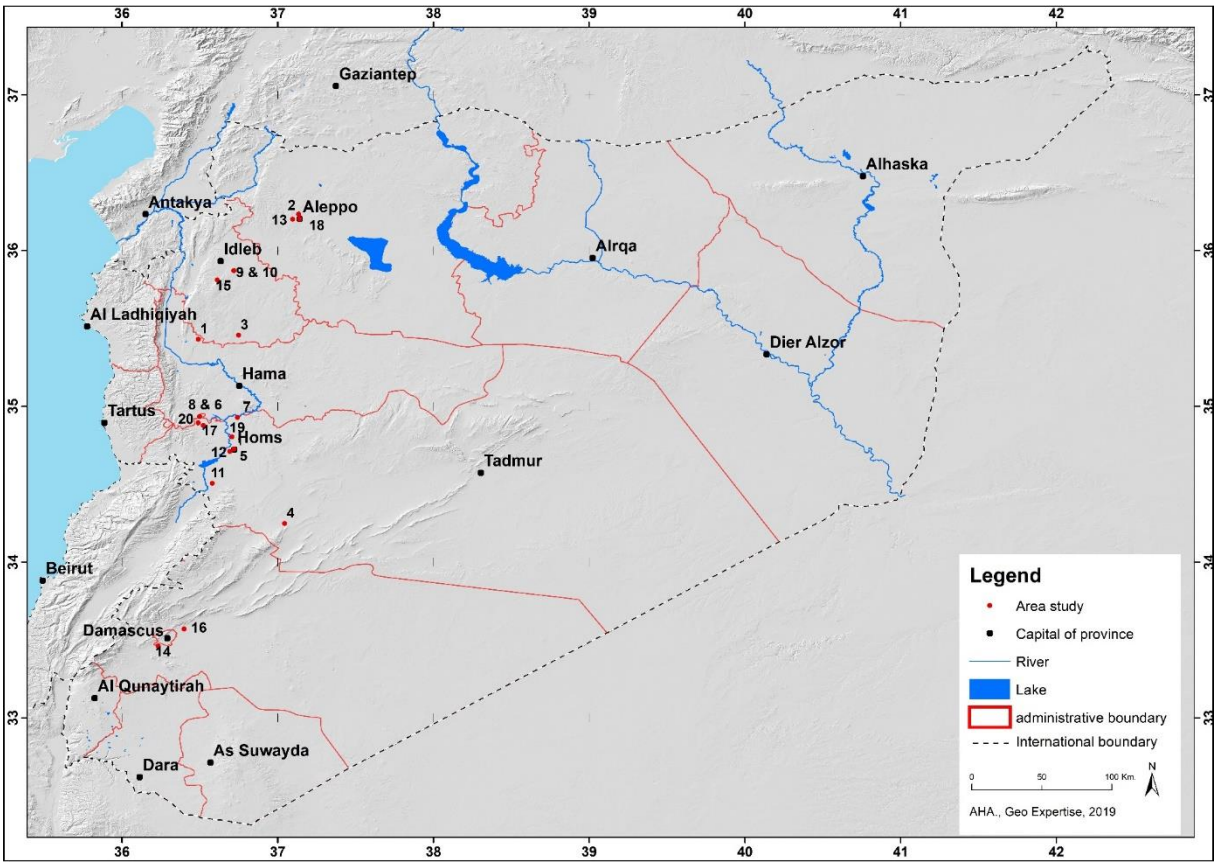

Illustration 1 Origin of interviwees, map

Interview	Village/City	Province
1	Kafr Nabudah	Hama
2	Ashrafiyah	Aleppo
3	Tamanah	Idlib
4	Mheen	Homs
5	Old city of Homs	Homs
6	Tal Dahab	Homs
7	Ar Rastan	Homs
8	Tal Dahab	Homs
9	Al Nerab	Idlib
10	Al Nerab	Idlib
11	Al Qusayr	Homs
12	Baba Amr	Homs
13	New Aleppo	Aleppo
14	Darayya	Damascus
15	Ariha	Idlib
16	Al Ghouta	Damascus
17	Al Hulah	Homs
18	Aleppo	Aleppo
19	Tair Maalha	Homs
20	Kafr Laha	Homs

Illustration 2 Origin of interviewees, table

Strengths and Limitations

A general limitation related to the sources comes from my inability to speak Arabic. For the primary data collection, despite the possibility of some misunderstandings which can never be excluded, the language barrier was mitigated by the fact that I had translators (ensuring the translation Arabic-French or Arabic-English). Regarding secondary sources, while I analysed English and French documents, I took care of reading articles from news websites based in different countries and to read reports not only from large organizations but also from local NGOs to ensure that the absence of reading Arabic does not result into western sources only. Also, writing about an ongoing war is difficult as dynamics are always changing, all issues at stake are not clear, and there is a lot of misinformation going on. I lowered this as much as possible by taking care of crossing sources to ensure the reliability of information: reports with academic articles, interviews among themselves, interviews with satellite imageries, news' articles with interviews etc. This time-consuming process of information checking was essential for me in order to be confident with the information shared in this thesis, which I am.

Concerning the primary data collection, it requires to go on the field and stay there several weeks to collect the desired data. It also demands having an easy-adaptable schedule and be prepared to last-minute cancellation. The time and resources requested might explain why most researches on this topic are based on secondary sources. Despite those constraints, it allows the collection of unique data and reassure the researcher about the reliability of the information, which in a war situation is not something that is taken for granted. While critics might question the reliability of a research relying on testimonies from individuals, I would like to mention that current academic articles rely on news articles, which themselves rely on individuals' testimonies. Therefore, in terms of reliability this research is even more rigorous than other researches on the topic. News' articles or NGOs/IOs reports have a 'filter' and suffer from disinformation, as being posted or published is not a guarantee of quality of the information. Collecting my own data provide fist-hand testimonies and a variety of sources was used to triangulate the data gathered from the interviews: academic articles, NGOs/IOs reports, newspapers, as well as satellite imageries. The data from the interviews is relevant in providing a deeper knowledge on the weaponization of water by the regime, while less relevant for other actors. This is a strength and limitation at the same time. It will add to the current knowledge as regions under IS's occupation are the ones most researched so far, meaning that the low level of individuals' testimonies on IS weaponization of water is not problematic. The present dissertation will be unable to identify if and how other actors, such as the opposition forces, weaponized water, and this will require further researches.

Literature review

The aim of this part is to summarize the knowledge currently available as well as the different positions held by the authors within the scholarly debate. A restricted number of researches or articles addresses the weaponization of water. The few scholars who wrote about it are coming from different disciplines; while King is an international security scholar, Von Lossow is from political science. Gleick researches the nexus Development-Environment-Security, whereas Tignino offers a legal perspective. Beccaro, a non-expert of the topic that is specialized in modern terrorism and urban warfare, will also be mentioned because the use of the concept in his research allows to show how the topic is apprehended outside the small club of experts.

Water conflict vs water in conflict

Traditionally, the discussion on water and conflict is divided in two. On one side, there are researches highlighting the risk of war on water, the so called 'water wars' where water is the cause of war or at least triggering it with 'water-related' conflicts. Water scarcity is described in Malthusian terms, related to a growing population, and climate change is said to be increasing the pressure on water (Selby and Hoffmann 2014). On the other side, the hydro-diplomacy's approach recognizes the potential of water to deliver peace. Whenever it is to ring the bell on the danger of water scarcity or the potential of water to make peace, since the 1990s most work has been done at the transboundary level, stressing the need for international law and UN resolutions, while less attention has been given to subnational violence (H. Gleick and Heberger 2014). The need for regional coordination, the creation of a river commission and a commitment to hydro-diplomacy in order to build peace and reduce the chances of future political instability triggered by water scarcity are among the options mentioned.

It is important to point out that the distinction between water-related conflicts and the weaponization of water is often unclear; in newspapers but in academic articles too. As an example, for King, a shortage of water results in political instability in the first place, and then the conflict can break out over the lack of water itself or water can be manipulated in an unrelated conflict. The pre-condition for both scenarios is water scarcity. In the Syrian case, the consequence of decades of mismanagement and climate change effects are given by the author. Even if he distinguishes between the use of water as a weapon, from conflicts over water resources, he still mentions that water needs to be a trigger of the conflict beforehand (King 2015). Mixing both topics is risky and contributed to the confusion on what falls under the definition of the weaponization of water, and what is outside. Another example of this confusion is the chronology of the Pacific Institute, a project lead by Gleick and initiated in the late 1980s (Pacific Institute 2018). The Institute aims at examining the connections between water resources, water

systems and international security and conflict. The chronology, which is the most completed chronology of water-related conflicts so far, tracks and categorizes events related to water and conflict (H. Gleick and Heberger 2014). Entries are classified as 'trigger', 'weapon' and/or 'casualty'. Notwithstanding that the chronology concerns water-related conflicts, the use of water as a weapon has its own category. This means that the chronology is at the same time the most completed water-conflicts chronology and the most comprehensive register of cases of weaponization of water. Here again, both topics are merged. I would like to insist on the fact that the topic of this thesis is neither water as a cause of conflict or as a tool for peace, but as a weapon in war.

A loosely defined and evolutive notion

While the possibility of weaponizing water was not recently discovered, the past decade has seen an impressive rise in attacks on water systems, most of them located in the Middle East region. Furthermore, the evolution of conflicts, with a shift from nation-to-nation to subnational violence happening in populated urban areas, has had an impact on the means of weaponizing water as well as its impacts. Changes in the reality of conflicts require an evolution of the analytical tools available and the recent adjustments in the categorization of the Pacific Institute's chronology confirmed this trend. Two main changes were the removal of the binary distinction between state and non-states actors, and the inclusion of the category 'weapon'. Indeed, before 2018, the role of water in conflicts was classified into six categories: military tool, military target, terrorism, political tool, development dispute and control over water resources. Military target and military tool were categories applying only to state actors, whereas terrorism was exclusively for non-state ones. Political tool, development dispute and control over water resources applied for both categories of actors. In addition to this, whereas water was mentioned as being a goal, target, tool or cause in the various categories, the only category explicitly mentioning the word 'weapon' was the military tool. Water as a military tool was defined as being used "by a nation or state as a weapon during a military action" (H. Gleick and Heberger 2014, 160). According to Gleick, weaponizing water was reserved for state actors and limited to the battlefield. The problem is that this Westphalian understanding of wars and weapons does not represent the reality of modern conflicts anymore, which might explain the 2018 major change. In terms of actors, in addition to states and non-state groups, individuals and a combination of actors are henceforth taken into consideration. Regarding the different roles of water in a conflict, they are not separated anymore by intention and/or category of actors, but the categories have been reduced to three: trigger, weapon and casualty. The explicit mention of the term 'weapon' as a category on its own reflects the need for an analytical tool representing the reality of current conflicts.

In my opinion, the new categorization is still not mirroring the reality. The distinction between a weapon and a casualty, as defined in the chronology, is questionable. Casualty is described as a situation where "water resources, or water systems, are intentional or incidental casualties or targets of violence", which means that the deliberate targeting of water systems is not considered as a weapon but as a casualty. A look at the chronology confirmed that the destruction of water infrastructures is not considered as a weapon if directed against civilians, but it is a weapon if it targets fighters. The comparison between two entries in the chronology confirms this. Whereas "*Syrian government forces are driven out of Wadi Barada's villages after the Free Syrian Army (FSA) cuts off water supply from Ain al-Fijah, a major spring serving the Damascus area*" is entered as a weapon, "*Up to four million people in Damascus suffer a loss of water services after springs outside the city are attacked. Water from the Wadi Barada and Ain al-Fija springs, which serve 70 percent of the Syrian capital, is cut off when water infrastructure is deliberately targeted*" is entered as a casualty (Pacific Institute 2018). This shows how civilians are still perceived as being hurt by casualty and not the primary victims. Under the name of 'unintentional weaponization', King explains that water is an indiscriminate weapon and "unintentional population displacement is a frequent form of collateral damage" (King 2015, 158). The findings from key authors as well as their personal comprehension of the weaponization of water will now be presented.

Matching definitions with underlying goals

The weaponization of water is a buzzword, which has the potential to capture global attention and spread fear worldwide. However, limited knowledge is available on it and the absence of a common definition leads each author to have his own understanding. Depending on the author, some elements are included or excluded from the definition and the emphasis is put on different elements. The understanding of the notion is impacted by the intended purpose of the research.

1. Securitarian perspectives

Von Lossow is an expert in water and security working at the German Institute for International and Security Affairs. He advises political decision-makers on security issues and this security approach is reflected in his narrowing of the use of water as a weapon to the control of big infrastructures. Indeed, according to him, an "important precondition for deploying the water weapon – distinguishing it from water as a target or 'water war' – is the control over water infrastructure such as reservoirs, pipes and dams that make it possible to manipulate water flows, supplies or reserves" (Von Lossow 2016b, 84). This pre-condition echoed the traumatism of the capture of the Mosul dam by IS, which is still very much present in the international security agenda. In his article, he lists the important dams on the Euphrates and Tigris. According to him, one important self-restriction to the weaponization of water is IS state's

ambitions. 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 the group, as it risks losing all its supporters. The risk grows if and when the militia is subjected to massive attacks and forced to withdraw from large areas (Von Lossow 2016a). Whereas for him there are three ways of using water as a weapon (by making sure that too little, too much or insufficient quality of water is available) he considers that the only effective answer to the weaponization of water, mostly reduced to the control of dams for him, are military means (Von Lossow 2016a).

For King, a scholar with experience in policy-research organizations and with the US government, the US security approach is driving his understanding of the weaponization of water. According to him, the use of water as a weapon should "inform a future U.S. engagement strategy in this region and elsewhere to mitigate instability by denying non-state actors the ability to wage this type of war" (King 2015, 163). Preventing the damages to water infrastructures, protecting them and provide a quick support for their reconstruction are some of his recommendations in terms of US defence policy. He identified five categories "based on the perpetrator's intended use of the water weapon": strategic weaponization, tactical weaponization, psychological terrorism, incentivization, unintentional weaponization (King 2015, 156). Like Von Lossow, King's article is highly influenced by the control of the Iraqi Mosul dam. His goal is to find a way to defeat IS and "successful denial of IS's ability to use the water weapon may represent a decisive factor in whether or not they can be defeated" (King 2015, 166). Even if King acknowledges that nearly all combatants understand the potency of water as a weapon, which made him already quite an exception in the literature, he quickly justifies the removal of other actors from his analysis by emphasizing that the total of all other incidents combined equal those attributed to IS only. Weaponizing water is said to be at the core of IS's strategy, which means that without it the group would have been unable to conduct efficient warfare: acquire territories, establish credibility and reward support from the occupied populace. The author's conclusion on IS strategy regarding water is that it "is the only actor that displays evidence of a truly strategic approach"(King 2015, 159). He highlights the risk of seeing an increase in the weaponization of water "unless countervailing strategies are designed and implemented by states committed to defeat extremists"(King 2015, 166). Overall, King's interest in defeating IS orientated his analysis towards the use of water as a weapon by IS or other non-state actors, which is a very narrowed definition of what using water as a weapon is. His emphasis on the role of non-state actors in the weaponization of water is denying the ability of state-actors to wage this kind of weapon and consequently preventing to capture the entirety of the problem.

It is also interesting to look at how non-water experts use the concept in their research. Beccaro did not write specifically on the weaponization of water, but in his article called *Modern Irregular Warfare: The*

ISIS Case Study he talks about the use of water as a weapon. His understanding of the weaponization of water is limited to the control of dams. According to the author, "ISIS has used local resources (mainly water) to control the population and local geography (i.e. the desert) to improve its warfare" (Beccaro 2018, 211). Water can be used against combatants on the battlefield with the drying of rivers allowing quick and unpredictable movements, or it can also be used against civilians by pressuring them and/or legitimizing its existence with the provision of water in the territories under its occupation. Like King, for Beccaro controlling dams allows IS to present itself as a proto-state providing services and collecting taxes. Finally, Beccaro raised an important point, which is that IS's existence relies on civilians' support as "the most important element for victory is the unconditional support of the local population" (Beccaro 2018, 212).

2. Promoting laws and international diplomacy

Scholars, medias, international community, to only mention few, were affected by the panic linked to the strategic role of dams and the importance to protect them. Legal scholars are not an exception. After the traumatic IS's experience, the need to strengthen international law has been highlighted by them. Different bodies of law might apply to the weaponization of water, the two most relevant being IHL and HRL. In 2014 already, the former UN Secretary-General Ban-Ki Moon declared that "preventing people's access to safe water is a denial of a fundamental human right," and that "deliberate targeting of civilians and depriving them of essential supplies is a clear breach of international humanitarian and human rights law"(Ki-Moon 2014). Currently, dams are protected against attacks with the art.56 of the *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts* (Protocol I) (1967), and the art.15 of the *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts* (Protocol II) (1977), but IHL remains silent on the control of such large infrastructures. Whereas belligerents may seize control of dams and dykes to strengthen their hold over a territory, to support economic needs, or to support the energy and water needs of populations in territories under occupation, the control of dams and dykes is not covered, unlike their attack. According to Tignino, the protections granted by IHL "should be broadened in their scope of application in order to prohibit the 'control' of dams and dykes by belligerent parties" (Tignino 2016, 13). The different options she mentioned are the adoption of agreements between riparian states in order to reinforce the protection of theses installations, the declaration of dams as neutral areas supervised by IOs and their identification during military operations with a special sign: three bright orange circles. Also, the author points at an interesting element, which is that water as such is not given legal protection under IHL but is protected because water is a basic human need that can become a weapon against the civilian population. She noticed that nowadays there is not any specific instrument in international law solely

devoted to the protection of water in times of armed conflict. Thus, she promotes the adoption of a new legal instrument: a treaty dedicated only to water in order to gather all relevant provisions from different bodies of law in a single instrument (Tignino 2016).

This legal solution is often advocated in conjunction with the promotion of diplomatic means. Governments, humanitarian aid agencies and think-thanks, all follow this mainstream politico-legal position. For instance, if we look at Switzerland, both the Swiss Agency for Development and Cooperation and the International Committee of the Red Cross (ICRC) assert the necessity of having a consistent legal framework to protect water and its infrastructures during conflicts (Global High Level Panel on Water and Peace 2017). In the same vein, King and Burnell claim that a better coordination "between the global community and national level actors is essential in countries where deteriorating ecological and social conditions are creating growing instability" (King and Burnell 2017, 72). However, this top-down legal approach is not unanimous because it assumes that law is respected during armed conflicts, which is debatable and debated. It assumes the existence of regulations prohibiting the target of water infrastructures and the flooding or drying of areas will restrain states from using these methods in armed conflicts. While for King, the low frequency of uses of water as a weapon by states (he found five incidents attributable to state-level actors) might confirm that many states are adhering to international agreements that prohibit the weaponization of the environment, Von Lossow's opinion is that "condemnations, appeals to human right to water and traditional measures of the Security Control, such as ostracizing by the community of states and sanctions, do not work with actors such as IS" (Von Lossow 2016b, 4–5; King 2015). King does not recommend the adoption of new laws, but the enforcement of current international laws prohibiting the weaponization of water and suggests that the US have a role to play in this. What needs to be done to ensure the enforcement of law is not detailed. The inability or lack of willingness of states to enforce existing relevant provisions might question the need for additional regulations.

The identified knowledge gap

The few researches on the weaponization of water all investigated IS's weaponization of water, whereas other actors were omitted, denied, or simply considered as irrelevant by academics. The adequacy between these conclusions and modern conflicts' realities is questionable. The emphasis on the Euphrates and Tigris region with both Syria and Iraq having been researched together suggests that the weaponization of water has been identical in both countries, which might not be the case. In the same vein, there has been a disproportionate attention on the weaponization of water by IS, while it cannot be assumed that the use of water as a weapon by other actors does not exist or is irrelevant, without

having truly been researched. A single-country analysis without choosing a perpetrator in advance, nor having a pre-defined agenda, like military intervention or national security objectives in mind, is required and would allow to expand the existing knowledge on the use of water as a weapon in modern conflicts. A better understanding of the ways to weaponize water is key in order to tailor better solutions: military, legal, or of any other type.

Moreover, the absence of a common understanding of what is encompassed in the notion of weaponization of water leads to differences among the authors. For example, IS's duty to provide water service to legitimate its existence as a quasi-state falls under the 'weaponization of water' umbrella for King and Beccaro, while it is considered as a restriction to the weaponization of water by Von Lossow. Overall, the lack of a common basic understanding of what the weaponization of water really encompasses lead to researches disproportionately emphasizing certain actors, on both sides, the perpetrator and the victim. The danger of a blurred concept is that it can be misused to serve specific agendas. Defining the notion and its boundaries appears to be essential to increase knowledge on the subject. Another element that is silenced in the current literature is the taking into account of the role of civilians. On one hand Beccaro, King and Von Lossow emphasize the use of water on the battlefield highlighting the strategic role of dams, and on the other hand the need to increase the protection of water itself and of the control of large infrastructures is claimed in the legal area. Smaller water infrastructures, which are important for local population's survival, are absent from the debate. Overall, there worldwide attention is distracted from civilians and their access to water.

CHAPTER 1. Investigating the use of water as a weapon

In this chapter, different means used to weaponize water will be presented. The common knowledge on the weaponization of water will first be deconstructed to raise awareness on its inconsistencies and limitations. The shortage of sources as well as the interdependency between academic articles and news websites will be mentioned. The findings from key authors will not be taken for granted but carefully analysed. While the academic literature faces a shortage problem as not a lot has been written on the topic, the situation is different for newspapers and reports from organizations which contributes to the blurring of the definition. Starting from the data gathered in the field, the weaponization of water in Syria will be explored from the water access perspective. The different possibilities of using water access as a weapon will be explored.

Deconstructing the IS's myth(s)

Civilians are commonly perceived as impacted by the weaponization of water because of their presence in the middle of the battlefield, as conflict happen in urban areas, but not as being specifically targeted by such a weapon. IS's characteristics and goals are raised by scholars to justify the use of water as a weapon by the group, de facto neglecting its use by other actors. The flaws of this approach will be presented.

1. Water as an ideal weapon for IS

'The weaponization of water in Syria' has often made headlines of news website, while the content of articles barely talks about actual weaponization of water. This participates to the confusion of the notion. In *The National Interest*, Beach despite acknowledging the targeting of water systems by other actors including the regime says, without further explanation, that "IS's endeavours have the potential to inflict greater damage" (Beach 2015). No evidence is given to support this; the only thing mentioned is the occupation of the Mosul Dam, which is considered as one of the most dangerous dams in the world because of the impacts its breaking could have. Similarly, in the academic literature, King stresses that a coherent strategy based on the use of water as a weapon exists for IS, and only for IS. According to King, the frequency of IS's weaponization of water is "understandable when one takes their declaratory strategic objectives into account: territorial expansion is the group's primary goal, and the water weapon is an effective means for expanding control of territory" (King 2015, 159). The use of water as a weapon was reported as being at the core of IS's strategy of territorial acquisition. Without it, IS would have been unable to conduct efficient warfare, acquire territories and acquire control over vulnerable populations. The occasional waging of this weapon is recognised but said as not being systematic nor strategic. He justifies this by the frequency of its use by IS compared to others. He found

the group being responsible of 21 out of the 44 incidents he identified between August 2012 and July 2015 in both Iraq and Syria. In comparison, only 3 were attributed to the Syrian regime (King 2015). The frequency of attacks' argument is problematic because of the geographical focus of the research, the Euphrates and Tigris region, as IS was disproportionately present in this region compared to other actors. Also, this region only covers a small part of the Syrian territory.

Apart from the occurrence of attacks, the other reason mentioned is the characteristics of non-state actors. According to Beccaro, irregular fighters have few economical resources and thus chose cheap means they can afford (Beccaro 2018). In the same vein, Banks declares that "irregular warfare becomes a common means for weaker parties to achieve political goals that they could not accomplish through established channels" (Banks 2011, 3). According to them, poorer and weaker parties would be the ones privileging irregular warfare modes, which explains IS's use of water as a weapon. Also, the distinction between IS and other non-state groups "is the superior ability to articulate a vision and implement a military strategy in support of that vision" (King 2015, 159). Another element countering the fact that IS's use of water as a weapon is pertinent is the fact that specific knowledge is required. Knowing which use is better suited for which region (destruction of a water tower or of a dam for instance), what period of the year creates more damage, how to avoid hurting its own troops and how to manage a dam, make the use of water as a weapon not as simple as it seems. In IS controlled-territories, former regime's employees were reported keeping their function in order to keep the water infrastructures working as the group itself "does not have the capacities or expertise for professionally operating these complex facilities" (Von Lossow 2016a, 6). An example of IS lacking the needed knowledge is the one of the Euphrates Dam, where large amounts of water were released in order to increase electricity production. This led to a record drop of the level of the lake Assad and a drop of groundwater levels, which forced IS to ration the additional electricity that has been produced (Von Lossow 2016b).

2. Possibility and probability

The difference between the possibility for IS to weaponize water and the likeliness of actually doing it has not been clarified in the literature. The most discussed case of weaponization of water in the Syrian war, as well as the most feared, was the risk of floods linked to the control of dams. In *The National Interest*, Beach mentions that "IS's quest to seize water infrastructure began in 2013 with the occupation of the Tabqa Dam, Syria's largest hydroelectric dam that supplies electricity to rebel and government territories, including the city of Aleppo" "(Beach 2015). According to her, the capture of the Tabqa dam in 2013 was the first of a series of weaponizations of water by IS. With dams "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"(Von Lossow 2016a, 2). In order to

understand it, a distinction between virtual and actual control of areas should be mentioned. In the literature, the strategic interest of being in control of a dam has been compared to the nuclear dissuasion as "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"(Von Lossow 2016a, 4). Controlling a dam de facto gives control over the downstream areas, which creates terror without having to do something apart from being in control. Nonetheless, it is important to distinguish among the possibility and the probability to do it. Indeed, the control of dams by IS was feared worldwide and lead to military intervention in Iraq because there was panic that the group will open the gates or destroy the infrastructures to flood downstream villages. In Syria, with the same reasoning, the US-led coalition supported the retaken of the Tabqa dam, which was controlled by IS.

Yet, there is not necessarily an advantage in actually deploying this weapon and the nuance should be clarified. The best proof is that no bombing nor actual opening of dam's gates to flood downstream areas did happen in Syria. There is even some irony related to the destruction of dams in Syria, which is that the Tabqa dam was reported as having been damaged in 2017 by US-led airstrikes aiming to remove IS. The dam was the object of several rumours about being in poor condition and reported attacked. The prevailing confusion was relayed in one of the biggest media corporation, the *British Broadcasting Corporation*, that described that some reports mentioned that civilians have begun to flee, while others declare they were being encouraged to stay. According to the British media, "IS media channels say US-led airstrikes weakened the Tabqa dam, but US-backed fighters denied hitting the facility"(BBC 2017). In the end, no actual destruction nor damage of dam did happen in Syria. It seems that the sole control of dams was the real interest, and not their destruction nor the opening of the gates. This challenges Von Lossow theory saying that the risk of a dam explosion is low when the group control territories, as it risks losing supporters, but grows when the militia is attacked and forced to withdraw from areas (Von Lossow 2016a). Indeed, despite withdrawing from Raqqa and losing the control of the Tabqa dam, the latter was not destroyed. The absence of strategic interest, and thus the low probability of happening, was not well apprehended.

3. Reliabilty and generalizability

Called tactical weaponization in the literature, most articles describe the weaponization of water as being among opposing troops on the (so-called) battlefield. Civilians are systematically rejected from the analysis. According to King, tactical weaponization of water concerns the use of water "on the battlefield in direct support of military operations" (King 2015, 157). Beccaro mentions how "dry rivers and channels can be easily forded, allowing ISIS to move unpredictably around the battlefield and reducing the strategic role of bridges" (Beccaro 2018, 211). For Von Lossow, the use of water as a

weapon can be motivated by its "immediate importance in the battlefield", where water is used to attack the opposing troops by cutting off water supplies to opponents' military positions or flooding of areas under the control of the opponent (Von Lossow 2016b, 85). The examples and the sources used to support the authors' claims are problematic because while the examples given concern Iraq, conclusions are made for Syria too. Von Lossow refers to the closing of the Falluja Dam's gates in April 2014 to flood the Iraqi government facilities upstream (Von Lossow 2016b). The author also mentions the floods caused by IS to stop the advance of Iraqi security forces in September 2014 and the same example is mentioned in King's analysis (King 2015). It should be noted that both authors refer to the same source: an article posted in *The Washington Post*. While Von Lossow and King fall short with Syrian examples, the pumping of the water from the lake Assad by IS to flood the villages of Deir Hager Plain is mentioned in Gleick's chronology. The reported goal was the stopping of the advances of the regime forces (Pacific Institute 2018). When having a closer look at the reference that is given to support this, Al-Masdar news, the website of Leith Abou Fadel, is found. I was surprised to discover that the website is a well-known pro-government news site, which is also known for having spread conspiracy theories around Assad's use of chemical weapons (Mackey and Saad 2015; Bertrand 2017). To me, the reliability of this source being at least questionable, it raises an interesting point about the reliability of sources and the difficulty of fact-checking. On my side I tried to find another source confirming this information, but I could not. No matter if this event did or did not happen, one event alone cannot prove the existence of a whole strategy based on the tactical weaponization of water by IS in Syria. The verification of information is not a high priority in the current instantaneity era. News media journalists, by definition, are part of a culture of rapid delivery. Researchers writing on an ongoing conflict also face a temporal constraint as they need to write and be published fast if they want their conclusions not to be outdated; even more if they want it to have an impact in terms of military intervention during the conflict. It is important that researchers privilege reliable sources when possible, do not take a single occurrence as a proof of truth or make generalized conclusions from it. Information should always be verified with care, and the source of information with its potential limitations should be mentioned.

The identification of contamination as part of IS's strategy of weaponization of water is also problematic. Von Lossow reported that IS deliberately contaminated water resources, giving the example of the contamination of drinking water with crude oil in the Balad district in Iraq. The author adds that there were also reports of poisoned water supplies from Aleppo, Deir ez Zor, Raqqa, and Baghdad, but the information about the contaminations being deliberate or accidental, as well as to their perpetrators, is missing (Von Lossow 2016a, 2016b). However, the phrasing is misleading as the Aleppo and Raqqa examples are given after the mention of the deliberate contamination of the Balad district by IS, and followed with "IS called on its followers to poison the drinking water of its enemies elsewhere as well",

which here again suggests that IS is responsible of the Aleppo and Raqqa attacks (Von Lossow 2016a, 3). When having a closer look at the sources given as reference by the author, there is no mention of the contamination being deliberate. Moreover, both sources are on Iraq, with no mention at all of Syria (Bender 2014; Lewis 2014)[2]. While no proof of deliberate contamination in Syria is given, this kind of weaponization of water is often mentioned in the literature as one of the ways used by IS in Iraq and Syria to weaponize water. Finally, Von Lossow's exact same example is entered in the World Water Chronology. This suggests that the limited knowledge available on the weaponization of water might be even smaller than expected, as the same few sources available are often re-used. It is problematic that the few authors that have written on the topic refer to the same event, consider it as a trend, and drive conclusions from it that are generalized to two entire countries. The reliability of sources is questionable and there is a shortage of primary sources with authors referring to articles from news.

Identifying the real danger: the access to water

Two voids were captured by the literature review: the absence of a common definition of what 'weaponizing' water means making it easily instrumentalized, and the place granted to civilians. The following paragraphs will try to fill those gaps.

1. Defining 'weapon'

There is a political importance associated with the use of the word weapon to describe the kind of manipulation of water at stake in Syria. Thus, the word 'weapon' should be clarified before analysing the use of water as a weapon. It is interesting to note that, as highlighted by King, there is no formal definition of weapon in international law or treaties regulating the use of force (King 2015). This might partly explain the variety of definitions of the weaponization of water. As presented in the literature review, authors' understanding of the concept is based on the aim of the weaponization (tactical, psychologic, unintentional), the identity of the author of the attack or of the victim, and is driven by the goal of their analysis. To overcome the absence of unanimous legal definition of weapon, and to avoid any bias in the choice of the definition, common dictionaries are useful. The first definitions refer to an 'object' used in fighting according to the Cambridge dictionary, or to a 'thing' that inflicts physical damage or bodily harm for the Oxford dictionary. References are made to guns, knives or nuclear weapons. These definitions reflect the first-thought understanding of the word weapon in common belief and are inadequate for water. With respect to water, the second definitions that are proposed

[2] "ISIS has also previously rendered water sources undrinkable. On April 17, gunmen detonated IEDs on a oil pipeline causing a massive spill which contaminated the western half of Baghdad's water supply." (Bender 2014).
"The recent ISIS oil pipeline breach near Bayji also contaminated the water supply to Baghdad. Whether or not these Baghdad effects were deliberate, ISIS has directly threatened Iraq's capital on the eve of national elections." (Lewis 2014).

are more pertinent. According to the Cambridge dictionary, a weapon is “an object used in fighting or war, such as a gun or a bomb, or something used against someone”(Cambridge Dictionary n.d.); this second definition adds to the narrowed definition of weapon as an object. There are two key elements in this definition. A weapon is not only a thing, and because it is ‘something used against someone’, the unintentional weaponization or incidental casualty, which are sometimes considered as being part of the weaponization of water, is excluded. The absence of intention will not be considered as a weapon and identifying the target of the use of the weapon will be a key element of the analysis. The Oxford dictionary confirms these two elements by defining a weapon as “a means of gaining an advantage or defending oneself in a conflict or contest” (Oxford Dictionary n.d.). Another component of the definition that is added is the broad phrasing of ‘gaining an advantage’. This means that a weapon is not restrained to an attack on a battlefield for instance, which suggests that the systematic consideration of civilians as collateral victims of attacks happening on the battlefield might be unjustified.

2. Water and its access

Weaponizing water is not the monopole of non-state actors or restrained to the battlefield. The testimonies from interviewees point at another reality of the weaponization of water: the difficulty in accessing water resulting from deliberate attacks. They shared different stories regarding the means that were employed, such as the control of dams or pipelines, or the destruction of infrastructures, but all interviewees mentioned the same result: an impeded water access. This suggests that in Syria, more than a use of water on the battlefield among belligerents, water has been used against civilians. Indeed, the difficulty to access water is a reality of the Syrian conflict. In 2017, two thirds of the Syrian population do not have consistent access to safe drinking water and because of the limited water provided through network, civilians had to turn to alternative sources for water, including costly commercial water trucking and unsafe open wells (Rohwerder 2017). People adapted to the shortage of water and modified their consumption habits, lowering other purposes than drinking. The longer lasts the conflict, the bigger the problem is. Water infrastructures have been damaged, accessing energy became increasingly difficult, the lack of maintenance as well as the clashes among different parties to the conflict have exacerbated the difficulty to access water. In areas that have become a refuge for Internally Displaced Persons (IDPs), the pressure on water resources grows. The current fights in the southern Idlib and northern Hama governorates have dramatically increased the number of IDPs in a short period of time, with 270’000 new displaced between 1 and 22 May 2019, resulting in a substantial increase of WASH needs (OCHA 2019). While part of the problem in accessing water is considered as ‘normal’ in war times, there is another part that results from the deliberate prevention of water access. The purposely hampering of water access does fall under the notion of weaponization of water. This has been acknowledged by the ICRC, who declared that “using access to water as a tactic or weapon during

conflict, or targeting water or power facilities, has both an immediate and a long-term impact on public health for populations that are already very vulnerable" (ICRC 2015, 5).

Adopting the angle of the access to water is interesting because it allows to analyse the weaponization of water from the civilians' perspective. A void captured by the literature review concerns the place granted to civilians, and while giving voice to them through interviews is a positive start, adequate analytical tools are required too. Targeting the access to water is a way, under the umbrella of different ways to weaponize water, that specifically affects civilians. The access to water refers to the human right to water, which requires access to safe, sufficient and affordable water. The head of the ICRC delegation in Syria, Marianna Gasser, declared that the access to this resource should be unconditional and that "it is civilians who suffer the most" (*Al Jazeera* 2015). It should be noted that every single person interviewed had an experience of use of water as a weapon to share, which testifies the frequency of the weaponization of water. Different means were employed from it, such as the control of pipelines, or the destruction of infrastructures, but the result was the same: civilians water access being impeded.

Typology of the identified ways to weaponize water

The shortage of water is as deadly, if not even deadlier, than floods. Now that the access to water as being encompassed in the definition of the weaponization of water has been demonstrated, the different ways used to impede civilians' access to water will be presented. The typology is based on testimonies from interviewees, thus reflecting the types of weaponization that I was able to identify without necessarily being an exhaustive list of all the possibilities. Before starting the analysis, it should be mentioned that all civilians were not equal regarding their experience of the weaponization of water. People having their own wells are less dependent and less harmed by the cutting of water access.

1. Controlling irrigation water

As early as 2012, the regime, who was in control of the Al Hulah (I6,17) and Ar Rastan (I8,20) dams threatened the downstream villages that were held by the opposition rebels with potential floods. While threats were not followed by actual floods, the control of dams was also used to stop the water access in the downstream villages. In irrigated areas, controlling the source of water has a direct impact on agriculture. The regime was reported cutting the water supply for irrigation by the interviewees (I6,8,17,20). This destroyed the agriculture and condemned people to starve. The two satellite images below support civilians' testimonies. Indeed, an impressive drop in the irrigated area of Al Hulah within only three years, between August 2010 and August 2013, can be observed. The expansion of the lake across years is also perceptible.

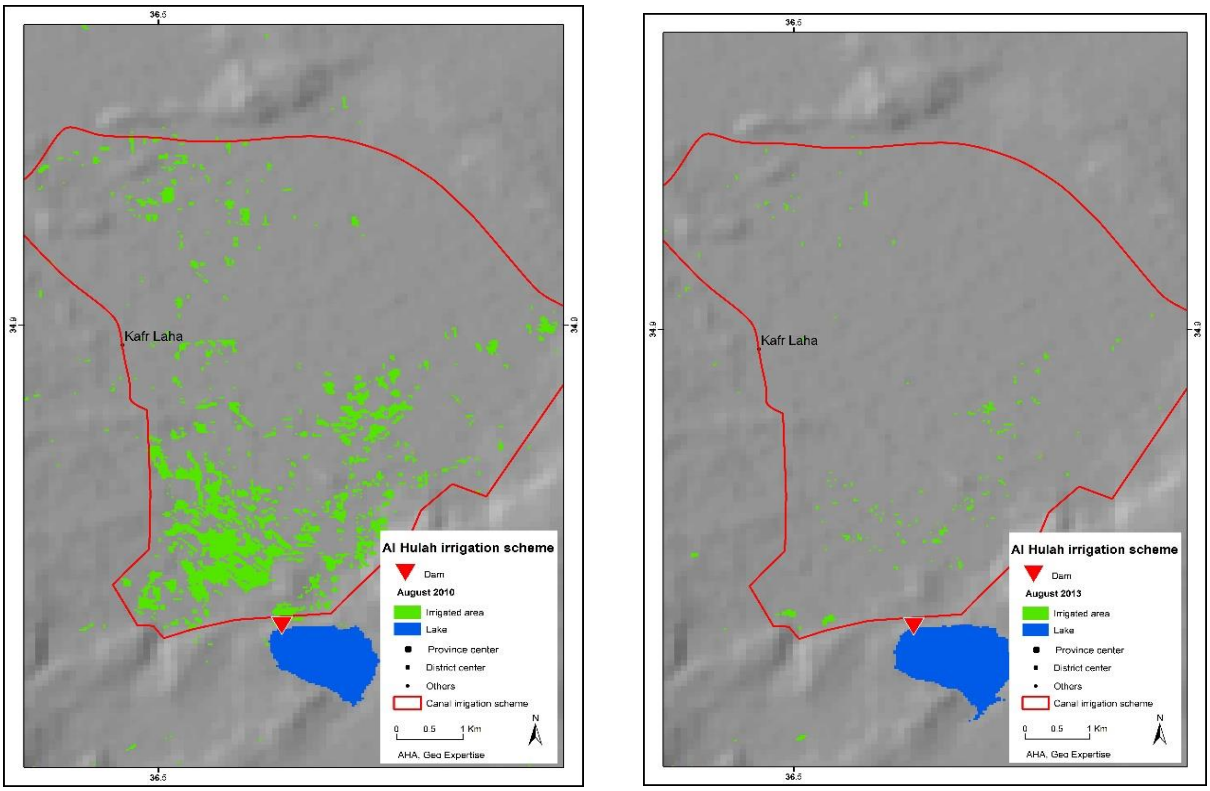

Illustration 3 Al Hulah irrigated surface area between, 2010 and 2013

It should be mentioned that Al Ghab and al Hulah were areas known as fertile areas for agriculture. Cutting the access to water allow to clean those areas from their civilians, makes it possible for the regime to grab those lands and the resources they contain. The source of irrigation water can be a seasonal dam used for agriculture, as previously mentioned, but it can also be a smaller source of water provision such as wells. In Tair Maalha, peasants were prevented from irrigating their agricultural lands, because the lands and the wells needed for irrigation were under the control of the regime. Despite this, there was a good rainfall in the region. The regime, determined to prevent the irrigation of lands and the future harvest, decided to burn the fields. Civilians were left with no source of water and food (I19). In Al Ghab, since 2012 the military checkpoints and blockages of the regime prevented peasants from reaching the water needed to irrigate their lands. This led to an impressive drop of the irrigated surface in a short time (I9). In the satellite images on the next page, the drop in the irrigated surface area between the months of August 2010 and 2013 is observable.

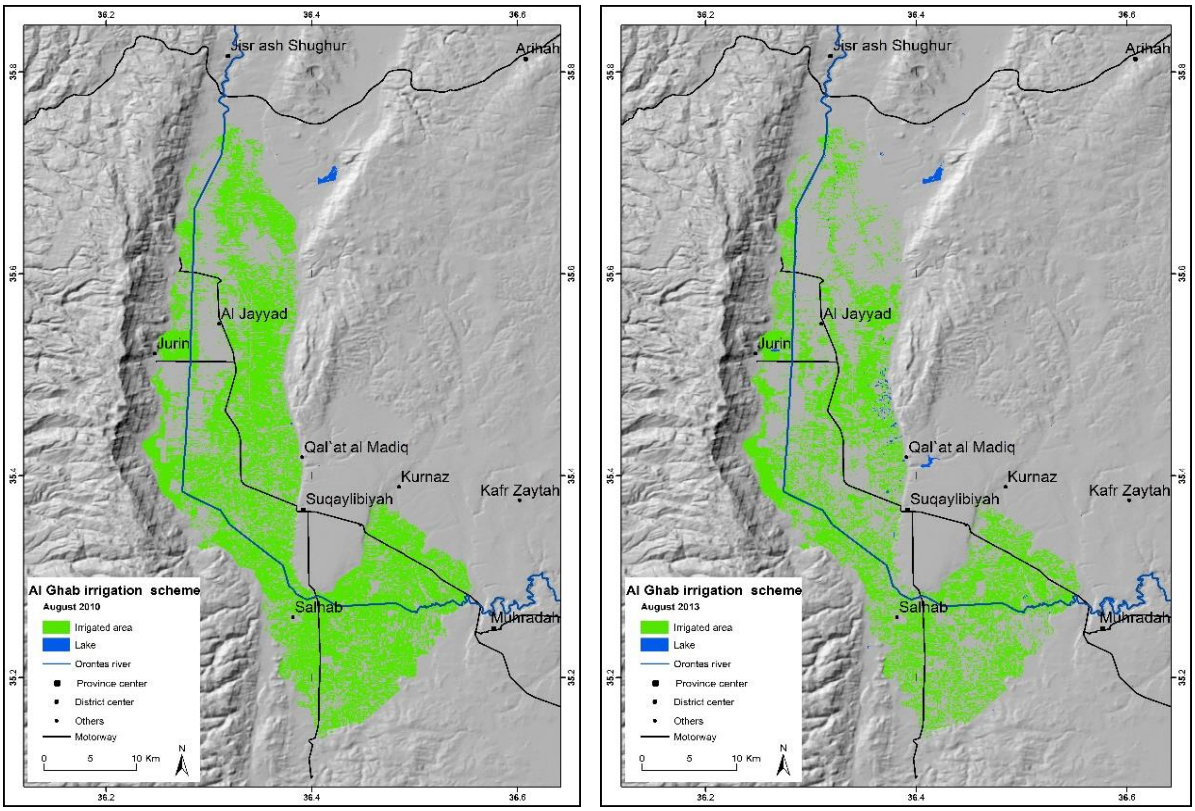

Illustration 4 Al Ghab irrigated surface area, 2010 and 2013

Rivers and lakes are also essential for the food production (fishing and agriculture). The man-made Rastan lake, formed by the Rastan dam, was considered as essential for the living of nearby communities. The city of Rastan was encircled by the government between 2014 and 2018, until the regime forces re-captured the city. In 2017, the Syrian government was reported drying the lake. The Ar Rastan reservoir lake separating villages under the control of the regime from the Al Hulah villages controlled by the rebels, was reported as having been dried by the regime (I8,17,20). An interviewee mentioned that "there was a small lake behind the dam that was used by animals and irrigation, so the regime dried the lake by making it flow in the river" (I20). Evidence of the drying of the lake has been supported in different news websites (a-Zouabi, Nassar, and Edwards 2017; *The Syrian Observer* 2017; *Zaman Alwsl* 2017). *The Syrian Observer* and *Zaman Alwsl* both translated and relayed an article originally from *Iqtissad,* an independent economic magazine, while journalists from *Syrian Direct* reported that "the local food industry of an encircled, rebel-controlled enclave in northern Homs province is in peril after regime forces reportedly drained a nearby lake that once supplied vital irrigation water and thousands of fish" (a-Zouabi, Nassar, and Edwards 2017). Drying the lake at this time of the year was particularly problematic as the month of May is usually the one of the fishing season. With the lake nearly emptied, fish eggs died. Not only Rastan was impacted, but also the nearby towns of the North of Homs, all of which were encircled by the regime's troop. Rastan was feeding the nearby towns encircled by the regime with fish, but the water from the lake was also used by farmers to grow potatoes

and cucumbers. Unfortunately, the drying meant the absence of irrigation for their produce (a-Zouabi, Nassar, and Edwards 2017). The importance of the lake for the mobility of persons and objects was also mentioned by interviewees. According to them, not only was the lake used to produce foodstuff, but it was also used by civilians for trade from one side of the lake to the other. The drying of the lake allows to stop the trade (I8,17). In addition to interviewees testimonies and news articles, satellite images confirm the drying of the lake. In only one year, between May 2016 and May 2017, the Ar Rastan lake disappeared.

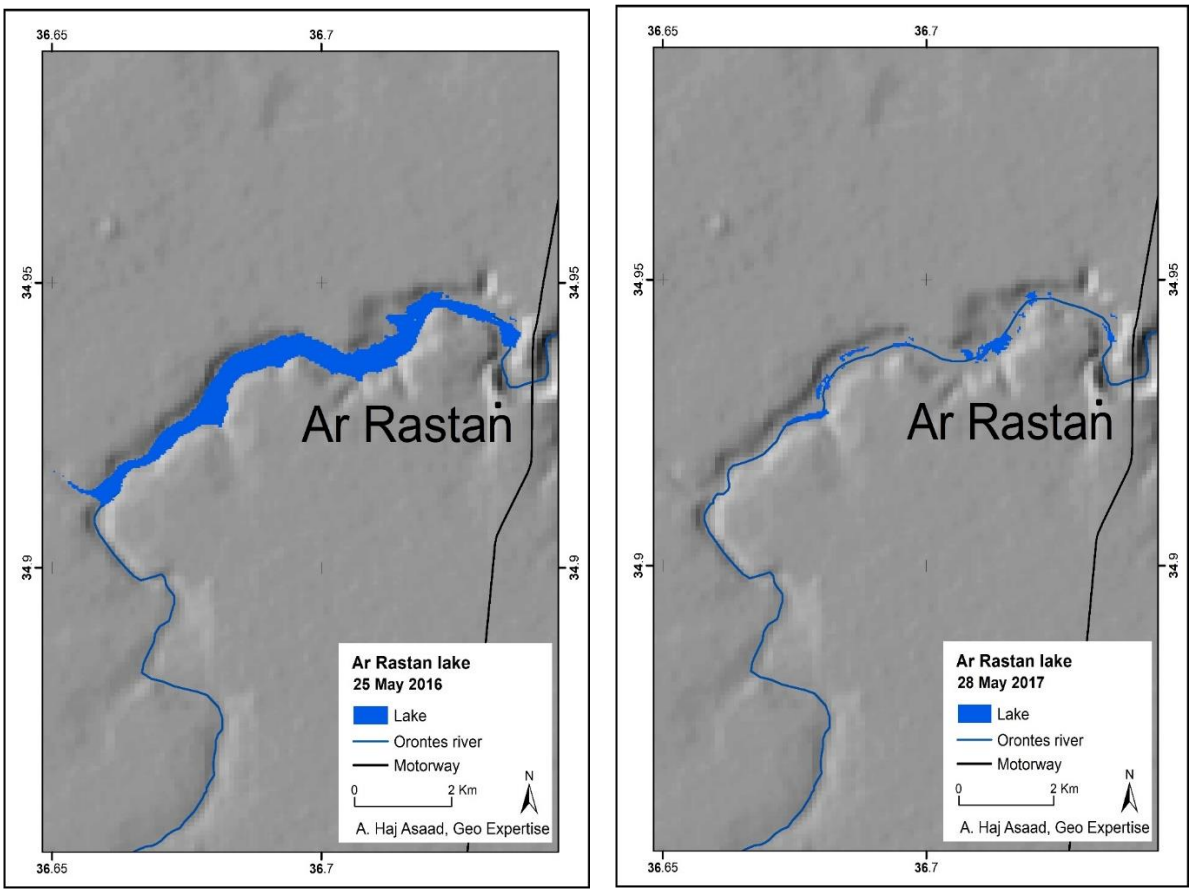

Illustration 5 The drying of the Ar Rastan lake, 2016 and 2017

2. Controlling drinking water

Controlling water springs, water supply networks or wells is as much important as dams when talking about water access, without the technical difficulties associated to dams. Several examples of this kind of weaponization of water were found on the regime's side. In early 2012, the control of the water supply network allows the regime to cut "the pipes bringing water neighbourhood per neighbourhood, particularly targeting neighbourhoods having a lot of regime's opponents" (I5). In June-July 2016, the water was cut to the whole Old city of Homs, at the exception of Al-Zara, described as a pro-regime neighbourhood. The interviewee raised a key point, which is that in the Old city of Homs, there were fighters from the opposition and civilians, so "when the government started using water as a weapon,

it affected both of them" (I5). The control of water springs as a way to control the access to water was reported by NGOS. According to Amnesty International, in Madaya (Rif Damascus), the access to local springs was restricted by the pro-government forces. Civilians pragmatically addressed this issue with the collective mapping of some hidden roads to avoid snipers and try to access water (Amnesty International 2017). Apart from springs, controlling wells is also key in order to control the water access. In Tair Maalha, wells are at the border of the village, and not inside as for example in Kafr Laha. In 2012, when the regime's troops surrounded the village and took control of the wells, inhabitants of the village were unable to access water (I19). This example shows how some villages are more vulnerable to specific uses of water as a weapon in comparison to others. In the absence of water networks, people rely on wells, which makes it very easy to physically prevent civilians from accessing water.

Reports from NGOs confirm the strategy of the regime regarding water access. In Daraya, situated in Western Al Ghouta, government forces laid siege in November 2012 and "cut water lines to the suburb in 2013, forcing inhabitants to use unsanitary wells for both hygiene and consumption" (Independent International Commission of Inquiry on the Syrian Arab Republic 2018). Controlling key infrastructures allows to stop civilians from accessing water. In Aleppo, the water situation was very complex, and water cuts were reported not only in opposition but also in government-held areas. Both sides blamed each other concerning the responsibility for the lack of water (*Al Jazeera* 2015). The daily struggle linked to water precarity was confirmed across interviews, with someone from Aleppo that remembered people relied on water trucks and "ended up taking two showers per month" (I2). An interviewee remembered that in July 2012, when the war began in Aleppo, water and electricity were cut on the same day, showing that it was a plan. When asked about who cut the water in Aleppo, he was very shy in answering and said that from his point of view it was "the ruling minority that controls everything" (I18). Finally, the taking over and appropriation of water sources by the regime was made clear by an interviewee from Al Nerab, who said that "the regime considers Syria like a farm; Bashar feels everything belongs to him and he is turning in and off the water as he wants" (I10).

3. Destruction of water infrastructures

The destruction of water infrastructures, on the contrary to their control, is regulated by IHL. IHL makes a separation between goods indispensable for population survival (Protocol I 1967, art.54; Protocol II 1977, art.14), namely small infrastructures such as drinking water supplies and irrigation works, and installations containing dangerous forces (Protocol I 1967, art.56; Protocol II 1977, art.15), namely dams. Despite being prohibited by IHL, the destruction of smaller water infrastructures is a reality of the Syrian conflict. Particularly, water towers were the infrastructure that was mentioned most often across interviews as having been the target of an attack (I1,3,6,7,17). Also, on the contrary to some water

networks (I3,4) and private wells (I3) that were sometimes reported as having been destroyed as a war casualty, all the destructions of water towers were said to be deliberately targeted. Water towers are several meters high and therefore surely visible. In addition to individuals' testimonies, videos provided by interviewees from Al Hulah (I17) and Tal Dahab (I6), show that the towers were not destroyed by coincidence, but specifically targeted.

👁 Click on the picture and follow the link to access the video provided by I17

Video 1 Destruction of a water tower

In addition to water towers, pumping stations were targeted and demolished in Ar Rastan (I7) and Al Nerab (I9), whereas wells were destroyed in the Al Hulah villages (I6,17). Concerning private wells, aside from their destruction, they often became unusable because of the stealing of material and lootings. While they are not necessarily part of a strategy, lootings contributed to worsen the water access problem. In Tamanah, private wells were looted by regime's militaries, who stole pumps, tubing, and motor (I3). Similar events were reported from Mheen, where as soon as the regime forces entered the village in 2013, the material was stolen. In 2014, once the regime left, "the population returned, re-bought pumps, re-constructed the wells that had been destroyed and started to live again" (I4).

Overall, this evidence of attacks committed by the regime is a new element compared to the existing literature that puts a strong emphasis on IS being the principal actor using water as a weapon. Whereas IS's monopole might be true for some regions, periods of the conflict, or specific infrastructures, the frequent use of water as a weapon by the regime cannot be denied. This actor mainly destroyed small infrastructures, which might be less relevant for international security but are crucial for the survival of civilians. Again, it is striking that the existing literature and the ongoing policy debate are mainly discussing the protection of large infrastructures, whereas dams were not reported targeted or destroyed by interviewees. Not a single deliberate destruction of a dam has been reported in Syria, by IS, the regime or any other actor. The fear against it, with hindsight, is not justified. However, the

momentum for water created by this fear could be canalized to call upon worldwide attention on the importance of ensuring the provision of water to civilians during armed conflicts. For this, examining the link between water access and energy provision is key.

4. Complementarity of water and energy supply

In some areas, the wells are located outside of the villages, which makes their control and the cutting of water access easy. In other villages, such as Kafr Laha, the wells are inside the village. Despite this, the water access has been impeded because of the interruption of the electricity provision by the regime as the electric station was under its control. Without electricity, it was impossible to make pumps work and to access the water from the wells (I20). This example demonstrates the complementarity of water and electricity. Deliberate power cuts were used to make the daily life of the population difficult and isolate it from the rest of the world. One of the effects of the use of energy as a weapon against civilians, which is probably its worst effect, is the shortage of water. Cutting the electricity, or other sources of energy such as diesel, which are essential for the pumps, is thus an indirect way to weaponize water. It is important to mention that this example is not an exception, but energy issues resulting in the impossibility of accessing water were mentioned by seven interviewees (I1,5,6,7,9,13,14,20). In New Aleppo, the electrical network has been replaced with a big generator for all the streets. An individual had a generator and by wires he was selling energy to all the houses, thus making money out of it. According to an interviewee "streets look like a giant spider web" (I13).

In addition to the individual scale, pumping stations cannot operate without energy neither. Indeed, an interviewee from Aleppo mentions that the main source providing water to Aleppo city is the Khafsah station in Maskanah, situated in the eastern countryside of Aleppo. Maskanah was a contested area between different parties to the conflict and as such has been the object of several battles across years. The numerous water cuts from Maskanah directly impacted Aleppo city and its inhabitants (I2). The relevance of energy for the provision of water is also found in articles from news' websites and reports from organizations. According to a 2015 article from *Al Jazeera*, the situation in Aleppo was complicated because while the water supply for the city depends on the operation of the pumping and electricity stations, each station was reported being under the control of different warring parties, and thus water cuts being even more frequent. According to the article, "the operation of the stations is often used in a way to put pressure on the other side"(*Al Jazeera* 2015). This example, once again, captures how water is presented as used among warring parties, and civilians pictured as being collaterally impacted. There is another example from Aleppo where the regime prevented the refuelling of the water company by the Syrian Arab Red Crescent (SARC). The water supply from the company was permanently cut and civilians had to rely on fuel to operate generators to pump water from improvised wells. Fuel was

expensive so the number of hours with electricity and consequently water was limited (Amnesty International 2017). All in all, in this complementarity context, it appears that access to energy is an important element in making water a powerful weapon against civilians.

CHAPTER 2. A strategy based on civilians and water access

This chapter will explore the place held by water in the war's strategies of IS and the regime. Their goals, as well as the role of the weaponization of water to reach them, will be presented. On the regime side, evidence of a comprehensive strategy based on the pressuring civilians will be demonstrated.

Identifying objectives: IS and the regime

1. Legitimization

Gaining popular support was an important element of IS strategy, and "IS's ability to effectively wield the water weapon is a major factor in achieving the political objective of winning the hearts and minds of the Iraqi and Syrian people" (King 2015, 161). IS's quest for legitimacy and consolidation of power as a state-like entity has been identified by scholars, and according to it, it was not in the group's interest to impede civilians access to water (Beccaro 2018; Von Lossow 2016a). The establishment of a caliphate "will presumably assume many of the attributes of statehood, including static control of territory and providing municipal services to its populace" (King 2015, 159). As part of its state duties, IS was reported collecting taxes in exchange of the provision of water. In Raqqa, the Credit Bank became the tax authority and 20 dollars were collected from shop owners every two months in exchange of electricity, water and security. Inhabitants from Raqqa communicated that those fees were less than they used to pay to the regime (Hubbard 2014). Like the well- known control of oil wells, the control of water wells appears to be another source of income. Schaap's work on the water allocation and distribution by IS in Manbij[3] shows that whereas IS-loyalists were unconditionally provided with running water and electricity, non-loyalists faced constraints. Her opinion is that IS's aim was not to make people thirsty, restrictions were mainly financial ones, but to make money out of sales (Schaap 2016).

Not only does the provision of water service reward its actual supporters, but it might also contribute to gain new supporters. Building on Ababsa research on the use of hunger as a weapon, I would like to explain how the access to water has been used as a legitimacy tool. According to the author, all warring parties used hunger to pressure the civilian popuation. Food was used "as a political tool to win allegiance" (Ababsa 2019, 261). More precisely, "the distribution of food parcels along with the subvention of the bread has attracted civilians from the opposition-held areas, as they were not able to afford the high food prices" (Ababsa 2019, 256). Civilians did actually move to IS-controlled areas in order to have food and a similar role for water can be deduced. Von Lossow confirms the ability of water

[3] Her analysis focuses on January 2014-April 2016, the period when the Islamic State controlled Manbij District.

to recruit new followers by explaining how the arrival of IS was perceived as a liberation among civilians living in areas where water had been inaccessible during several days or weeks.

For IS, the access to water can be temporarily used to pressure civilians, but the overarching goal of state-building takes rapidly the lead on it. According to Von Lossow, “IS has made only temporary use of the weapon water, generally for just a few days, largely avoiding broader long-term damage in the territories disputed or under its control” (Von Lossow 2016b, 95). There are other elements supporting this, such as IS’s reparations of pipes, building of tanks and drilling of wells in territories under its control (Global High Level Panel on Water and Peace 2016). Also, at the time of Von Lossow’s article (in the last months of 2016) the reparation of water infrastructures already took the lead on the demonstrations of power, according to the author himself (Von Lossow 2016a). The objective of establishing a caliphate has a positive impact on civilians, with respect to water access. Once the short-term demonstration of power stage is reached, the duty to make water accessible to civilians takes the lead in order to legitimize the role of IS. Harming civilians does not seem to be neither the primary nor a sustainable aim for IS, but what about the regime?

2. Loyalty

Investigating the analogue role of water as a legitimacy tool for the regime, while falling short, revealed the existence of another goal: the forcing of civilians’ loyalty. The regime is already a state and was in charge of the water provision before the conflict. Interrupting the water service provision in areas outside its control had an effect similar to the legitimization strategy of IS: it showed civilians that "the regime is the only one able to rule in Syria"(I6). It is a demonstration of its ability to offer services and proves that “in its absence the country cannot function” (I15). After months and even years of being deprived from accessing water, civilians might decide to make allegiance to the regime, if they know that better living conditions are offered in its areas. This explains the repeated water cuts in areas out of the regime’s control, particularly in areas close to opposition or IS-controlled areas, where it was possible for people from neighbouring areas to hear about what they could have. Al-Ghouta is an ideal illustration. Whereas most of Western Al-Ghouta was loyal to the regime, an interviewee coming from Eastern Al-Ghouta declared that whereas he and others in his village could not access water, the loyal villages in Western Al-Ghouta were “full of water” (I16). Similarly, in Homs countryside several interviewees shared that everything (water, electricity, food) was available in loyal villages, whereas in their own villages that were under the control of the opposition forces, the water provision was suspended (I6,8,17,19,20). An interviewee coming from the Old city of Homs mentioned that there was a distinction among, but also within, villages. Neighbourhoods having a high number of regime-opponents were prevented from accessing water (I5). In Al Nerab, regime-loyalists were able to access

water cheaper and more regularly than the rest of the population. Whereas loyalists could afford water thrice a week, 'normal people' only could have access once a week (I10). A similar distinction based on loyalty has been reported on *the New Arab* news website. Mezzeh, a village that was controlled by the regime, received water almost daily, while Barzeh, under the control of the opposition, only received water two hours per day. The water in the capital being in the hands of the regime, it was "shared out depending on level of support for the regime in the district"(Razzaq 2015).

Overall, there was the will to afraid the population, to create "psychological pressures to force the submission of the population to the regime" (I7). People suffered from the lack of water and an interviewee reported that the regime was claiming that "he cannot give us water because we are against the regime" (I8). Restraining water access was a way to pressure civilians and to force their loyalty (I16,19). Life outside its control is made so unbearable that the only choices offered to civilians are to join the regime's side or leave (I5,14,20). The displacement option is discussed in the next paragraph.

3. Displacements

According to Lichtenheld, a researcher specialized on forced migration, "the Syrian war serves as a stark reminder that population displacement is not simply a consequence of armed conflict; it is integral to the strategies, tactics, and practices of combatants"(G. Lichtenheld 2017). It is interesting to contrast it with King's explanation of unintentional weaponization of water causing unintended population displacement. The data from the interviews tends to confirm that there was indeed a clear will to displace civilians on certain areas controlled by the regime. A recurrent answer given by interviewees, when asked about the strategy behind the decision of using water as a weapon, was that the forced displacement of populations was the goal. Concretely, interviewees shared slightly distinct experiences of water-related forced displacements. Some reported going from one village to another to look for water (I16), whereas others moved from their villages and cities to their own fields, as they had private wells waiting for them there (I3). The choice of destination was highly influenced by the need to find a place where water was accessible. An interviewee explains that he left Aleppo, where he was living and working, to go to his hometown in Hama countryside, where he had a well. As other family members did the same, they ended up being four families under the same roof. Unfortunately, during summer there was not enough water for all of them, so he was constrained to move a second time. This is when he left for Turkey (I18). Not only internal displacements, but also transboundary ones resulted from the unavailability of water: "without drinking water and water for animals, people had to leave for Lebanon, Jordan, or Turkey" (I20). The testimonies suggest that the displacements were the spontaneous decision of civilians and motivated by the water access problem. However, these stories and their frequency support that forced displacements were not an undesirable casualty happening here and there, but part

of a well-designed plan of the regime. Allowing departure in exchange of territory, has been the surrender deal offered to opposition fighters and civilians. The leading role of the regime in facilitating evacuations with the systematic displacement of so-called opponents corroborates that massive displacements were at the core of the regime's strategy. According to Denselow, the green buses are part of "a strategy of the regime and its allies to consolidate a 'loyal' population", and the consequent population swaps already let emerged the portray of the new Syria with ethnic-sectarian and urban-rural divides (Denselow 2017). This statement shows the complementarity between the displacement's objective and the loyalty one. Lands grabbing is also, and strongly, part of the objective. This is the point of the following section.

The result of those massive displacements is that they are being used as an urban planning tool. The regime is remaking the country to maintain control over it and there is a feeling that "Syria's regime is changing the country's urban planning laws to punish its foes and reward loyalists"(Yahya 2018). An interviewee, (I15). Indeed, some legislative changes denying property rights and aiming at permanently dispossess Syrians have been passed. In 2012, the Decree n°66 targeting unauthorized housing and informal settlements in Damascus was approved. In 2018, law n°10 extends the Decree n°66 to the entire country and to all kinds of housings. People owning a property in an area in which a development plan has been validated by the regime are then given 30 days to provide proof of ownership. The reconstruction process has already started in some areas of the country and denunciations of demographic engineering are rising. Indeed, according to an interviewee, the regime did not force all the people to leave but "some regions were chosen" (I18). The regime is now free to re-build the country from scratch, deciding where people will settle in order to secure the loyalty from its population and avoid future revolutions. Areas that were the cradle of revolution are particularly targeted by the reconstruction plans, such as Homs and Damas, suggesting that those that revolted against Assad will be punished.

Displacement is a long-term component of the government's strategy. The re-designing of the country according to Assad's wills has already started and will be difficult to monitor. International lawyers denounced that without political transition, any state or organisation contributing to the reconstruction process is potentially contributing to war crimes, in particular to ethnic cleansing (Barthe 2018). Displaced populations, if willing to return one day, would most likely not be able to do so, or at least not allowed to decide where to return. Another interesting element that might corroborate this theory is the low level of returns so far. An interviewee, who was general in the army, made an interesting comment about the prohibition of return by the regime. He said that after the departure of the militaries occupying the villages of Jobar, Baba Amr and Kafr Aya, civilians asked to return to their houses, but the

answer coming from the high level of the government was that "there is no right to return" (I12). Also, more than a way to punish non-loyalists, there is another element adding to the complexity of the regime's strategy: the large economical projects pre-existing before the war. Some villages were impressively and completely emptied after the regime took their control. This is the case of the 20 villages of Al Qusayr (I5). An interviewee from Al Qusayr shared that there was a tourism development project for which the cleaning of the Qattinah lake as well as the removal of the inhabitants were required (I11). Reference to a project of touristic complex on the banks of the Lake Qattinah is also made in the academic literature. In 2008, before the beginning of the conflict, a research on this project shows that while there were villages in the area, accessing the land was a precondition to its realisation (Haj Asaad, Saadé-Sbeih, and Jaubert 2019). In the same vein, the Old City of Homs was completely purged (I5). While the reasons might be multiple or difficult to identify at this stage of the conflict, what is clear is that the displacement of population is one goal of the regime's strategy and that water was an important element to achieve it.

4. Comparing objectives

Distinct objectives between IS and the regime resulted in even more different uses of water against civilians. In IS-controlled areas, civilians did not suffer from a sustained and systematic difficulty to access water. Using water to displace populations seems inconsistent with IS state's ambitions, as one of the key components of the definition of a state is having a population. To meet its legitimization's objective, it was more adequate to work on improving the water access in areas under its control. Indeed, for insurgent groups, "the most important element for victory is the unconditional support of the local population"(Beccaro 2018, 212). Unlike IS, prohibiting the access to water appears to be in line with the two objectives identified for the regime. Testimonies from civilians support the deliberate targeting of non-combatants by the regime, who "makes people starve and deprives them from water, in order for them to leave or to surrender" (I14). Restraining the access to water permits to force loyalty and displaced populations, because "water is life and if there is no more water you need to leave the region" (I3).

The comprehensive strategy of the regime

The forcing of loyalty as well as the forcing of displacements indicate that the regime is waging a war against the civilian population. Water is a powerful weapon specifically because of its ability to affect non-combatants. The non-academic literature denounces a comprehensive siege strategy conducted by the regime since 2012, when "pro-Government forces began laying sieges in a coordinated and planned manner, aimed at forcing populations, collectively, to starve or surrender" (Independent

International Commission of Inquiry on the Syrian Arab Republic 2018). While NGOs reports denounce the systematic targeting of civilians, in the academic literature that has been presented earlier civilians are still described as unintended casualties of the weaponization of water, which is happening among belligerents. Their view reflects how civilians are commonly perceived in conflicts and this perception is formed by the distinction principle at the core of IHL.

1. The distinction principle

The principle of distinction underpinning many rules of IHL makes a double distinction: "the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives" (Protocol I 1967, art.48).

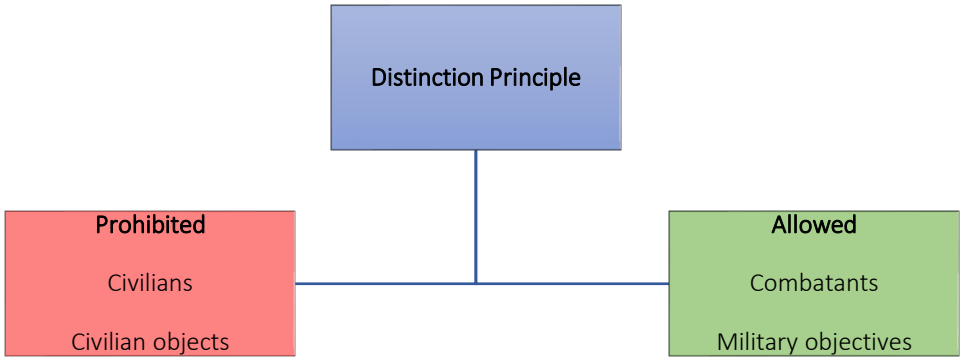

Illustration 6 Distinction principle

Basically, any direct attack against a civilian or civilian object is prohibited. Additionally, any weapon which does not target civilians specifically but incapable of distinguishing between civilians/civilian objects and fighters/military objects is also illegal. In that sense, water is commonly perceived as an indiscriminate weapon. It should be mentioned that this restriction still holds in cases where combatants hide among civilians. The definition of civilian objects by the negative is interesting as it means that everything that does not fall under the definition of military objectives is considered as a civilian object, but what exactly is a military objective? In the Protocol I, it is mentioned that: *"In so far as objects are concerned, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to a military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage"* (Protocol I 1967, art. 52.2). IHL does not allow to consider civilians as military objectives and primary victims of attacks. However, the role of civilians as unintended casualty has already been questioned by the numerous cases of deliberate blockage of water access presented in the first chapter. Stopping the water access was one instrument used by the regime to hurt civilians. Refusing to see civilians as targets is a denial of the reality.

2. A series of attacks against civilians

A statement from an interviewee from Ariha is impressively clear on the fact that "for the regime the enemy is not an armed group, but the population that is in the opposition-controlled area" (I6). Looking at the numbers of civilians that were killed by different parties to the conflict allows to observe the discrepancy in the number of civilians killed by IS and the regime, which supports the fact that objectives and strategies of both groups are different. Calculating the toll was challenging and lead to different numbers among sources. Two different sources were used to increase the reliability of the conclusions. The data comes from the Syrian Network for Human Rights (SN4HR 2019) and the Syrian Observatory for Human Rights (SOHR 2019).

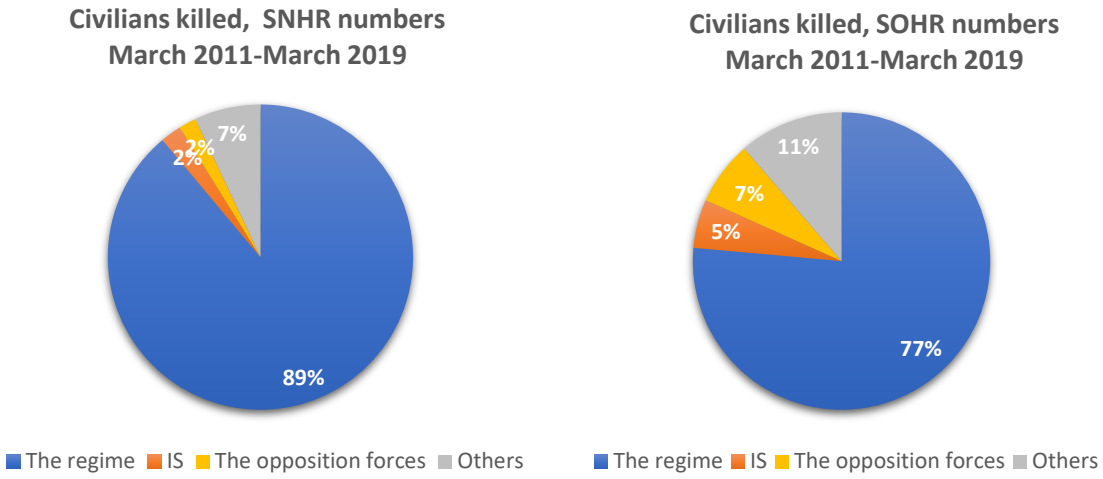

Illustration 7 Percentages of civilians killed per actor

Despite the differences in absolute numbers (223161 for the SN4HR and 112623 for the SOHR), both sources confirm that the Syrian government is responsible for the large majority of civilian deaths. This confirms that the weaponization of water is part of a regime's series of attacks directed against civilians, like the bombing of hospitals. Nonetheless, the Syrian conflict is more complex than a democide with a government killing its own population. The number of refugees and IDPs outnumber by far the number of persons killed. The overall number of Syrian refugees reaches 5.6 million, with 64% in Turkey, 17% in Lebanon and 12% in Jordan as of 3rd June 2019 (UNHCR 2019b). In addition to those refugees outside of the country, there are also 6.2 million of IDPs as of January 2019 (UNHCR 2019a). The ongoing conflict in the northern Hama and southern Idlib governorates increases both numbers quickly. Water is especially effective at pressuring and displacing people, while other weapons are more effective at killing. Water has thus a specific role within a comprehensive strategy.

3. The siege strategy

The weaponization of water is part of the broader siege strategy of the regime. Since the beginning of the conflict, besieging has been an intrinsic part of the war strategy of the government. In April 2011 already, after a month of unsuccessfully trying to quash the peaceful protests in Daraa, the military encircled the city and cut it off from the outside world for 11 days. This first and brief siege will be followed by many others. According to the Siege Strategy, a project of a peace organisation documenting the sieges in Syria, the regime is responsible for the large majority of sieges. It is also the only actor that has led systematic sieges across the country. An evolution from a 'surrender or starve' strategy, where civilians from the besieged areas were famished, to a 'surrender or die' one with more aggressive military attacks, is described. In besieged areas, inhabitants were "cut off from electricity and running water, and deprived of food, fuel, medical supplies, and other basic necessities" (PAX 2019, 11). Stopping the access to water is one of the quickest ways to pressure civilians in a besieged area. Also, as it has been presented earlier in this dissertation, water, food and energy are closely inter-linked, which shows the key role of water in the regime's siege strategy. The aim of the besieging strategy is the surrendering. Water is key in forcing loyalty, but what about displacements? Sieges are considered as "a form of collective punishment that often ended in the complete collapse of targeted communities and large-scale forced population transfers as part of a long-term demographic engineering strategy" and water has the power to displace civilians (PAX 2019, 11). An interviewee from Darayya, in Damascus, explained how after years of siege, he left his city "according to the forced displacements' agreement, that gives us the right to leave or to surrender to the regime, but as I feared the execution of the regime I decided to leave to Idlib in July 2016" (I14). As the interviewee was injured, he has then been transferred to Turkey to be cured. Overall, weaponizing water allows to reach the displacement and forced loyalty objectives, which are part of the larger siege strategy of the regime.

4. The ability to wage water as a weapon

Finally, now that the weaponization of water's role in a large-scale and systematic strategy of the regime has been demonstrated, I would like to elaborate on the choice of water by the regime. In addition to the frequency component, with the numerous examples provided in the first chapter, there are other elements supporting the systematic character. First of all, the regime, who has overseen the water provision since decades, possesses the required knowledge to inflict great damages to civilians without hurting its own forces. The strength of the damages associated with the weaponization of water highly depends on the timing, and there is evidence of the regime taking this into consideration. Opening the gates of a dam in winter, when the water level is high due to the rainfall rate, does not have the same effect as opening it in summer. The regime was reported gathering water in winter in order to keep

threats level high and stop the provision of water in summer when people needed it the most (I8). It also stopped the water provision during the key period for agriculture to impact the harvest (I9). Moreover, the ways water is weaponized varied among areas and hydrographical contexts. For instance, despite being often targeted, water towers were not destroyed everywhere in Syria. An interviewee from Mheen explained that "in other villages it may make sense to bomb water towers in order to impose conditions to civilians and ask groups to surrender, whereas in Mheen the surface water being easily accessible, people can just dig a well and access water" (I4). Finally, to support the evidence of a carefully planned strategy linked to the use of water as a weapon, the Ar Rastan example speaks for itself. The map below shows the drinking water supply network going from Al Qusayr to Ar Rastan. In 2012, Ar Rastan was under the control of the opposition, whereas the regime was controlling the pipeline. While it could have decided to cut the access to water, the regime did not stop the water provision as the same pipelines are then going to Hama and Salamiyah that were under its control (I7). This proves that the knowledge the regime has on the water networks makes it more capable than any other actor to strategically weaponize water without hurting its own troops.

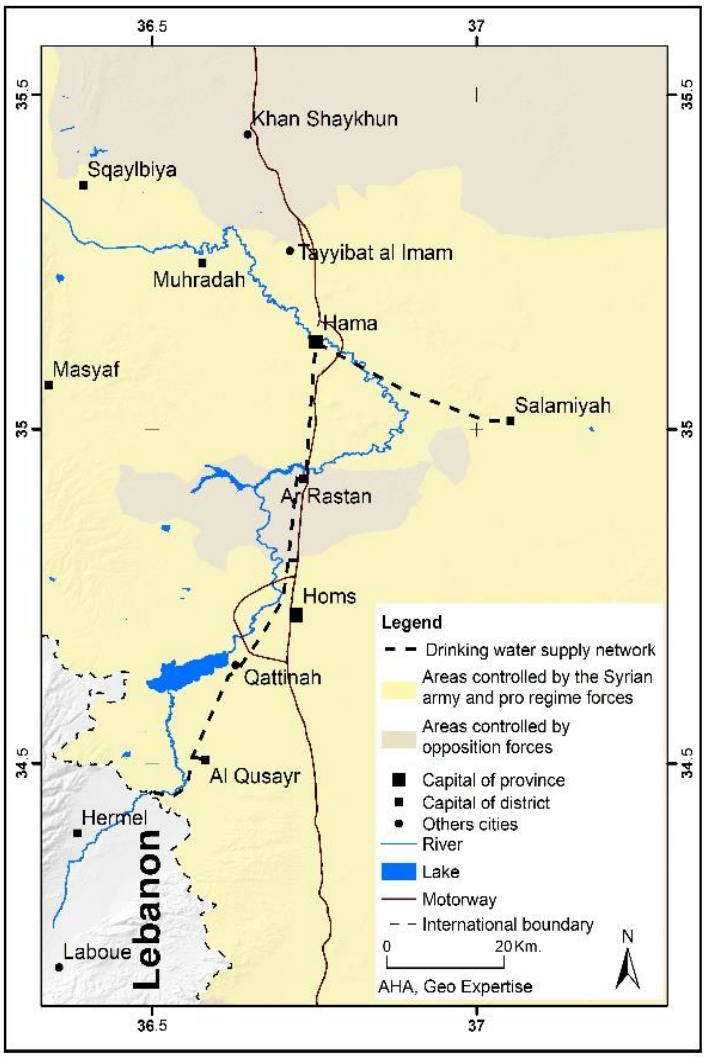

Illustration 8 Drinking water supply network

CHAPTER 3. Responding to the weaponization of water

Civilians have been heavily targeted by the regime's use of water as a weapon and this part will explore some of the responses that have been provided to it, including a reflection on their strengths and weaknesses. No one-size-fits-all solution has been discovered yet, but partial solutions will be introduced in order to identify limitations and good practices, which could be shared in future conflicts during intentional interruptions of water provision.

The reality of the access problem

Before investigating the responses to the weaponization of water, it is important to understand the needs of civilians. In Al Nerab, water was reported having been cut for six years, so people relied on water trucks and "it is only after six years that he [Bashar] started to give us water once a week during two to three hours" (I10). The suspension of water provision often meant the beginning of a water trucks' trade managed by privates, whose water quality is bad, and prices high (I2,5,9,17). In Aleppo water was difficult to access; "it was managed by privates, but it was not a mafia, as for instance for gas" (I2). To have a better idea of the price ranges and what is understood by 'expensive', an interviewee form Aleppo mentioned that 1m3 of water, which according to her equals water for three persons for three days, costs 1500 Syrian Liras[4]. She also mentioned that the monthly salary was around 20'000 Syrian Liras and that you might have a wage every four months (I2). Based on these numbers, I calculated that 22'500 Syrian Liras were required every month only to cover water expenses, while 20'000 were available to cover all costs for four months. Water habits had to adapt to this. The testimony from a mother with three children in Tal Dahab confirms the price range. According to her, 1m3 costs 2USD, and she needs a 1m3 tank every two days (I6). She added that as some people were unable to afford it, a solidarity movement emerged so those having water shared it for free with those in need. In Kafr Laha, the 1m3 tank was reported to cost 4USD. Despite knowing that the quality of water was low, there were gatherings of people in the streets to get it (I20).

The Old city of Homs was totally closed in early 2013 and an interviewee shared that he saw people creating their own 'filters' with a mix of sand, cotton and coal. They separated "the liquid and solid parts from wastewater, passed the liquid part through tights in order to clean it and drank it" (I5). Important health problems were induced. In 2016 in Aleppo, after one and half a month without any water, "the water arrived one day per week, but only during nights and for 5 hours" (I13). During those nights, people were taking everything they could find to collect water, even glasses. Similarly, in Kafr Nabudah

[4] As of 23rd May 2019, 1500 SYP = 3USD

water is currently provided one day per week, so "people put everything they can, such as buckets, to get as much water as they can" (I1). In Ar Rastan, after the local distribution network was damaged, "civilians started to take water directly on the pipelines, as they were not very deep" (I7). The water was transported either by water trucks or by individuals who brought it directly to their house.

Solutions from humanitarian organizations

The limits of humanitarian aid were reached in Syria: humanitarian workers were not allowed to access areas outside the control of the government. This is problematic as humanitarian aid could reward the regime. The uneven distribution of aid between government and non-government controlled areas results in the presence of aid mainly in regime's areas (Meininghaus 2016). This means that the reconstruction of water infrastructures and the consequent amelioration of the water access in areas under its control is already, and will continue being, attributed to the regime's credit. While analysing the testimonies from the interviewees, I first thought they would not be useful for the section on humanitarian aid, as most of the respondents did not have an experience with humanitarian organizations to share. Then, I realised that the absence of humanitarian aid was actually an important feature of aid. The inability to reach people in need in encircled areas is as much indicative as if interviewees had had an actual experience to share. One said that "even an ant cannot enter" (I20); another sceptically commented that "people only saw the advertisement of aid on TV" (I19). Apart from the inability of organisations to access their communities (I17,18,19,20), there was a general mistrust in humanitarian organizations. There was a feeling that the rest of the world does not care about their lives and has abandoned them.

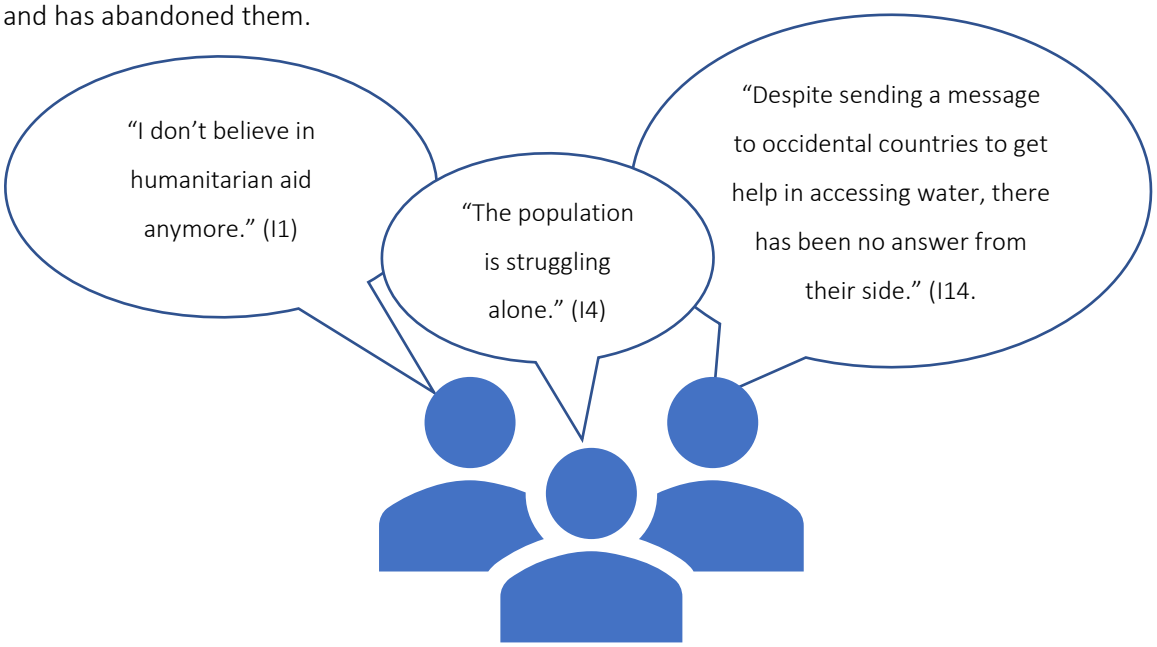

Illustration 9 Civilians' perspectives on humanitarian aid

The ICRC provided an original solution allowing to cope with the access problem of humanitarian workers. In October 2014, the organisation provided inhabitants from Aleppo with an online map locating the closest of over 80 water points across the city of 2 million inhabitants. The app, which was available on phones and has been updated until 2016, guided them with a Global Positioning System (ICRC 2016). The illustration below is a screenshot of this online map.

Illustration 10 Screenshot of the online map in Aleppo (ICRC 2016)

Assuming the neutrality of the workers will be respected, for instance to allow their passage in order to repair the infrastructures, is unrealistic. Yet, this was one of the solutions proposed by the ICRC and emphasised by the Global High Level Panel on Water and Peace and Tignino. Establishing water ceasefires allowing the passage of technicians to access and repair infrastructures is an interesting proposition but apart from the low probability of happening in situations where workers face an access problem, this solution only tackles one specific case of weaponization of water: the destruction of water infrastructures (Global High Level Panel on Water and Peace 2017; Tignino 2016). It does not answer other uses of water as a weapon in which civilians can be prevented from accessing water despite running infrastructures. Also, finding the right timing to reconstruct is not an easy task. In some areas, reparations of damaged infrastructures did happen, such as in al Nerab where the water tower and the pumping station were rehabilitated by an NGO in 2014 (I9). In other areas that are still considered as conflict zones, it has not been the case. For example, in Kafr Nabudah, the destroyed water tower has not been reconstructed because it is still endangered (I1). In Mheen, civilians purchased the equipment needed for the wells to function and that had been stolen by the regime, but one year later they had to leave again when IS entered the village. The militia stayed a month and then the regime forces came back, and lootings re-happened (I4). Investing in reparation and new material is a complex decision to make when there is no security about what tomorrow will bring. Infrastructures in warzones can be re-destroyed in the next days, so their reconstruction is questionable and raises sensitive ethical questions: Until when should organizations wait before intervening? What if the region is in war during a long

period? Are there any specific criteria that justify an intervention: number of people relying on an infrastructure for water, the severity of the damage to the infrastructures etc.?

This timing issue points out a bigger problem: the mandate of humanitarian aid itself. Humanitarian aid, unlike development, is supposed to consist in urgent and punctual provision of emergency aid to reduce immediate suffering during a crisis. However, the Syrian crisis has gone on for so long that it cannot be classified as emergency anymore. The use of water as a weapon has both immediate and long-term impacts, which should be taken into account by organizations. There is the evident immediate problem, the shortage of water for civilians' daily life, but there are also longer-term effects that will last even after the conflict ends. They should be considered, or they risk impeding and slowing down the war recovery. An illustration of emergency solutions are the fountains installed in Aleppo. To ensure the water supply, the SARC and ICRC installed 8 tanks of 2000 liters of water, in 2015 (SARC 2015).

Illustration 11 SARC installing emergency fountains (SARC 2015)

In a long-lasting conflict such as the Syrian one, humanitarian and development goals are becoming increasingly intertwined. In February 2016, at the World Humanitarian Summit held in Istanbul, the former UN Secretary-General, Ban Ki-moon, claimed that there is a need to "transcend the humanitarian-development divide by working to reduce people's vulnerability and risk"(Ki-Moon 2016). Syria is the perfect example of the blurring of the frontier between humanitarian and development aids, with the beginning of the reconstruction process before the end of the conflict itself. It is not only a matter of definition, but the emergency character of humanitarian aid, if not thinking sustainably, can have damages in the long run. Organisations were reported drilling wells, while the low quality of the water coming from them will have consequences in terms of public health and water-borne diseases. As an example, in July 2013 cases of polio were signalled in the country after an 18-year absence. Typhoid, dysentery and hepatitis A were also among the waterborne diseases identified in the past years in Syria (Sparrow et al. 2016). Another concern related to the sustainability of this kind of response is

that providing water with water trucks or building new wells is a very short-term answer. After some months the wells will be out of order without leftover pumps or access to energy. The French NGO ACTED*, Agence d'Aide à la Coopération Technique Et au Développement* in French, declared being conscient of the need for humanitarian aid to provide more than an emergency answer, and is thus solarizing water supply infrastructures in Syria ('Solar-Powered Water Pumps for Conflict-Affected Syrian Communities' n.d.). Geo Expertise, a Geneva-based NGO, constates that donors focus mainly on emergency drinking water supply solution, while the restoration of irrigation water receives little attention (Haj Asaad and Chamali 2016).

A way for humanitarian organizations to adapt to the duration of the conflict would be to work on finding solutions that both answer the lack of water and empower civilians. Mc Goldrick claims that "people affected by crises should be enabled to exercise greater voice and choice in humanitarian action" and recommends the collaboration of national and international humanitarian organizations with local ones (McGoldrick 2015). Before the war, the water provision and treating systems were highly centralized, which means that only a handful of people know how to keep it functional. Civilians' capacities should be enhanced by providing them with information on how to protect, repair, but also manage the infrastructures. Geo Expertise's approach is precisely to strengthen the capacities of Syrian civil society organizations. Constating that the only way to improve the distribution of humanitarian assistance in Syria was relying on local organizations, in 2015-2016, the organisation conducted trainings in design and management of water projects in North Western and Central Western Syria. During the course, the trainees identified and designed potential drinking water or wastewater treatment projects, which could be implemented by civil society organizations (Haj Asaad, Chamali, and Al Dbiyat 2016; Haj Asaad and Chamali 2016). Another project was the encouragement of local collective water management with the establishment of a water user association in 2017 in conjunction with the rehabilitation of an irrigation scheme in the Ar Ruj plain ('Geo Expertise: Projects' n.d.). In the same vein, in 2013 the ICRC and the SARC provided local water boards in Damascus, Aleppo, Homs and Idlib with technical expertise, as well as pumps and generators (ICRC 2013). The conjunction between material and knowledge allows to empower civilians and to render the water accessible despite a conflict. The degree of empowerment will be dependent of the actual degree of delegation of power, but what is certain is that in term of efficacy of the delivery of aid, local actors would be helpful in a situation where humanitarian organizations are prevent from accessing those in need.

Civilians all by themselves

While some of the interviewees interrogated recognised that some humanitarian organisations did something to improve their access to water, with the building of wells or the bringing of fountains in the streets, they agree on the fact that aid provided was only a small contribution compared to their needs (I5,13). The population counter the absence of humanitarian aid with mutual aid and genuine ways to access water. When the humanitarian principle is not respected, the only option for civilians is to find their own coping strategies.

Before the war, the construction of new wells was constrained by the authorisation of the state, which was a long and expensive process. Authorisation was thus difficult to obtain. While legislation aiming to protect water resources was passed in the 1960s already, the implementation really started in the late 1990s (Saadé-Sbeih et al. 2018). The enforcement of this regulation ended at the beginning of the revolution. Individuals were "exploiting the lack of state and dig their own private wells" (I1). Like aid organizations, civilians were reported constructing wells on their own, especially in areas unreachable by organisations. Concerning the frequency, the digging of wells by individuals themselves was reported more often than by IOs or NGOs. Whereas in some areas, interviewees did not construct any new well, in other areas such as Tair Maalha "a hand-made well was built in almost every house, without machinery or electricity" (I19). Similarly, in Kafr Laha, "everyone went to his field and dig a well, if you were lucky you got dirty water, otherwise you did not get any water" (I20). Machinery was often unavailable, resulting from a destruction, stealing, or lack of electricity. Sometimes, it was also just too dangerous to use because it could generate an attack by the regime. Therefore, wells were mainly hand-made. The video below, provided by an interviewee from Al Ghouta, shows the digging of wells by hand and the extraction of water by traditional methods.

👁 Click on the picture and follow the link to access the video provided by I16

Video 2 The people of Eastern Ghouta extracting water by 'traditional' methods

A problem associated with the high number of new wells, as reported by the SOHR, is the threat posed to the groundwater resources. While this action is beneficial to answer urgent needs in terms of access to water, without any control and because of the low rainfall level of past years there is a serious risk of groundwater overuse (SOHR 2019). In Daraa for instance, the Muzayrib's lake has been reported dried. Before the war, a study concluded that no wells should be constructed within 30 km^2 of the lake in order to preserve it, but with the absence of state, 12'000 new wells were reported between 2011 and 2017. According to Ali al-Buqayrat, a Syrian water expert, the main reason of the drying "is the spread of unregulated wells in the region"(Leestma and al-Noufal 2017). Another issue with those new wells is the health consequences that they bring with them. People might not die instantly because of thirstiness, but water-borne diseases can have devastating impacts. An interviewee reported that several people, particularly children got sick after drinking the polluted water coming from those new wells (I17). *The New Arab*'s news website also reported that in Douma, victim of the siege of the regime, people depended on water from wells dug inside or near their house, "many have contracted hepatitis and typhoid due to drinking contaminated water" (Razzaq 2015). In Kafr Nabudah, an interviewee reported that "due to forced economies on water and hygiene, diseases spread" (I1). It should be mentioned that among villages, there is an important difference in the depth required to access water. According to interviewees, in Al Hulah for instance water is available 4-5 meters deep, whereas in Tal Dahab it is 20-25 meters, and in Al Ghouta 30 meters. In Ariha, it is required to drill around 100 meters in order to access the first layers of water and 600 meters for the second ones (I6,15,16,17).

Apart from handmade wells, some brilliant ideas emerged out of despair. Darayya was besieged for four years, so among other shortages there were shortages of water and diesel. People started using plastic to reproduce it, after they realised that burnt plastic smells like petrol. Youtube videos taught them how to boil the plastic and keep it at a precise temperature to make the liquid coming out of it. This liquid was used for the motors of water pumps. Indeed, as the first layer of water are polluted in Darayya, pumps are necessary in order to access a water that cannot be called drinkable but is not too contaminated. Without electricity but with imagination, people also found a way to bring water from the ground to the second floor by setting up a system with a dynamo attached to a bike. This bike-method had a cost so not everyone was able to afford it. Using buckets remained an option for those with less financial means (I14). Sharing this information with civilians whose access to water is challenged because of a lack of energy might help. Furthermore, the need for protection of certain infrastructures was understood by civilians. In Darayya, wells in urban areas being scarce, the civilians were aware of their importance and felt the necessity to protect them against attacks. An interviewee mentioned that tables, sand and soil, reaching five meters, were pilled over the wells (I14). Some people started digging wells in the bedrooms, as it was safer than going to the field (I16). Similarly, domestic

tanks were not let on the roofs as it is usually done but inside the houses to protect them (I14,16). Awareness should be raised about the importance to protect wells and other vital infrastructures in conflict.

Finally, in the absence of government and of aid, not only did civilians bypass the administrative barriers to have their own (handmade) well, but they also organised among themselves. Testimonies of solidarity were reported from Al-Ghouta and Tal Dahab, where neighbours gathered together to build hand-made wells together and those having wells on their properties shared it with the others (I6,16). A more formal way for civilians to organise and cope with the absence of state and aid was also reported: the establishment of local councils. Those councils were pictured positively across interviews. Humanitarian organizations were reported giving money to local councils, who were then in charge of distributing it, as it was easier to enter an encircled zone than pumps or generator. Local councils were advantageous in terms of continuity of water provision and affordability of water (I1). In Ar Rastan for instance, the local council paid water-trucks owners "so they could deliver water free of charge to civilians" (I7). In Al Nerab, councils were reported collecting money from families to cover the expenses of the water station's maintenance. An NGO repaired the station, but the local council was ensuring the sustainability of the solution (I9**).** The establishment of local councils, like the above-mentioned collaboration with local water boards of the ICRC and the establishment of a water user association by Geo Expertise, shows the capacity of civilians to take over state and humanitarian organisations' functions in their absence.

Conclusion

Despite a limited knowledge on the weaponization of water, the notion is increasingly mentioned in academic and non-academic articles. It is even presented as one key characteristic of the Syrian conflict. The combination of unreliable sources, a restrained geographical area studied, few events highlighted as a trend, and the several agendas at stake, resulted in a misleading understanding of what the weaponization of water in Syria is. The tactical use of water on the battlefield with the key role of large infrastructures to lower the opponents' strength, while presented as a systematic strategy of IS in Syria, was by far exaggerated and inaccurate. The present analysis of the weaponization of water in the western part of Syria contrasts with findings from the Euphrates region and reveals the existence of a strategy on the regime's side: the deliberate impediment of civilians' water access. Analysing the weaponization of water with first-hand data collected from interviews with Syrian refugees allowed to capture the diversity of possibilities to impede water access: the control of irrigation water and drinking water, the destruction of small infrastructures, and power cuts. Civilians interviewed during the research process expressed no doubt on the intention of their government, which was to force their submission to the regime's rule or their departure. The aim of this dissertation was to investigate if and how civilians constitute a privileged target of the weaponization of water in the Syrian conflict, and the findings suggest that the whole perception of the weaponization of water should be reversed. In cases of weaponization of water during a conflict, the role of civilians as primary target of the weaponization of water should be presumed.

The regime's use of water against civilians should be understood as one component of a larger set of attacks targeting the civilian population. Parallel conflicts are at stake in Syria[5] and the weaponization of water focusing on IS and large infrastructures contributes to shift global attention from the revolution of the Syrian people against their government, to a non-international conflict opposing the regime to non-state actors. In that picture, attacks against civilians are perceived as being unintended casualties resulting from the other conflicts, while they are specifically attacked by the regime. In that way, this thesis challenges the traditional definition of a war among two state actors, the belligerents, who combat on a battlefield. While the evolution from this traditional type of conflicts to modern ones has been acknowledged in the literature, the understanding of modern conflicts is based on the appearance of a new actor, the non-state actor (namely IS), who is challenging the Westphalian monopole of violence by states. However, an element that remains silent is the legitimacy of the use of

[5] The Syrian government is engaged in several non-international armed conflicts against non-state actors, such as IS and the opposition forces. Also, the involvement of the US-led coalition on Syrian territory without its government consent gave an international dimension to the conflict.

violence by states. When directed against non-combatants, this legitimacy should be questioned, and adequate means of action should be researched to prevent it. It is probably too early to call it a trend, or a new characteristic of modern conflict, but the Syrian example is questioning the common knowledge about conflicts and consequently challenging the tools provided on behalf of the humanitarian principle.

IHL is based on a distinction between civilians and military objectives that does not represent the reality of conflicts anymore. The weaponization of water illustrates perfectly the inability of authors to include the targeting of civilians in their analysis, demonstrating that the delimitation between collaterals and intentional targets is not straightforward. The Syrian case informs us on the incapacity of international law to protect civilians and queries whether there is a need for additional laws. The current legal framework, theoretically, already prohibits the intentional targeting of civilians, restraining military attacks to military objectives, and imposes that the proportionality between the collateral damage against civilians and the military gain is respected. However, existing laws "have largely failed to prevent attacks on civilian water systems, and they do not appear to impose sufficient liability or accountability on governments in a way that offers effective constraints on military operations targeting such infrastructure" (Gleick 2019, 1738). IHL rules are not respected, which suggests that the real issue is more the enforcement of current laws and less the adoption of new ones. Whereas the non-respect of IHL by non-state actors is often denounced, states often act as if they were above the law. In the international area, regulations are nothing without enforcement, and there is no enforcement of IHL without states' commitment to sanction its non-respect.

Apart from the limitations of the legal approach, the analysis of the use of water as a weapon in Syria also points to the limits of humanitarian organizations. In situations where IHL, or the humanitarian principle more generally, is disregarded, the access of organizations to the field cannot be taken for granted. Humanitarian organizations need to consider this component and design solutions able to overcome it. Their short-term approach has been challenged by the duration of the Syrian conflict. Solutions need to be designed in a way that considers their sustainability and their potential instrumentalization. This will allow avoiding causing harm not only in the present, but also later. All in all, the end of an era seems to be approaching for the humanitarian approach. It will have to adapt to the realities of conflicts. In a world where IHL is not implemented, and humanitarian organizations' intervention is impeded, then how can civilians be protected?

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Appendix

THE GRADUATE INSTITUTE GENEVA

INSTITUT DE HAUTES ÉTUDES INTERNATIONALES ET DU DÉVELOPPEMENT

GRADUATE INSTITUTE OF INTERNATIONAL AND DEVELOPMENT STUDIES

geo expertise

ORAL CONSENT FORM: Statement of Research Purpose

Investigator
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The research is part of the Investigator's Thesis, which is required for the completion of her master's degree. The research is supervised by Professor Ronald Jaubert from the Graduate Institute of International and Development Studies, and is conducted in collaboration with Geo Expertise, a non-profit organization based in Geneva and working in Syria.

Research Purpose
In Syria, water has frequently been used as a weapon. The word "weapon" is employed when water is strategically used to pressure civilians. Water can be used as a weapon in three different ways: contamination, floods or cutting access to water.

The purpose of this research is to **investigate the weaponization of water in Syria, its consequences on civilians in terms of starvation strategy and forced displacements, and the humanitarian response provided to it.** As part of the research process, interviews are held with key organisations working in Syria, individuals having endured weaponization of water, and academics having relevant knowledge on the topic.

Interviewee Consent

Interviewee's participation to interviews is voluntary. They have the right to decline to answer any question or to end the interview anytime. Notes will be taken during the interview, but any interview content that is made available through academic publication or other academic outlets will be anonymized so your confidentiality will remain secure.

Professor Ronald Jaubert	**Ahmed Haj Asaad**	**Elodie Feijoo**
For the Graduate Institute	For Geo Expertise	Investigator

Interview form