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Targeting the Unseen: Gendered reverberating harm from attacks affecting water access- A Case Study of Sudan

The Intersection of Climate Change, Gender and Conflict in International
Humanitarian Law

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Abstract

This thesis examines the extent to which the International Humanitarian Law can incorporate gendered reverberating harm arising from attacks affecting access to water in climate-vulnerable contexts, using the ongoing armed conflict in Sudan since April 2023 as a qualitative case study. The central argument is that the interpretation of the principle of proportionality and precaution during the targeting process does not include the gendered aspects of the reverberating consequences arising from the attacks that affect access. The text of IHL lacks a gender perspective and incorporates the understanding of civilian harm as being experienced equally by all civilians. However, as the Sudan case illustrates, pre-existing inequalities and gendered assigned roles that cover water collection, household care, and food provision, engaging with the intersection of climate-change-induced water scarcity, results in uneven harm to women and girls. Building on the existing concept of reverberating harm, the thesis develops the concept of "gendered reverberating harm" to describe the foreseeable indirect consequences that fall disproportionately on women and girls because of socially constructed gender roles and pre-existing inequalities in the context of climate vulnerability. The thesis concludes that the existing IHL framework is, in principle, capable of encompassing gendered reverberating harm without requiring new legal rules by adopting a progressive interpretation of the rules of proportionality and precaution. Therefore, commanders should incorporate gendered reverberating harm consideration on the basis that they satisfy the causation and the foreseeability element.

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Abbreviation

AP	Additional Protocol
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
GHG	Greenhouse Gas
IAC	International Armed Conflict
ICJ	International Court of Justice
ICRC	International Committee of the Red Cross

IHL	International Humanitarian Law
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
NIAC	Non-International Armed Conflict
UN	United Nations
WASH	Water Sanitation and hygiene

Introduction

Throughout human history, war has been used as an instrument to achieve political goals. The famous saying of Clausewitz that ‘war is the continuation of politics by other means’¹ capture its sustained existence in international relations. However, its devastating consequences pushed the international society to develop a framework to limit it. The first step was the development of movement that today is known as the Red Cross Movement by Henry Dunan². Progressively, along with that, legal instruments establishing limits on the conduct of hostilities began to take shape, such as the Hague Regulations³. The catalytic event for the development of the framework of International Humanitarian Law that exists today was the devastating outcome of the Second World War, which introduced a new system of global governance centred on the United Nations⁴. The new technologies and methods used during the years 1939–1945 and the civilian casualties drove the international community to develop international conventions in order to regulate the relations of states leading to the ratification of the four

¹ Carl von Clausewitz, *On War*, trans. Col. J.J. Graham. New and Revised edition with Introduction and Notes by Col. F.N. Maude, in Three Volumes (London: Kegan Paul, Trench, Trubner & C., 1918). Vol. 1 , chapter 1 par.24

² International Committee of the Red Cross(ICRC), ‘About the International Red Cross and Red Crescent Movement’ <<https://www.icrc.org/en/about-international-red-cross-and-red-crescent-movement>> accessed 28 May 2026

³ Hague Convention (IV) Respecting the Laws and Customs of War on Land (adopted 18 October 1907, entered into force 26 January 1910) 205 CTS 277

⁴ Charter of the United Nations (adopted 26 June 1945, entered into force 24 October 1945) 1 UNTS XVI

Geneva Conventions of 1949⁵ and the two Additional Protocols of 1977⁶. After more than seventy-five years since the establishment of those rules, the number of armed conflicts is more than double than 15 years ago⁷. This reality questions the effectiveness of the existing, especially in light of new developments. Two developments that are increasingly visible in contemporary conflicts are the role of climate change in intersection with the gender dimension of the harm arising in conflicts.

On the one hand, climate change consists of one of the most pressing challenges as long as it determines the conditions under which battles are conducted. Specifically, modern armed conflict takes place in climate vulnerable areas, already affected by conditions such as droughts, desertification, and water scarcity⁸. These conditions have a direct impact on the daily lives of citizens, and when hostilities erupt, they are added to the equation, resulting in the civilian population experiencing an even harder reality. As a result climate change function as an exacerbating factor in the context of a conflict⁹, impeding the experience and protection of the civilian population. Among the various consequences of climate change, water insecurity consists of an important challenge for the civilian population. Water scarcity is connected with vital parts of their livelihood such as food production, sanitation and human dignity highlighted the importance of access to water both in peacetime and during armed conflict¹⁰.

In general, environmental concerns and especially the discussion of climate change were not at the center of the state's interest for most of the 20th century. During the time of codification of the Geneva

⁵ Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field (adopted 12 August 1949, entered into force 21 October 1950) 75 UNTS 31 , Geneva Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea (adopted 12 August 1949, entered into force 21 October 1950) 75 UNTS 31 , Geneva Convention (III) relative to the Treatment of Prisoners of War (adopted 12 August 1949, entered into force 21 October 1950) 75 UNTS 31 , Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War (adopted 12 August 1949, entered into force 21 October 1950) 75 UNTS 31

⁶ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) (adopted 8 June 1977) 1125 UNTS 3, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II) (adopted 8 June 1977) 1125 UNTS 3

⁷ International Committee of the Red Cross(ICRC), 'Humanitarian Outlook 2026: A World Succumbing to War' (2025) <<https://www.icrc.org/en/article/humanitarian-outlook-2026> > accessed 28 May 2026

⁸ International Committee of the Red Cross (ICRC), 'When Rain Turns to Dust: Understanding and Responding to the Combined Impact of Armed Conflicts and the Climate and Environment Crisis on People's Lives (ICRC 2020) p. 10-13

⁹ Mara Tignino, 'Water in armed conflicts' (2024), International Institute of Humanitarian Law, The Sanremo Review, <<https://iihl.org/mara-tignino-water-in-armed-conflicts/> >

¹⁰ David Kaelin, Caroline Pellaton and Tadesse Kebebew, 'Water and Survival in War: Upholding IHL's Protective Purpose and Documenting the Hidden Toll' (2025) 107 International Review of the Red Cross 1142-1144

Conventions, that was particularly right¹¹. At the same time, neither do legal texts dealing traditionally with environmental protection have addressed armed conflict situations directly. It was only after the linkage of international peace, stability, and development with the prevention of environmental damage and the exploitation of resources that the interconnection between these fields began to expand. Therefore, the connection of environment and IHL started with either soft law texts, such as the Stockholm Declaration¹², the Rio Declaration¹³, or other legal texts, such as the Opinion of the ICJ on the Legality of the Threat or Use of Nuclear Weapons¹⁴, which attempted to underscore the protection of the environment as an element of interest during armed conflict. However, contemporary research¹⁵ addresses more systematically the connection of these fields as long as scientific knowledge connects the effects of armed conflicts in climate change and vice versa¹⁶. A further critique concerns the anthropocentric framing of the environmental provisions under IHL, which protect the environment instrumentally as a condition for human survival rather than as a value in itself. That framing limits the extent to which diffuse, long-term, and climate-induced environmental harm can be captured within the existing framework, since such harm may not immediately threaten human life in the way the provisions anticipate¹⁷.

On the other hand, despite its long development and extensive codification, IHL has always received significant criticism from feminist scholars and academics due to the lack of gender perspective. This is illustrated in the way IHL approaches civilians as a homogeneous category. That limited understating, overlooks the fact that conflicts affect individuals differently according to their social roles, economic conditions, and gendered responsibilities¹⁸. That limitation becomes particularly acute in relation to

¹¹ Tuiloma Neroni Slade, 'International Humanitarian Law and Climate Change' in Suzannah Linton, Tim McCormack and Sandesh Sivakumaran (eds), *Asia-Pacific Perspectives on International Humanitarian Law* (Cambridge University Press 2019) pp. 643–646.

¹² Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration) UN Doc A/CONF.48/14/Rev.1 (1972)

¹³ Rio Declaration on Environment and Development (adopted 14 June 1992, entered into force 12 August 1992) UN Doc A/CONF.151/26 (Vol I)

¹⁴ Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion) (1996) ICJ Rep 226

¹⁵ Yiokasti Mouratidi, 'You Say Precautions, I Say Prevention: Towards the Systemic Integration of International Humanitarian Law and International Environmental Law' (2024) (1 ed., Vol. 25, pp. 3-40). (Yearbook of International Humanitarian Law; Vol. 25). T.M.C., Carl Bruch, Cymie R. Payne, Britta Sjöstedt, '50 Armed Conflict and the Environment' (2021) *The Oxford Handbook of International Environmental Law* (2nd edn) Lavanya Rajamani (ed) and Jacqueline Peel (ed)

¹⁶ Katharine J Mach et al, 'Climate as a risk factor for armed conflict' (2019) *Nature* 571 p 194,

¹⁷ Catherine O'Rourke and Ana Martin, 'Gender, Conflict and the Environment: Surfacing Connections in International Humanitarian Law' (2023) 105 *International Review of the Red Cross* 1612-13

¹⁸ Nivedita Raju and Laura Bruun, 'Integrating gender perspectives into International Humanitarian Law' SIPRI Insights on Peace and Security No. 2023/08 (2023) p.3, Kailash Jeenger, 'A Humanitarian Critique of International Humanitarian

access to water, where gendered social roles determine who bears the primary burden of water-related harm¹⁹.

The importance of water access is further underscored by its recognition as a fundamental human right right to safe and clean water²⁰ and sanitation²¹ that were recognised by the UN Assembly as such in 2010 and 2015. The integration of these rights under the framework of international human rights law consists of an impressive progress that creates a set of positive and negative obligations to States in order to safeguard the 'access to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use' and 'physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, socially and culturally acceptable'²². Following the basic principle of the human rights framework, States must also ensure the fulfillment of these rights in an indiscriminate and equal way. Moreover, following the UN Resolution the right to safe and clean water and the right to sanitation have fundamental role of for the full enjoyment of all human rights²³. The validity of these rights does not cease when a conflict erupts. Contrary to this, human rights obligations run parallel with the rules that govern conflicts. In the context of attacks on water impacted infrastructure, the right to water and sanitation provides an important normative framework for understanding the significance of access to water beyond its character as a civilian object under IHL. In fact, both rights are central during the conflict and particularly under the condition where climate change acts as an exacerbate stressor.

Law', SDG: 16 Peace and Justice, Strong Institutions, Springer Nature Sustainable Development Goals Series (2025) p.132-33

¹⁹ The Kvinna till Kvinna Foundation 'The climate, gender and conflict nexus' (2022) accessed: https://kvinnatillkvinna.org/wp-content/uploads/2022/04/TheKvinnatillKvinnaFoundation-Position-Pape_The-Climate-Gen-der-and-Conflict-Nexus.pdf, UN WOMEN, Abdelmageed M. Yahya & Tamer Abd Elkareem 'Gender, Conflict and Environmental Assessment/Analysis Blue Nile State' (2021) p.3 [However, the interplay between environmental conditions and prevailing patriarchal values and gender discriminatory practices leads to disproportionately experienced adverse effects in which women suffer more consequences of both environmental degradation and their concomitant conflict dynamics (UNDP, 2012).] : <<https://sudan.un.org/sites/default/files/2022-06/Final%20%20Report%20of%20Gender%20Conflict%20and%20Environe-mental%20Analysis%20%28BNS%29.pdf>> accessed 28 May 2026, Judith G.Gardam and Michelle J.Javris, 'Women Armed conflict and International Law' (2001) Kluwer Law International p.43, Susan B. Sorenson, Christiaan Morssink, Paola Abril Campos, 'Safe access to safe water in low income countries: Water fetching in current times' (2011) Volume 72, Issue 9 p.1522-1526, United Nations (UN) 'Women and girls bear brunt of global water and sanitation crisis' (2023) <<https://news.un.org/en/story/2023/07/1138407>> accessed 28 May 202

²⁰ United Nations General Assembly, 'The Human Right to Water and Sanitation' (adopted 28 July 2010) UN Doc A/RES/64/292

²¹ United Nations General Assembly 'The human rights to safe drinking water and sanitation' UN Doc A/RES/70/169 (17 December 2015)

²² UN A/RES/70/169, par.2

²³ UN A/RES/64/292 par.1, UN A/RES/70/169 par. 1

The ongoing conflict in Sudan since April 2023 illustrates precisely this intersection between armed conflict, climate vulnerability, and gendered civilian harm²⁴. Sudan is facing unstable weather conditions leading to heavy drought or floods that challenge Sudanese people livelihoods due to the destruction of their houses and their fields affecting their agricultural work. Moreover, since mid-April 2023 has been experiencing an escalation of hostilities and until today there is no sign of deescalation. Both parties of the conflict have been involved in severe violations of the rules of conduct of hostility because of the targeting of civilian infrastructure²⁵, increasing the civilian loss. Both these dimensions share a common gender dimension as both affect disproportionately women and girls in ways that are structured by pre-existing social inequalities and gendered roles.

Therefore, this thesis examines the interrelation of climate change induced effects with armed conflicts effects regarding the occurring civilian harm through a gender lens, using the human right to water and sanitation as normative context. The research question is formulated as ‘To what extent can IHL be interpreted to encompass gendered reverberating harm arising from attacks that affect access to water in climate-vulnerable contexts, a case study of the conflict in Sudan.’.

In order to answer that question, the thesis will be divided into four chapters. The first chapter will elaborate the case study of Sudan, answering ‘How does the conflict in Sudan illustrate the intersection of climate-induced water scarcity, attacks on water impacted infrastructure, and gendered civilian harm?’. Based on the documented facts, the chapter highlights the gender aspect of the consequences of the climate-change induced effects and the harm from the conflict in Sudan. The presentation of the situation provides the space to challenge the existing frameworks that regulate the targeting process. Based on that, the second chapter will cover the legal framework answering the question ‘How does the existing IHL framework protect access to water and to what extent does the proportionality and precaution assessment include reverberating harm from attacks on water systems?’. Having established the concept of reverberating harm the third chapter will introduce the dimension of climate in the conflict. Specifically, the chapter answers to ‘To what extent can climate change-induced water scarcity be taken into account under the proportionality and precaution assessments governing attacks under IHL’. Finally, the fourth chapter is driven by the question ‘To what extent does the interpretation of

²⁴ UN Human Rights Council (HRC), ‘Findings of the investigations conducted by the Independent International Fact-Finding Mission for the Sudan into violations of international human rights law and international humanitarian law, and related crimes, committed in the Sudan in the context of the conflict that erupted in mid-April 2023’ (2024) UN Doc A/HRC/57/CRP.6, p. 16-17

²⁵ Ibid par. 139,145, 152, 164

incidental harm under the proportionality and precaution assessment take into account the gendered reverberating harms resulting from attacks affecting access to water in climate-vulnerable contexts?

Methodology

In that thesis, I adopt doctrinal legal research methodology²⁶ informed by an interdisciplinary approach. It combines the legal analysis of the two Additional Protocols to Geneva Conventions and the relevant customary law, with a feminist legal theory as a critical lens and empirical scientific and humanitarian data. Through this approach I examine how the rules governing the conduct of hostilities intersect with the gendered harm and climate vulnerability arising from the attacks affecting access to water. Through this I use the terminology ‘attacks affecting access to water’ to describe not only direct attacks on water facilities but also attacks on interconnected infrastructure such as electricity supply systems whose disruption affects civilian access to water. This understanding is aligned with the approach adopted in the Geneva List of Principles on the Protection of Water Infrastructure, which recognised the interdependence of water facilities with different components that should be understood as an integrated system²⁷.

Firstly, regarding the doctrinal framework, the analysis focuses on the interpretation of rules of proportionality and precaution regarding the assessment process of targeting of water infrastructure. More particularly, the attention is on the indirect or “reverberating” effects²⁸ of attacks on water infrastructure and on whether such effects could be assessed under the principles of distinction, proportionality, and precautions in attack.

Furthermore, I use the ongoing armed conflict in Sudan since April 2023 as an illustrative qualitative case study which provides a factual context through which the interaction between climate-induced water insecurity, attacks affecting access to water, and gendered civilian harm can be examined in light of existing IHL rules. The choice of Sudan as a case study is twofold. First, according to reports from

²⁶ Terry Hutchinson and Nigel Duncan, ‘Defining and Describing What We Do: Doctrinal Legal Research’ (2012) *Deakin Law Review* 17(1):83

²⁷ Geneva Water Hub, ‘The Geneva List of Principles on the Protection of Water Infrastructure’ (2019) p.13-14

²⁸ Morais Figueiredo B. ‘Strengthening the protection of civilian infrastructure in armed conflict: Practical measures to operationalize IHL and reduce civilian harm’, *International Review of the Red Cross* (2026)

United Nation bodies as well actors working on the field, Sudan is experiencing one of the world's most severe humanitarian crises²⁹, while academic and media attention regarding the conflict remains relatively limited. Therefore, with this thesis I aim to contribute to the broader discussion and understanding of the humanitarian situation in Sudan. Second, Sudan is a region significantly affected by climate change, particularly through drought, desertification, and water scarcity, all of which create additional challenges for the civilian population³⁰. As a result, the coexistence of armed conflict and climate-related pressures provides an important factual context regarding the interaction of this in reality. The temporal scope of the case study is limited to the period following the outbreak of hostilities in April 2023.

In addition, I apply a feminist critical lens, highlighting the limited recognition of women's experiences in armed conflict and how such experiences are interconnected with gender hierarchies and socially constructed roles³¹. By the application of this lens I aim to examine potential gaps in the traditional IHL framework regarding the different ways civilian populations experience harm. In order to support the legal analysis I anticipate academic literature from the field of IHL, Environmental Law and Feminist critiques on International Law and International Human Rights. Moreover, I use scientific reports such as the Intergovernmental Panel on Climate Change (IPCC) report to establish the linkage of climate-change induced to water scarcity and to conditions such as droughts and flooding, which may exacerbate civilian vulnerability³². Moreover, I also include reports produced by United Nations agencies, the ICRC and other humanitarian organisations that documented the humanitarian

²⁹ World Health Organisation (WHO), 'Sudan: 1000 days of war deepen the world's worst health and humanitarian crisis' (2026)

<<https://www.who.int/news/item/09-01-2026-sudan-1000-days-of-war-deepen-the-world-s-worst-health-and-humanitarian-crisis>> accessed 28 May 2026, Red Cross Red Crescent Climate Centre, 'Country profiles-Sudan' (2024) <https://www.climatecentre.org/wp-content/uploads/RCCC-Country-profiles-Sudan-2024_final.pdf> accessed 28 May 2026, EMERGENCY, 'Out of the spotlight: The war in Sudan enters its fourth year' (2026) <<https://reliefweb.int/report/sudan/out-spotlight-war-sudan-enters-its-fourth-year>> accessed 28 May 2026,

³⁰ Elamin Akoy, Adam Sabbil, Mohammed B. Altoom, Salih Nurain, Emad Eldeen Salim, 'Climate Change, Conflicts and Food Security in North Darfur State, Sudan: Risks and Implications. Bergen: Chr. Michelsen Institute (Sudan Working Paper SWP 2025:4) (2025)

³¹ Judith Gardam and Hilary Charlesworth, 'Protection of Women in Armed Conflict', Human Rights Quarterly, Feb., 2000, Vol. 22, No. 1 (2000), pp. 148-166, Diana Sankey, 'Gendered Experiences of Subsistence Harms: A Possible Contribution to Feminist Discourse on Gendered Harm?' Social & Legal Studies, Vol. 24(1) 25-45 (2015)

³² Caretta, M.A., A. Mukherji, M. Arfanuzzaman, R.A. Betts, A. Gelfan, Y. Hirabayashi, T.K. Lissner, J. Liu, E. Lopez Gunn, R. Morgan, S. Mwanga, and S. Supratid, 'Water. In: Climate Change 2022: Impacts, Adaptation and Vulnerability' (2022) Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, p. 551-712

consequences of attacks affecting access to water and the differentiated experiences of women and girls in Sudan. These materials are not treated as sources of law but as empirical evidence that informs the legal assessment of foreseeability and civilian harm.

In that regard, it is important to note that throughout the thesis the reference to gender perspective is not limited within a binary framework³³, nor should it be intended to respond exclusively to the needs of women and girls. I adopt that, gender encompasses the full spectrum of socially constructed identities and roles that shape individuals' experiences of armed conflict. However, legal analysis is focused primarily on women and girls, for two reasons. First, the empirical evidence available for the Sudan case study is framed around the experiences of women and girls specifically. Second, the gendered social roles that are central to the thesis argument such as water collection, food provision, and caregiving responsibilities are documented in the Sudanese context as being assigned predominantly to women and girls. The use of these terms throughout the thesis therefore reflects the social reality documented in the sources rather than an assumption about the nature of gender itself.

Moreover, this thesis does not provide a detailed examination of weapons technology or the technical means and methods of attack. Instead, it focuses on whether reverberating harms arising from conflict and climate-related water scarcity and affecting disproportionately women and girls can and should be taken into account in targeting assessments and civilian harm analysis under IHL framework.

Lastly, I declare that AI tools for grammar formatting and translation has been used such as Grammarly and Deep L translator.

³³ Nivedita Raju and Laura Bruun, 'Integrating Gender Perspectives into International Humanitarian Law' (Stockholm International Peace Research Institute 2023) p.6, Karen Engle, Vasuki Nesiah and Dianne Otto, 'Feminist Approaches to International Law' (2021). U of Texas Law, Public Law Research Paper No. 716 p.12-13

Chapter I- The case study of Sudan

It has been more than three year of the conflict in Sudan, and the atrocities, human rights violations, and distinct marks of genocide are being continuously reported³⁴. The humanitarian situation regarding the living conditions of the civilian population and their protection is alarming. One of the defining elements of that conflict is the intersection of the climate-conflict and gender, a connection that shapes the experience of the civilian population during armed conflicts. Building upon these three elements, the chapter will be developed along the three axes answering ‘How does the conflict in Sudan illustrate the intersection of climate-induced water scarcity, attacks affecting access to water, and gendered civilian harm?’ by presenting the real scale of the consequences before turning to the legal responses to that topic.

1.1 The outbreak of conflict and historical background

To begin with, the first element of the conflict, the Sudanese people have been experiencing the effects of conflict for three years now, starting on 15 April 2023 in the capital of the country, Khartoum. As the UN High Commissioner for Human Rights, Volker Türk, noted, the conflict in Sudan consists of ‘a human rights catastrophe unfolding in real time’³⁵. Historically, Sudan had experienced periods of authoritarian governance as well as profound hostilities based on ethnicity leading to atrocities in the region in Darfur.³⁶ However, the current conflict has a difference based mostly on the scale at which

³⁴ United Nations Human Rights Council (HRC), ‘Sudan: Mass killings, abductions aMass killings, abductions, and gang rape carried out in El Fasher constitute distinct markers of genocide, UN Fact-Finding Mission says as it launches urgent inquiry into El Obeid’ (2026) <<https://www.ohchr.org/en/press-releases/2026/07/sudan-mass-killings-abductions-and-gang-rape-carried-out-el-fasher?sub-site=HRC>> accessed 9 July 2026, HRC,’ Sudan: On third anniversary of conflict, UN and ACHPR-AU Fact-Finding Missions jointly warn of escalating violence and heightened risk of further atrocity crimes’ (2026), <<https://www.ohchr.org/en/press-releases/2026/04/sudan-third-anniversary-conflict-un-and-achpr-au-fact-finding-missions?sub-site=HRC>> accessed 9 July 2026, HRC’A war of atrocities:” Sudan civilians deliberately targeted, UN Fact-Finding Mission reports international crimes on large-scale’ (2025) <<https://www.ohchr.org/en/press-releases/2025/09/war-atrocities-sudan-civilians-deliberately-targeted-un-fact-finding-mission?sub-site=HRC>> accessed 27 June 2026

³⁵ The Office of the United Nations High Commissioner for Human Rights (OHCHR), ‘Three years of war in Sudan: A crisis the world can’t ignore’ (2026) <<https://www.ohchr.org/en/stories/2026/04/three-years-war-sudan-crisis-world-cant-ignore>> accessed 1 June 2026

³⁶ UN Human Rights Council (HRC), ‘Findings of the investigations conducted by the Independent International Fact-Finding Mission for the Sudan into violations of international human rights law and international humanitarian law, and related crimes, committed in the Sudan in the context of the conflict that erupted in mid-April 2023’ (2024) UN Doc A/HRC/57/CRP.6 p.16-17, European Parliamentary Research Service (EPRS), ‘Understanding the war in Sudan, The Human cost of geopolitics’ (2025) PE 779.180

civilians are getting affected³⁷. The escalation of the violence arose from the armed competition between the Sudanese Armed Forces (SAF) under General Abdel Fattah al-Burhan, against the paramilitary Rapid Support Forces (RSF), led by General Hemedti, and their respective allied militias³⁸ and have contributed to the disruption of essential social and economic infrastructure such as education and health system³⁹. Contrary to the previous time when the capital used to be a safe place⁴⁰, new tension erupted in Khartoum. The conflict is the result of a long-lasting instability of the country caused by the harsh government of the former President Omar al-Bashir for whom an arrest warrant has been issued by the International Criminal Court for five counts of crimes against humanity, two counts of war, and three counts of genocide allegedly committed in Darfur, Sudan⁴¹, which led to massive popular protests in December 2018. Between that period and the recent escalation of the hostilities, there were attempts for the formation of a transitional civilian government. However, the strong military presence and the difficulties in reaching consensus on creating a single national army led to disputes between the two generals and their respective militaries. According to the reports of the UN bodies, the conflict is categorized as a non-international armed conflict (NIAC) and therefore, Common Article 3 and Additional Protocol II apply, as well as rules of customary humanitarian law⁴². However, it should be mentioned that has been observed the intervention and influence of several foreign countries that support each side in order to promote their interest by sparking and fueling the continuation of the dispute⁴³.

Overall, the ongoing hostilities have triggered many rules of international humanitarian and human rights law, with attacks on civilians, use of tactics of terror, and outbreak of violence. As long as the

³⁷ UN Human Rights Council (HRC), 'Findings of the investigations conducted by the Independent International Fact-Finding Mission for the Sudan into violations of international human rights law and international humanitarian law, and related crimes, committed in the Sudan in the context of the conflict that erupted in mid-April 2023' (2024) UN Doc A/HRC/57/CRP.6, par. 124

³⁸ UN Human Rights Council (HRC), par. 16-17, Data Friendly Space, 'Sudan Situation Analysis: 23/3/2026-29/3/2026' (2026) <<https://www.datafriendlyspace.org/resources/sudan-situation-analysis-23-3-2026-29-3-2026>>

³⁹ Osman Sirajeldeem Ahmed and others, 'Is Calling the SAF-RSF Conflict a "Dirty War" an Objective Description or a Moral Judgment? A critical analysis of the ongoing war in Sudan (2023–present)', (2025) *Cogent Social Sciences*, 11:1, 2586199, Amal Elamin, Sara Abdullah, Abda ElAbbadi, Almoghira Abdellah, Abda Hakim, Naiema Wagiallah, and John Pastor Ansah, 'Sudan: from a forgotten war to an abandoned healthcare system' (2024) *BMJ global health*, 9(10)

⁴⁰ Osman Sirajeldeem Ahmed and others p.1

⁴¹ The Prosecutor v. Omar Hassan Ahmad Al Bashir, Second Decision on the Prosecution's Application for a Warrant of Arrest ICC-02/05-01/09-94

⁴² *ibid*, par. 40

⁴³ Estifanos Balew Liyew, 'Sudan Conflict Impact on the Horn of Africa Security' (2025) *Sage Insight on Africa* 17(2) 127–141, PAX. 'How trade in gum arabic fuels conflict in Sudan' (2025) <<https://paxforpeace.nl/publications/how-trade-in-gum-arabic-fuels-conflict-in-sudan/>> accessed 29 June 2026

conflict continues, the civilian population is exposed to severe harm due to destruction of the state's infrastructure that endangers further their safety. A major output of this conflict is the number of internally displaced populations (IDPs) who, in their attempt to find a safe area, are moving from state to state according to the shift in power. According to the IOM report, for the 3 years since the eruption of the conflict, this number has more than tripled. Specifically, one in three people, which counts more than 15 million, have been moved in the past years⁴⁴ and today there is an estimation of 8.8 million people remaining displaced⁴⁵. Although after a period of picking in 2025, there is some sign for people coming back to Sudan from the neighborhood states like Chad and Egypt⁴⁶ only to find houses, markets, health system, and essential infrastructure destroyed⁴⁷.

1.2 The climate change-induced effects in Sudan

In the latest IOM report, 'natural hazards'⁴⁸ are listed among the causes of displacement, highlighting the environmental impact in Sudan. In fact, Sudan is one of the most climate-vulnerable countries⁴⁹ which results in the rising of temperature, the instability of climate, droughts, and floods. The influence of climate change on the country's climate has been reported before the eruption on the conflict and therefore is continuing to be present in the context of the Sudan conflict. Sudan's territory is characterized as arid or semi-arid⁵⁰, and according to reports, the effects of climate change are expected

⁴⁴ International Organization for Migration (IOM), 'Sudan: Three Years of Conflict and Displacement' (2026) DTM Sudan IOM <<https://dtm.iom.int/reports/sudan-three-years-conflict-and-displacement?close=true>> accessed 9 June 2026

⁴⁵ International Organization for Migration (IOM), May 21 2026. DTM Sudan Displacement and Return Snapshot (5). IOM, Sudan.

⁴⁶ International Organization for Migration (IOM), 'DTM Sudan Cross-Border Monitoring Report (4)' (2026) IOM, Sudan. <<https://dtm.iom.int/reports/dtm-sudan-cross-border-monitoring-report-4?close=true>> accessed 9 June 2026

⁴⁷ Osman Sirajeldein Ahmed and others, ACAPS Analysis Hub, 'Sudan, Risk analysis', (2026) Thematic Report p.13-14 <https://www.acaps.org/fileadmin/Data_Product/Main_media/20260513_ACAPS_Sudan_-_Risk_analysis_2026_.pdf> accessed 7 June 2026

⁴⁸ International Organization for Migration (IOM), 'Sudan: Three Years of Conflict and Displacement' (2026) DTM Sudan IOM accessed 9 June 2026

⁴⁹IMPACT Initiatives, 'Sudan Climate Analysis in the Context of Conflict' (2026) Reliefweb <<https://reliefweb.int/report/sudan/sudan-climate-analysis-context-conflict-december-2025>> accessed 7 June 2026, United Nations Environment Programme and European Union. 'Climate Change and Security Project: Building Resilience to Climate-related Security Risks in North Darfur, Sudan' (2022)<<https://wedocs.unep.org/items/f7b680d7-62e6-4f73-b4fb-5a10b9bf9d73>> accessed 7 June 2026

⁵⁰ Dr Andrew E. Yaw Tchie, Dr Elisabeth L. Rosvold, Anne Funnema, Kheira Tarif, Katongo Seyuba, Dr Kyungmee Kim. Visuals: Kheira Tarif, Katongo Seyuba & Jose Luengo-Cabrera 'Climate, Peace and Security Fact Sheet Sudan' (2022) The Climate-related Peace and Security Risk project NUPI and SIPRI <<https://www.sipri.org/sites/default/files/NUPI%20SIPRI%20Fact%20Sheet%20Sudan%20May%202022.pdf>> accessed 7 June 2026

to influence the condition and the quality of soil and water supply⁵¹. Given that agriculture is the main source of income for the Sudanese population, the climate conditions are in great link with soil productivity. For instance, in 2020 and in 2022, several states in Sudan faced heavy rainfall and floods or droughts that destroyed houses and crops⁵² affecting as well the access and the quality of water⁵³. As a result, the changing climate conditions force the population to relocate, increasing the number of internally displaced people, disrupting the lives of the population, and making it challenging to start over in a new place. At the same time, states infrastructures that were planned to cover a specific number of people arriving in their limits due to the needs arising from the internal displacement, as it happened for instance in the state of White Nile, the system was planned to cover a small population, but now the needs of the people is up to then thousands⁵⁴.

Against this background, one of the highest risks connected to climate change is water security. Water security is defined as ‘the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability’⁵⁵. Water security is particularly urgent in the case of Sudan because, as of November 2020, 32% of Sudan’s population had no access to the basic domestic water supply, and 151 of 189 localities in Sudan were classified in a state of crisis regarding critical water shortage⁵⁶. For instance, the population that lives along the Nile

⁵¹ Intergovernmental Panel On Climate Change (IPCC), ‘Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change’ (1st edn, Cambridge University Press 2023) par. 9.5.6, 9.8.2, 9.9.4 <<https://doi.org/10.1017/9781009325844>> accessed 10 June 2026.

⁵² Dr Andrew E. Yaw Tchie, Dr Elisabeth L. Rosvold, Anne Funnema, Kheira Tarif, Katongo Seyuba, Dr Kyungmee Kim. Visuals: Kheira Tarif, Katongo Seyuba & Jose Luengo-Cabrera ‘Climate, Peace and Security Fact Sheet Sudan’ (2022) The Climate-related Peace and Security Risk project NUPI and SIPRI <<https://www.sipri.org/sites/default/files/NUPI%20SIPRI%20Fact%20Sheet%20Sudan%20May%202022.pdf>> accessed 7 June 2026

⁵³ ACAPS Analysis Hub, ‘Sudan, Impact of the current conflict on WASH needs’, (2023) Thematic Report <https://www.acaps.org/fileadmin/Data_Product/Main_media/20230911_ACAPS_thematic_report_Sudan_impact_of_current_conflict_on_WASH_needs.pdf> accessed 5 June 2026

⁵⁴ *ibid*

⁵⁵ Caretta, M.A., A. Mukherji, M. Arfanuzzaman, R.A. Betts, A. Gelfan, Y. Hirabayashi, T.K. Lissner, J. Liu, E. Lopez Gunn, R. Morgan, S. Mwanga, and S. Supratid, ‘Water. In: Climate Change 2022: Impacts, Adaptation and Vulnerability’ (2022) Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA p. 558, doi:10.1017/9781009325844.006

⁵⁶ ACAPS Analysis Hub, ‘Sudan, Impact of the current conflict on WASH needs’

River experiences less certain water flow because of climate change⁵⁷. More specifically, after the outbreak of the conflict, the scale of destruction of civilian infrastructure and the markets has had direct impacts on water supply systems and WASH needs⁵⁸. Attacks on water pumping stations, such as the one recorded in Bahri, alongside deliberate targeting of power infrastructure, have disrupted the functioning of water distribution networks, given their dependence on electricity supply⁵⁹. As a result, the population already living under conditions of climate-induced water stress is now further deprived of access to the infrastructure. This interaction is not coincidental. The IPCC has documented that climate change is projected to increase the frequency and intensity of extreme weather events in sub-Saharan Africa, reducing freshwater availability and increasing the vulnerability of water infrastructure to both environmental and human-induced shocks⁶⁰. In Sudan, that projected vulnerability is already a lived reality. The consequences for public health illustrate the scale of this compounding effect. The insufficient functioning of water and sanitation systems has contributed directly to the spread of waterborne diseases⁶¹. Sudan has been experiencing a significant cholera outbreak driven by the collapse of water and sanitation infrastructure that caused by the ongoing conflict and the deterioration of WASH services⁶².

While it would not be right to attribute the eruption of the current conflict directly to climate pressures, the evidence supports the view that climate instability act as a conflict stressor, a factor that intensifies pre-existing social, economic, and resource-related tensions, making populations more vulnerable particularly in the context of severe hostilities.

⁵⁷ Dr Andrew E. Yaw Tchie, Dr Elisabeth L. Rosvold, Anne Funnema , Kheira Tarif, Katongo Seyuba, Dr Kyungmee Kim. Visuals: Kheira Tarif, Katongo Seyuba & Jose Luengo-Cabrera 'Climate, Peace and Security Fact Sheet Sudan' (2022) The Climate-related Peace and Security Risk project NUIP and SIPRI <<https://www.sipri.org/sites/default/files/NUPI%20SIPRI%20Fact%20Sheet%20Sudan%20May%202022.pdf> > accessed 7 June 2026

⁵⁸ United Nations Human Rights Office of the High Commissioner, "'Three days of terror with no safe refuge": RSF offensive on Zamzam IDP camp, El Fasher (11-13 April 2025)' (2025) <<https://www.ohchr.org/en/documents/country-reports/report-ohchr-sudan-country-office-offensive-rapid-support-forces-zamzam>> accessed 7 June 2026 par.57-59

⁵⁹ ACAPS Analysis Hub, 'Sudan, Impact of the current conflict on WASH needs'

⁶⁰ Caretta, M.A., A. Mukherji, M. Arfanuzzaman, R.A. Betts, A. Gelfan, Y. Hirabayashi, T.K. Lissner, J. Liu, E. Lopez Gunn, R. Morgan, S. Mwanga, and S. Supratid p.616

⁶¹ Peter H Gleick, 'Water as a Weapon and Casualty of Conflict: Freshwater and International Humanitarian Law' (2019) 33 Water Resources Management 1737 p.1742, Michael Talhami and Mark Zeitoun, 'The Impact of Attacks on Urban Services II: Reverberating Effects of Damage to Water and Wastewater Systems on Infectious Disease' (2020) 102 International Review of the Red Cross 1293, David Kaelin, Caroline Pellaton and Tadesse Kebebew, 'Water and Survival in War: Upholding IHL's Protective Purpose and Documenting the Hidden Toll' (2025) 107 International Review of the Red Cross

⁶² UNICEF, 'The fight against Cholera in Sudan, Amidst the ongoing conflict' (2025) <<https://www.unicef.org/sudan/fight-against-cholera-sudan>> accessed 8 June 2026

1.3 The gender dimension of the conflict

Following the analysis of the previous chapter it can be concluded that the relation between climate-induced effects and conflict is really strong. However, there is a deeper layer that intersects with the above conditions and this is gender. As already indicated, Sudan is facing climate-related challenges, including droughts, desertification, and water scarcity. These conditions do not affect populations uniformly but rather are shaped by the existing gender inequalities and gender roles⁶³. Sudan is a patriarchal society⁶⁴ where cultural, religious, and political factors combined reinforce gender inequality regarding women's right to access to natural resources, ownership of land, and income⁶⁵. As a result, women become vulnerable to climate instabilities and financially dependent on their family or society⁶⁶. This reality creates serious challenges after the eruption of the conflict, when the number of women-headed households has increased. Therefore, women are being forced to take on roles and responsibilities they did not have before, and the reality proves that women-headed households are more vulnerable to food insecurity because it is harder for women either to have a field or to gain enough money to provide food⁶⁷. Alongside, women are assigned to specific roles mostly

⁶³ UN Women, ‘ “Last and least”: Gender dimensions of food insecurity in Sudan’ (2025) Gender Alert No. 3, UN Women Sudan Country Office
<<https://www.unwomen.org/en/digital-library/publications/2025/11/gender-alert-last-and-least-gender-dimensions-of-food-insecurity-in-sudan>> accessed 8 June 2026

⁶⁴ Country Gender Assessment of the Agriculture and Rural Sector – The Republic of the Sudan (FAO 2021) <<https://doi.org/10.4060/cb7042en>> accessed 7 June 2026, UN Women, ‘Women and Girls of Sudan: Fortitude amid the flame of war’ (2024) Gender Alert No.1 p.3
<<https://www.unwomen.org/en/digital-library/publications/2024/09/gender-alert-women-and-girls-of-sudan-fortitude-amid-the-flame-of-war>> accessed 8 June 2026

⁶⁵ Country Gender Assessment of the Agriculture and Rural Sector – The Republic of the Sudan (FAO 2021) <<https://doi.org/10.4060/cb7042en>> accessed 7 June 2026

⁶⁶ UN Women, ‘ “Last and least”: Gender dimensions of food insecurity in Sudan’ (2025) Gender Alert No. 3, UN Women Sudan Country Office p.12-13
<<https://www.unwomen.org/en/digital-library/publications/2025/11/gender-alert-last-and-least-gender-dimensions-of-food-insecurity-in-sudan>> accessed 8 June 2026

⁶⁷ UN Women ‘Sudan: Women, Food Insecurity, and Famine Risk in Sudan, Gender (2025) UN Office for the Coordination of Humanitarian Affairs
<<https://reliefweb.int/report/sudan/sudan-women-food-insecurity-and-famine-risk-sudan-gender-snapshot-21-july-2025>> accessed 8 June 2026

related to householding, part of which is the provision of food and the collection of water⁶⁸. These conditions have immense effects on the way women and girls experience the challenges arising because of the eruption of conflict, as well as the climate-induced scarcity of water access. Therefore, water is not merely a resource for personal survival but is directly connected to a range of unpaid domestic responsibilities, including cooking, hygiene maintenance, and subsistence agriculture⁶⁹. When water becomes scarce, all of these activities are disrupted, and it is women and girls who bear the primary burden of finding alternative means to fulfil them⁷⁰.

The first linked consequence of water scarcity in this context is the increase in the distances women and girls must travel to collect water⁷¹. This practice is a necessity that exposes them to heightened security risks, including gender-based violence, such as rape, gang rapes, sexual harassment, and trafficking⁷². More than three years after the conflict, women lead organisation on the ground report an increase in conflict-related sexual violence as a war tactic happening from the both sides. Connecting that with the immense food insecurity, the protection risk for women and girls has increased. The last report of UN Women highlighted that women face sexual exploitation and abuse in the places and

⁶⁸ United Nations Environment Programme, UN Women, UNDP and UNDP/PA/PSO, 'Gender, Climate and Security, Sustaining inclusive peace on the frontlines of climate change' (2020) p.11-20 <<https://www.unwomen.org/en/digital-library/publications/2020/06/gender-climate-and-security>> accessed 8 June 2026, Country Gender Assessment of the Agriculture and Rural Sector – The Republic of the Sudan (FAO 2021) <<https://doi.org/10.4060/cb7042en>> accessed 7 June 2026, UN Women, 'Women and Girls of Sudan: Fortitude amid the flame of war' (2024) Gender Alert No.1 UN Women Sudan Country Office p.4 <<https://www.unwomen.org/en/digital-library/publications/2024/09/gender-alert-women-and-girls-of-sudan-fortitude-amid-the-flame-of-war>> accessed 8 June 2026, UN Women, 'No excuse: Calling for an end to gender-based violence in Sudan' Gender Alert No.2 UN Women Sudan Country Office p.4 <> accessed 8 June 2026, UN Women, '“Last and least”: Gender dimensions of food insecurity in Sudan' (2025) Gender Alert No. 3, UN Women Sudan Country Office p.9-13 <<https://www.unwomen.org/en/digital-library/publications/2025/11/gender-alert-last-and-least-gender-dimensions-of-food-insecurity-in-sudan>> accessed 8 June 2026,

⁶⁹ UN Women's Fund for Gender Equality; Azita Azargoshab 'Supporting Women's Empowerment and Gender Equality in Fragile States: Research Brief — Sudan' (2016) UN Women <<https://www.unwomen.org/en/digital-library/publications/2016/3/supporting-womens-empowerment-and-gender-equality-in-fragile-states-sudan>> accessed 7 June 2026

⁷⁰ Proscovia Nakibuuka Mbonye, 'From risk to relief, Safe water transforms lives in Central Darfur' (2024), UNICEF, <<https://www.unicef.org/sudan/stories/risk-relief>> accessed 6 June 2026

⁷¹ UN Women, '“Last and least”: Gender dimensions of food insecurity in Sudan' (2025) Gender Alert No. 3, UN Women Sudan Country Office <<https://www.unwomen.org/en/digital-library/publications/2025/11/gender-alert-last-and-least-gender-dimensions-of-food-insecurity-in-sudan>> accessed 8 June 2026

⁷² UN Women, 'Three years of war: Sudanese women on the frontlines of humanitarian and local peacebuilding efforts' (2026) Gender Alert No. 4, UN Women Sudan Country Office <<https://www.unwomen.org/en/digital-library/publications/2026/04/gender-alert-three-years-of-war-sudanese-women-on-the-frontlines-of-humanitarian-and-local-peacebuilding-efforts>> accessed 8 June 2026

checkpoints where humanitarian aid is provided⁷³. At the same time, an increase is recorded in negative mechanisms responding to the challenges of famine and protection, using women's bodies as an exchange value to obtain food⁷⁴. Following the same rationale, there is an increase in the practice of child marriage or female genital mutilation FGM⁷⁵. All of these factors contribute to girls' exclusion from the educational system, which also affects their personal development and long-term prospects⁷⁶.

Another situation where gender dynamics are visible is the displacement of the population. Following the outbreak of hostilities in April 2023, approximately 10.8 million people were forced to flee their homes, of whom 54% were women and girls⁷⁷. Among the internally displaced population, female-headed households face particular difficulties in securing water and food, given the structural barriers that limit women's access to income and decision-making as indicated earlier⁷⁸. At the same time, the conflict has deepened food insecurity, with Sudan entering its worst food crisis from April 2024 onwards⁷⁹. In the most affected states, including Greater Darfur, South and North Kordofan, Blue Nile, Al Jazirah, and Khartoum, the gendered dimension of food and water insecurity is well documented throughout interviews of either the persons themselves or the humanitarian workers on the

⁷³ UN Women, 'Three years of war: Sudanese women on the frontlines of humanitarian and local peacebuilding efforts (2026) Gender Alert No. 4. UN Women Sudan Country Office p.18 p.<<https://www.unwomen.org/en/digital-library/publications/2026/04/gender-alert-three-years-of-war-sudanese-women-on-the-frontlines-of-humanitarian-and-local-peacebuilding-efforts>> accessed 8 June 2026

⁷⁴ UN Women, 'Three years of war: Sudanese women on the frontlines of humanitarian and local peacebuilding efforts (2026) Gender Alert No. 4. UN Women Sudan Country Office <<https://www.unwomen.org/en/digital-library/publications/2026/04/gender-alert-three-years-of-war-sudanese-women-on-the-frontlines-of-humanitarian-and-local-peacebuilding-efforts>> accessed 8 June 2026

⁷⁵ Nafisa Bedri and Tamsin Bradley, 'The gendering of Sudan's Brutal War' (2024) The Cairo Review of Global Affairs <[The Gendering of Sudan's Brutal War – The Cairo Review of Global Affairs](#)> accessed 8 June 2026, UN Women, 'Three years of war: Sudanese women on the frontlines of humanitarian and local peacebuilding efforts (2026) Gender Alert No. 4. UN Women Sudan Country Office <<https://www.unwomen.org/en/digital-library/publications/2026/04/gender-alert-three-years-of-war-sudanese-women-on-the-frontlines-of-humanitarian-and-local-peacebuilding-efforts>> accessed 8 June 2026

⁷⁶ UN Women, 'Three years of war: Sudanese women on the frontlines of humanitarian and local peacebuilding efforts (2026) Gender Alert No. 4. UN Women Sudan Country Office p. 19 <<https://www.unwomen.org/en/digital-library/publications/2026/04/gender-alert-three-years-of-war-sudanese-women-on-the-frontlines-of-humanitarian-and-local-peacebuilding-efforts>> accessed 8 June 2026

⁷⁷ UN Women, 'Women and Girls of Sudan:Fortitude amid the flame of war' (2024) Gender alert No.1 <<https://www.unwomen.org/en/digital-library/publications/2024/09/gender-alert-women-and-girls-of-sudan-fortitude-amid-the-flame-of-war>> accessed 8 June 2026

⁷⁸ UN Women, 'Three years of war: Sudanese women on the frontlines of humanitarian and local peacebuilding efforts (2026) Gender Alert No. 4. UN Women Sudan Country Office <<https://www.unwomen.org/en/digital-library/publications/2026/04/gender-alert-three-years-of-war-sudanese-women-on-the-frontlines-of-humanitarian-and-local-peacebuilding-efforts>> accessed 8 June 2026

⁷⁹ UN Women, 'Women and Girls of Sudan:Fortitude amid the flame of war' (2024) Gender alert No.1 <<https://www.unwomen.org/en/digital-library/publications/2024/09/gender-alert-women-and-girls-of-sudan-fortitude-amid-the-flame-of-war>> accessed 8 June 2026

field, reporting that women and girls are more frequently denied access to humanitarian resources, and are the last to eat within households⁸⁰. Regarding sanitation specifically, the conflict has produced a severe shortage of menstrual hygiene products alongside the reduction in access to clean water, worsening the everyday conditions of women and girls and increasing the risk of infection. The absence of safe water also poses direct risks in the context of childbirth and maternal health, given the simultaneous collapse of health infrastructure. These risks are compounded by the collapse of water infrastructure, which in Sudan has been directly affected by the increase in drone attacks⁸¹ in the urban environment and targeting of essential infrastructure such as power systems, causing a power shortage. The functioning of water distribution networks depends on electricity supply, and the disruption of that supply has reduced access to clean water⁸², increasing civilian exposure to waterborne disease and deteriorating sanitation conditions.

Concluding there are two significant observations to make from the documented facts above.. Firstly, it becomes clear that civil infrastructures vital for the survival of the population are highly interdependent, meaning that an attack of one's component can trigger the mal-function or the destruction of another's function. Power generated facilities, fuel supplies and the decrease of human resources sufficiently educated to run these system⁸³ lead to long-lasting effects for a civilian population. Secondly, in conjunction with the first remark, the climate-induced water scarcity, and pre-existing gender inequality forms the foundation for compounding forms of civilian harm. Therefore, the intersection of the three axes in the reality of the battlefield leads to the question of how IHL addresses the complex reality of the current conflicts. This topic will be covered in the next Chapter.

⁸⁰ UN Women, ‘ “Last and least”: Gender dimensions of food insecurity in Sudan’ (2025) Gender Alert No. 3, UN Women Sudan Country Office
<<https://www.unwomen.org/en/digital-library/publications/2025/11/gender-alert-last-and-least-gender-dimensions-of-food-insecurity-in-sudan>> accessed 8 June 2026

⁸¹ Sudan INGO, ‘Sudan: Deadly Escalation of Drone Strikes in Civilian Areas Must End’ (2026)
<<https://reliefweb.int/report/sudan/sudan-deadly-escalation-drone-strikes-civilian-areas-must-end>> accessed 8 June 2026

⁸² ACAPS Analysis Hub, ‘Sudan, Impact of the current conflict on WASH needs’, (2023) Thematic Report
<https://www.acaps.org/fileadmin/Data_Product/Main_media/20230911_ACAPS_thematic_report_Sudan_impact_of_current_conflict_on_WASH_needs.pdf> accessed 5 June 2026

⁸³ David Kaelin, Caroline Pellaton and Tadesse Kebebew, ‘Water and Survival in War: Upholding IHL’s Protective Purpose and Documenting the Hidden Toll’ (2025) 107 International Review of the Red Cross

Chapter II The Legal framework

The increasing targeting and weaponisation of water infrastructure in contemporary armed conflicts⁸⁴, as illustrated by the situation in Sudan, raises important questions regarding the framework of protection that the existing IHL provides. More specifically, the harm occurring from the attacks impacting water infrastructure is not solely direct at the time of attack but rather extends in time, starting a chain of reverberating consequences that disrupt access to essential services and affect the livelihoods of the civilian population. This chapter will follow a three stages analysis. Firstly, it will examine the protection that IHL provides to access to water. Second, it will address the principles of proportionality and precaution that govern the targeting process and the assessment of occurring. Third, it will analyse the concept of indirect and reverberating harm and whether it can be included under the understanding of civilian harm.

2.1 Protection of access to water under IHL

Starting the analysis regarding the protection framework that IHL provides, a first remark to make is that the water is not protected as such under IHL but rather by virtue of its civilian character⁸⁵. The characterisation as a civilian object enables the principle of distinction that is codified in Articles 48 and 52(2) of Additional Protocol I⁸⁶. The principle of distinction consists of ‘cardinal principle’⁸⁷ of IHL, introducing the prohibition of indiscriminate attack towards the objects that are not military objects. The fundamental nature of the principle of distinction among civilian and military objects is affirmed by the establishment as war crimes in international armed conflicts when belligerents ‘intentionally directing attacks against civilian objects, that is, objects which are not military objectives’⁸⁸. Article 52 of AP I identified as military objection, the object which “by their nature, location, purpose or use make an effective contribution to military action and whose total or partial

⁸⁴ International Committee of the Red Cross (ICRC) ‘Humanitarian law & Policy Tadesse Kebebew, ‘The imperative to protect water and water systems during armed conflict’ (2025) accessed: <https://blogs.icrc.org/app/uploads/sites/102/2025/04/the-imperative-to-protect-water-and-water-systems-during-armed-conflict-b.pdf>

⁸⁵ International Committee of the Red Cross (ICRC), ‘Having Access to Water Is Increasingly a Matter of Survival in Conflict Zones’ (21 March 2022) <https://www.icrc.org/en/document/having-access-water-increasingly-matter-survival-conflict-zones> >accessed 24 May 2026

⁸⁶ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) (adopted 8 June 1977) 1125 UNTS 3, art 48, 51(2), 52 (2)

⁸⁷ Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion) [1996] ICJ Rep 226, par 78

⁸⁸ Rome Statute of the International Criminal Court (opened for signature 17 July 1998, entered into force 1 July 2002) 2187 UNTS 3 art 8(2)(b)(ii), Prosecutor v Galić (Judgment) ICTY-98-29-T (5 December 2003) par. 51-61

destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage'⁸⁹. Regarding the NIAC, the AP II doesn't contain as such the principle of distinction and the prohibition of directing attacks on civilian objects. However, more recent treaties that are applied in NIAC include the principle of distinction⁹⁰. Also its customary character has been confirmed by the case-law⁹¹.

Moreover, another ground that access to water is being protected is by the protection of water infrastructure as 'objects indispensable to the survival of the civilian population' under Article 54 of Additional Protocol I⁹², article 14 of Additional Protocol II⁹³ and Rules 53 and 54⁹⁴. These provisions add a further layer of protection⁹⁵ except from the general rule of prohibition of indiscriminate attack. That protection stems from the absolute prohibition of starvation, that exists in Article 54 (1), followed by a non-exhaustive list of objects that are usually used for that purpose. On that basis, there is 'a prohibition to attack, destroy, remove, or render useless objects such as... drinking water and irrigation systems'⁹⁶. That prohibition reflects on the understanding that the survival of civilians depends on access to these resources, and therefore, their deliberate destruction cannot be justified solely by military necessity. Whether in restricted circumstances these objects are identified as valid military targets, the assessment under the proportionality and precautionary assessment follow stricter threshold as there is prohibition on taking any action against objects indispensable to the survival of the civilian population if it is expected to lead to starvation or forced movement of civilians⁹⁷.

However, the protection provided under article 54 is not absolute. According to article 54(3) when the objects indispensable for the civilians are used by the armed forces or when supporting the function of armed conflicts, then they lose their protection and can be targeted. In fact water infrastructure as well

⁸⁹ Article 52 AP. I

⁹⁰ Rule 7: The Principle of Distinction between Civilian Objects and Military Objectives, ICRC Customary IHL Database <<https://ihl-databases.icrc.org/en/customary-ihl/v1/rule7>> accessed 4 July 2026

⁹¹ Prosecutor v Kupreškić (Trial Judgement) IT-95-16-T (14 January 2000) [167] par. 180, Prosecutor v Kordić and Čerkez (Judgment) IT-95-14/2-T (26 February 2001) par. 182

⁹² ICRC, 'Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.' <https://ihl-databases.icrc.org/en/ihl-treaties/api-1977>

⁹³ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II) (adopted 8 June 1977, entered into force 7 December 1978) 1125 UNTS 609 (Additional Protocol II) Article 14

⁹⁴ ICRC Customary IHL Database 'Rule 43. Application of General Principles on the Conduct of Hostilities to the Natural Environment' and Rule 54: Attacks against Objects Indispensable to the Survival of the Civilian Population, Rule

⁹⁵ Marco Sassòli, 'International Humanitarian Law' (Edward Elgar Publishing 2019) par. 3.42

⁹⁶ Additional Protocol I article 54 (2)

⁹⁷ Marco Sassòli, International Humanitarian Law (Edward Elgar Publishing 2019) par. 8.351, 8353

energy infrastructure⁹⁸ are usually under that condition which is described as a dual-use object. The term 'dual-use' object does not consist of the status of legal concept creating uncertainty regarding its status under Article 52(2) as military objects. The difficulty arises from the paradox that the same object, for instance water infrastructure is used for the civilian population to access to clean water and at the same time can be used as supply for armed forces, making the application of principle of distinction extremely complex⁹⁹. As a result, when water or power infrastructure are identified as a military object, they lose the protection under article 54 and then the targeting process following the assessment of under proportionality and precaution take place. Precisely, according to the real cases such as the air campaigns in the First Gulf War or NATO Bombing Campaign Against the Former Yugoslavia , the targeting of dual-use objects is connected with disruption of infrastructure and consequences that affect civilians far for the moment of the attack¹⁰⁰. Based on that Capone suggests a paradigm shift in the understanding of dual-use object¹⁰¹ and during the assessment under proportionality and precaution, the commander should take into consideration the civilian character of the target, especially regarding the consequences that will occur from that target to civilian population. Lastly, beyond the protection as 'object indispensable for civilians' Article 56 of AP I and Article 16 of AP II establish protection for particular categories of water infrastructure, namely works and installations containing dangerous forces. More specifically, dams and the dykes are among the installations that, according to paragraph 1, even in the case of consisting of a legitimate target, the attacks are prohibited if the result could be the release of dangerous forces that lead to severe losses among civilians. Also, when other military objects are located at or in the vicinity of these objects, the attacks are also prohibited when the result could be the release of dangerous forces that lead to severe losses among civilians.

Overall, besides the protection of water infrastructure under the provision of article 54 and 56 of AP I and article 16 of AP II, the reality from the battlefield, underscore that implication on access to water which is actually act of dignity and realisation of fundamental human rights depend on the interpretation and the application of the rules governing the conduct of hostilities which include the principle of distinction, proportionality, and precaution. Although they are formally introduced as

⁹⁸ UN Secretary-General, 'Protection of Civilians in Armed Conflict: Report of the Secretary-General' (2024) UN Doc S/2026/390 par. 10

⁹⁹ Francesca Capone, Dual-Use Objects under International Humanitarian Law: Towards a Paradigm Shift (TMC Asser Press 2025) p.2

¹⁰⁰ Francesca Capone, Dual-Use Objects under International Humanitarian Law: Towards a Paradigm Shift (TMC Asser Press 2025) p. 66-69

¹⁰¹ Francesca Capone, Dual-Use Objects under International Humanitarian Law: Towards a Paradigm Shift (TMC Asser Press 2025) Ch.4

prohibitions, in practice, they function as the framework within which a lawful attack is planned and justified¹⁰². The principle of distinction was introduced briefly in the previous section and it can be seen as the determinative element that put in place the other principle. Therefore in the next section the principle of proportionality and precaution will be elaborated further.

2.2.1 The principle of proportionality

The principle of proportionality is codified for the first time¹⁰³ in AP I and appears in article 51(5)b and article 57(2)(iii) and 57(2)(b) with the same formulation. The proportionality is also part of the customary law that make its application also in NIAC possible¹⁰⁴. Starting the analysis, article 51(5)(b) define an attack as being indiscriminate and therefore prohibited when it is expected to ‘cause incidental loss of civilian life, injury to civilians, or damage to civilian objects that would be excessive in relation to the concrete and direct military advantage anticipated’¹⁰⁵. However, “the application of the principle of proportionality is more easily stated than applied in practice”¹⁰⁶ as long as there are several elements that deserve further attention. The first is the notion of "concrete and direct military advantage". The ICRC has underlined that the advantage that occurs from an attack must be substantial and relatively proximate in time, rather than speculative or indirect¹⁰⁷. Yet, the absence of a precise legal definition leaves significant room for subjective assessment, and that's why this term has been interpreted broadly in practice, giving attacking parties considerable interpretive space to justify their attack¹⁰⁸.

Furthermore, following IHL provisions when an attack has a concrete and direct military advantage, the existence of ‘incidental loss of civilian life, injury to civilians, or damage to civilian objects’ is allowed but limits are introduced under the principle of proportionality not to be extensive and under precaution to take constant care and all feasible precaution to avoid or limit it. The understanding of what consists of incidental harm and what types of harm are under that term is connected to the question whether

¹⁰² Marco Sassòli, *International Humanitarian Law* (Edward Elgar Publishing 2019), par. 3.37

¹⁰³ Ian S Henderson, *The Contemporary Law of Targeting: Military Objectives, Proportionality and Precautions in Attack under Additional Protocol I* (Martinus Nijhoff Publishers 2011) p.181-2

¹⁰⁴ Jean-Marie Henckaerts and others (eds), *Customary International Humanitarian Law* (Cambridge University Press 2005) rule 7,11,12,15,54

¹⁰⁵ Article 51 (5) (b)

¹⁰⁶ Committee Established to Review the NATO Bombing Campaign Against the Federal Republic of Yugoslavia, ‘Final Report to the Prosecutor’ (2000) par.19

¹⁰⁷ ICRC, ‘Rule 14. Proportionality in Attack’ < <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule14> >

¹⁰⁸ David Kaelin, Caroline Pellaton and Tadesse Kebebew, ‘Water and Survival in War: Upholding IHL’s Protective Purpose and Documenting the Hidden Toll’ (2025) 107 *International Review of the Red Cross* 1158

harm that does not occur directly but progressively, may be considered during the proportionality and precaution assessment. That question is elaborated further in the next section 2.3 'The reverberating harm arising from the attack on water infrastructure'.

Moreover, a further element of the principle of proportionality is the requirement of an 'ex ante assessment', an assessment conducted before the launching of the attack. Based on that requirement Gillard introduces a two-step test as a tool to determine whether the incidental harm falls within proportionality and precaution assessment based on the establishment of the criterion of causation and of foreseeability of the harm¹⁰⁹. Considering the first element, the establishment of a causal link between the incidental harm and the attack is not bound by any limitation of time or space, contrary to the obligation for a direct and concrete military advantage¹¹⁰. Therefore, whether the incidental harm occurs at the moment of the attack through the destruction of civilian homes, or arises progressively through the consequences that the disruption of electricity supply can have for access to clean water, is not legally determinative as both can satisfy the causation requirement¹¹¹. Moving to the second element, the foreseeability of the occurring consequences here, the decisive element is the availability of information at the moment of planning¹¹². As Gillard establishes, the standard does not require certainty about outcomes but rather that a reasonable person, making use of the information available at the time, could have predicted those consequences. Following that a suggested model is the 'reasonable foreseeability'¹¹³, based on which commanders are expected to anticipate the effects that a reasonable person, making use of the information available at the time, could have predicted. Therefore, the proportionality principle should not be assessed in isolation but together with the rules under the provision of article 57, which introduces the precaution on attack¹¹⁴.

¹⁰⁹ Emanuela-Chiara Gillard, 'Proportionality in the Conduct of Hostilities The Incidental Harm Side of the Assessment' (2018), Chatham House The Royal Institute of International Affairs 13-18

¹¹⁰ Ibid, Isabel Robinson and Ellen Nohle, 'Proportionality and Precautions in Attack: The Reverberating Effects of Using Explosive Weapons in Populated Areas' (2016) 98 International Review of the Red Cross 107 p.113

¹¹¹ Emanuela-Chiara Gillard, 'Proportionality in the Conduct of Hostilities The Incidental Harm Side of the Assessment' (2018), Chatham House The Royal Institute of International Affairs par. 43

¹¹² *ibid* par. 53

¹¹³ Isabel Robinson and Ellen Nohle, 'Proportionality and Precautions in Attack: The Reverberating Effects of Using Explosive Weapons in Populated Areas' (2016) 98 International Review of the Red Cross

¹¹⁴ Emanuela-Chiara Gillard, 'Proportionality in the Conduct of Hostilities The Incidental Harm Side of the Assessment' (2018), Chatham House The Royal Institute of International Affairs par.22-23

2.2.2 The principle of precaution

The principle of precaution is established in AP I and encompass obligations that cover both the attack as well as the part that is subject to the attack¹¹⁵. However, under that section the focus will be on the precaution obligation that the attacker has to complete during the assessment proceeding of the attack prior to the attack that are established in article 57 of AP I¹¹⁶, article 13 of AP II¹¹⁷ and the customary law as well¹¹⁸. According to that principle the attacker must take constant care and/or ‘do everything feasible’ to determine that the target is a lawful target and then ‘take all feasible precautions in the choice of means and methods with a view to avoiding, and in any event to minimizing’ the incidental harm. Therefore the element of what is understood as feasible gains great importance. Many States has been interpreted that obligation to cover precautions that are practicable or practically possible taking into account all circumstances ruling at the time, including humanitarian and military considerations¹¹⁹. Therefore it is clear that the availability of information becomes a determinative element. In fact, not just the availability but as well the attempt to reach that information is important. Part of the precaution in attack is to suspend an attack¹²⁰ when it is becoming present that the object is not military or the proportionality is not met and the incidental harm is excessive regarding the military advantage¹²¹. Lastly, the attacker must provide ‘effective advance warning’.

2.3 The reverberating harm under IHL

Following the so far analysis, it is clear that IHL were developed as a compromise between humanity and military necessity¹²². This means that the conduct of hostilities does not require ‘zero civilian casualties’ but rather a balance between the military necessity and the protection of the civilian population and civilian objects from dangerous military operations¹²³. Achieving that balance requires

¹¹⁵ Sasoli, 8.6,6

¹¹⁶ AP I article 57

¹¹⁷ AP II article 13

¹¹⁸ ICRC Customary Law Study, above note 64, Rule 15, p. 51, ICTY (TC), Prosecutor v Kupreskic et al., 14 January 2000, IT-95-16-T, PAT.524

¹¹⁹ Ian S Henderson, *The Contemporary Law of Targeting: Military Objectives, Proportionality and Precautions in Attack under Additional Protocol I* (Martinus Nijhoff Publishers 2011) Chapter 7, ICRC, ‘Rule 15.Principle of Precautions in Attack’ <https://ihl-databases.icrc.org/en/customary-ihl/v1/rule15#Fn_8BB44AF2_00016>

¹²⁰ Additional Protocol, Article 57 (b) , (2)(ii)

¹²¹ Additional Protocol, Article 57 (2)(ii), Prosecutor v Galić (Judgment) ICTY-98-29-T (5 December 2003) par 58

¹²² Peter H Gleick, ‘Water as a Weapon and Casualty of Conflict: Freshwater and International Humanitarian Law’ (2019) 33 Water Resources Management 1737

¹²³ International Review of the Red Cross, ‘International Humanitarian Law and the Challenges of Contemporary Armed Conflicts: ICRC Report’ (2024) 106 (927) IHL& Peace p.1394

a clear understanding of what is considered as incidental harm and can be under the assessment of proportionality and precaution. The text of AP I contains no temporal or spatial limitation on incidental harm, which means that in principle when an attack results indirect and time-delayed harm, these consequences are captured under the term incidental harm¹²⁴.

The indirect consequences of attacks on civilian infrastructure have progressively been captured under the concept of reverberating harm. The term has been adopted by the ICRC to describe the foreseeable indirect effects of an attack that extend beyond the immediate physical destruction of the targeted object¹²⁵. The interconnectedness of some events such as the disruption of civilian homes can lead to displacement to civilian population as well the disruption of power stations can affect the function of supply networks. The ICRC has developed the view that a ‘reasonably well-informed person’ should do everything feasible to obtain information that will allow him/her an assessment of the foreseeable incidental effects on civilians and civilian objects. Building on that foundation, Robinson and Nohle¹²⁶ have developed the concept further, particularly in the context of explosive weapons in populated areas, demonstrating how a single attack on one element of an interconnected system such as energy, water, health, or sanitation can produce cascading harm across all systems that depend on it. Furthermore, it is important to note that also state’s practice seems to integrate the understanding of reverberating harm as being part of incidental harm and therefore under proportionality and precaution assessment¹²⁷. The deceive element is the foreseeability of the consequences in order a reasonably well informed person could combine the attacks and the occurring harm. However, the assessment procedure is context sensitive and related to the factual elements that exist at the time of the attack as ICRC has proposed the gained knowledge of previous attacks as well as scientific and empirical data support the foreseeability element of the attacks of interdependent system¹²⁸.

Lastly, at this point it is important to note a structural limitation of the current framework becomes visible, precisely in accordance with reverberating effects caused by the attacking on infrastructure that affects access to water. Despite the obligation to take feasible precautions and the requirement to assess

¹²⁴ Emanuela-Chiara Gillard, ‘Proportionality in the Conduct of Hostilities The Incidental Harm Side of the Assessment’ (2018), Chatham House The Royal Institute of International Affairs, par 63

¹²⁵ International Committee of the Red Cross (ICRC), ‘Urban Services during Protracted Armed Conflict: A Call for a Better Approach to Assisting Affected People’, Geneva, 2015 (Urban Services Report) p. 21-32, International Committee of the Red Cross (ICRC), ‘International humanitarian law and the challenges of contemporary armed conflicts’ (2015) Geneva 32IC/15/11 p.52-53, ICRC, ‘Preventing and mitigating the indirect effects on essential services from the use of explosive weapons in populated areas: ICRC Recommendations, Geneva, ICRC’ (2024) p.4-5

¹²⁶ Isabel Robinson and Ellen Nohle, p.112

¹²⁷ Isabel Robinson and Ellen Nohle, p.113-116

¹²⁸ International Committee of the Red Cross (ICRC), ‘International humanitarian law and the challenges of contemporary armed conflicts’ (2015) Geneva 32IC/15/11 p.52

proportionality in light of non excessive incidental harm, both principles operate on the assumption that an attack is a discrete event whose consequences can be evaluated at the moment it occurs¹²⁹. The reality of attacks on infrastructure that affects access to water challenges that assumption fundamentally. The reverberating harm produced by such attacks frequently extends far beyond the immediate physical damage, affecting interconnected systems and manifesting in indirect consequences that accumulate over time¹³⁰. Therefore, documenting the link between strikes on targets and their impact on water availability and the spread of disease, as illustrated by the example of Sudan, provides a basis for arguing that such actions can and should be included in the precautionary assessment, on the grounds that their consequences are sufficiently foreseeable.

Following the legal analysis, it can be noted that however the existence of a protection framework under the Articles 54 and 56 of AP I and Article 14 and 16 regarding the water infrastructure the most decisive element for the realisation of the right to water and sanitation is the way the principle of proportionality and precaution are applied. Indeed based on the assessment under proportionality and precaution the occurring incidental civilian harm is also tested Supporting the context of incidental harm in a way that integrating reverberating harms that arise for attacks of water impacted infrastructure are the way to address these harm and protect civilian population. The concept of reverberating harm has particular aim contexts where climate change-induced effects co-exist with armed conflict, and it is that intersection that the following chapter addresses

Chapter III Climate change and IHL

The link between climate change and armed conflicts is crucial in the context of the reverberating harm occurring by the targeting of water infrastructure or other interconnected infrastructure. More specifically, based on scientific reports and data, the increase in greenhouse emissions leads to an increase in global temperature, which is connected to major challenges that affect the way we used to experience livelihood so far¹³¹. Precisely, climate change constitutes a major problem for our planet and

¹²⁹ David Kaelin, Caroline Pellaton and Tadesse Kebebew

¹³⁰ Paula S Tallman and others, 'Water Insecurity and Gender-based Violence: A Global Review of the Evidence' (2023) 10 WIREs Water e1619 , David Kaelin, Caroline Pellaton and Tadesse Kebebew, 'Water and Survival in War: Upholding IHL's Protective Purpose and Documenting the Hidden Toll' (2025) 107 International Review of the Red Cross 1141 p.1145-46

¹³¹ IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 4-6

will affect every human and non-human organisation¹³². However, its result does not affect all the population equally¹³³. As it has been rightly framed, some people faced ‘double vulnerabilities’¹³⁴ that emerge both from the climate change impact, and armed conflict implications. It is worth mentioning that 3.6 billion people are living in vulnerable areas exposed to intense weather events, combined with the ongoing conflict¹³⁵. Sudan boldly illustrates that reality, intensifying the question regarding how the current framework of IHL addresses the risks arising from climate change effects during armed conflicts.

Against that background the following chapter is being developed to answer the question ‘To what extent can climate change-induced water scarcity be taken into account under the proportionality and precaution assessments governing attacks under IHL, applying a gender lens ?

3.1. The connection of climate change and IHL

Environmental concerns and especially the discussion of climate change were not at the center of the state's interest for most of the 20th century. During the time of codification of the Geneva Conventions, that was part and particularly right¹³⁶. At the same time, neither do legal texts dealing traditionally with environmental protection have addressed armed conflict situations directly. It was only after the linkage of international peace, stability, and development with the prevention of environmental damage¹³⁷ that the interconnection between these fields began to expand. Therefore, the connection of environment

¹³² Wim Zwijnenburg, ‘Data-driven environmental decision-making and action in armed conflict’ (2021) Humanitarian Law & Policy, International Committee of the Red Cross <<https://blogs.icrc.org/law-and-policy/2021/06/01/data-driven-environmental-decision-making-armed-conflict/>> accessed 16 June 2026

¹³³ International Committee of the Red Cross (ICRC), ‘When Rain Turns to Dust: Understanding and responding to the combined impact of armed conflicts and the climate and environment crisis on people's lives (ICRC 2020) p. 13-14 <<https://www.icrc.org/en/publication/4487-when-rain-turns-dust>>

¹³⁴ Katie Peters, Leigh Mayhew, Hugo Slim, Maarten van Aalst and Julie Arrighi, ‘Double vulnerability: The humanitarian implications of intersecting climate and conflict risk’ (2019) ICRC, Red Cross Red Crescent Climate Centre. Working paper 550

¹³⁵ International Committee of the Red Cross (ICRC), ‘Special Appeal 2025 - Climate change and conflict: Protecting the most vulnerable’ (2025), <<https://www.icrc.org/en/article/special-appeal-climate-change-and-conflict>>

¹³⁶ Tuiloma Neroni Slade, ‘International Humanitarian Law and Climate Change’ in Suzannah Linton, Tim McCormack and Sandesh Sivakumaran (eds), *Asia-Pacific Perspectives on International Humanitarian Law* (Cambridge University Press 2019) pp. 643–646.

¹³⁷ United Nations General Assembly (UNGA) Res A/RES/63/311 (29 May 2009)

and IHL started with either soft law texts, such as the Stockholm Declaration¹³⁸, the Rio Declaration¹³⁹, or other legal texts, such as the Opinion of the ICJ on the Legality of the Threat or Use of Nuclear Weapons¹⁴⁰, which attempted to underscore the protection of the environment as an element of interest during armed conflict. It is interesting to note that even the Paris Agreement, the most recent multilateral agreement that deals with the effects of climate change, there is zero reference to armed conflicts¹⁴¹.

However, as scientific knowledge is developed, the linkage of armed conflict and climate change effects is becoming tighter and more demanding. For instance, the research indicates that military activity contributes to the increase of GHG emissions, increasing the amount of pollution in the environment¹⁴². At the same time, empirical knowledge also highlighted that climate-induced effects reduce the resilience of the population, increasing its vulnerability to effects that conflict provokes¹⁴³. Talking for instance, the climate-induced effects that the population experiences in Sudan, with severe floods and droughts that disrupt their livelihood, expose them to further risks, proves that characteristic of climate change as a threat multiplier¹⁴⁴. In fact, there is no consensus if there is a direct link between climate change and the eruption of armed conflict. However, climate change effects, such as water scarcity, can exacerbate the living conditions in situations where political instability and poor institutions exist¹⁴⁵.

¹³⁸ Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration) UN Doc A/CONF.48/14/Rev.1 (1972)

¹³⁹ Rio Declaration on Environment and Development (adopted 14 June 1992, entered into force 12 August 1992) UN Doc A/CONF.151/26 (Vol I)

¹⁴⁰ Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion) [1996] ICJ Rep 226

¹⁴¹ Christine Bakker, 'The relationship between climate change and armed conflict in International Law: Does the Paris Climate Agreement add anything new? (2016) Winter Spring Vol. 2 N. 1

¹⁴² Neimark, Benjamin and Bigger, Patrick and Otu-Larbi, Frederick and Larbi, Reuben, A Multitemporal Snapshot of Greenhouse Gas Emissions from the Israel-Gaza Conflict (2024). <<https://ssrn.com/abstract=4684768>> [The projected emissions from the first 60 days of the Israel-Gaza war were greater than the annual emissions of 20 individual countries and territories.], Adriaan Korthuis, Lennard de Klerk, Mykola Shlapak, Olga Gassan-Zade and Sergiy Zibtsev, Climate Damage Caused by Russian War in Ukraine in 24 Months (Climate Focus 2024) [War emissions increased to 175 million tCO₂e, the equivalent of putting 90 million new petrol cars on the road or building 260 coal-fired power unit of 200 MW each] <<https://climatefocus.com/publications/climate-damage-russian-war-in-ukraine-24-months/>>

¹⁴³ Vanessa Murphy and Helen Obregon Gieseken, 'Fighting without a Planet B: how IHL protects the natural environment in armed conflict' (2021) Humanitarian Law& Policy, International Committee Red Cross [*At the same time, countries enduring conflict are on the front line of climate change: of the 25 countries most vulnerable to climate change and least ready to adapt, 14 are mired in conflict.*] <<https://blogs.icrc.org/law-and-policy/2021/05/25/fighting-without-planet-b/>> accessed 15 June

¹⁴⁴ Tuiloma Neroni Slade, 'International Humanitarian Law and Climate Change' in Suzannah Linton, Tim McCormack and Sandesh Sivakumaran (eds), *Asia-Pacific Perspectives on International Humanitarian Law* (1st edn, Cambridge University Press 2019).

¹⁴⁵ Tara Shith, 'Climate Change and Armed Conflict' (2022), ASSER PRESS and the authors 2022 S. Sayapin et al. (eds.), *International Conflict and Security Law*, United Nations, "Climate Change 'Biggest Threat Modern Humans Have Ever Faced'", Press Release SC/14445, 23 February 2021

Moreover, the relationship between armed conflict and climate change is not single-directional but rather operates in both directions¹⁴⁶. On the one hand, as already indicated, climate change can act as a conflict stressor, intensifying pre-existing social, economic, and resource-related tensions and making populations more vulnerable to the effects of hostilities¹⁴⁷. On the other hand, conflict-related environmental damage also contributes to the further deterioration of the climate. More specifically, the destruction of infrastructure during armed conflict, such as oil installations and energy facilities, forces large volumes of greenhouse gases and other pollutants into the atmosphere, compounding the negative impacts on the climate that already exist. In that sense, the two phenomena do not simply coexist but actively reinforce each other, creating a cycle in which climate vulnerability increases the severity of conflict, while conflict in turn deepens climate instability.

That reciprocal dynamic is particularly visible in the context of attacks affect water access, when conflict-related destruction does not only deprive the civilian population of access to water but also degrades the environmental conditions that sustain water availability over time, by compounding the pre-existing effects of climate-induced water scarcity. Sudan conflict proves that dynamics taking into consideration that the population has already been exposed to climate-induced water insecurity which was connected to internal displacement and implication to safeguard fundamental rights such as food and water and today, after the eruption of the conflict, they experience additional destruction of the water impacted systems. That reality raises the question of whether and how IHL, as it currently stands, is capable of addressing the climate-induced dimensions of civilian harm.

3.2 Climate change-induced effects under IHL

Moving deeper in the analysis regarding the integration of climate change-induced effects under the provision of IHL, the relevant articles are the articles 35(3)¹⁴⁸ and 55(1)¹⁴⁹ of AP I. These are the only

¹⁴⁶ Stavros-Evdokimos Pantazopoulos, 'Navigating legal frontiers: Climate change, environmental protection and armed conflict' (2024), Cambridge University Press on behalf of International Review of the Red Cross (2024), 106 (925), 366–392.

¹⁴⁷ Catherine O'Rourke and Ana Martin, 'Gender, Conflict and the Environment: Surfacing Connections in International Humanitarian Law' (2023) 105 International Review of the Red Cross 1600 p.1601-1605

¹⁴⁸ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Additional Protocol I) (adopted 8 June 1977, entered into force 7 December 1978) 1125 UNTS 3 (API) art 35(3) [3. *It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.*]

¹⁴⁹ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Additional Protocol I) (adopted 8 June 1977, entered into force 7 December 1978) 1125 UNTS 3 (API) art 55(1) [1. *Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or*

provisions that IHL addresses the environment as an element affected from armed conflict. Although, the text does not specifically mention climate change but rather refers to the protection of the natural environment, scholars have begun to argue that the existing IHL framework is capable of encompassing climate considerations through purposive interpretation, reading the provisions in accordance with their object and purpose rather than restricting their meaning to the specific threats that existed at the time of drafting¹⁵⁰. Following that approach, the key question becomes how broadly the term "natural environment" in articles 35 (3) and 55(1) AP I should be understood. On that point, the updated ICRC 'Guidelines on the Protection of the Natural Environment in Armed Conflict'¹⁵¹ provide important guidance, establishing that the notion of environment should be understood as widely as possible in light of further developments and the gaining of new knowledge. According to the ICRC, the natural environment consists of 'the system of interrelations between living organisms and their inanimate environment, encompassing everything that exists or occurs naturally, including the hydrosphere, biosphere, geosphere, and atmosphere'¹⁵². Under that broad understanding, climate constitutes part of the atmospheric and physical conditions that form the natural environment and therefore falls within the scope of the term as used in AP I. That interpretation is further supported by the principle of good faith in treaty interpretation¹⁵³ and by the understanding of the natural environment that has developed in other fields of international law, where climate is treated as an integral element of the environmental system. Most recently, the ICJ Advisory Opinion on the Obligations of States in respect of Climate Change¹⁵⁴ unanimously establishes the State obligation under International Law to prevent significant environmental harm on the reason that the protection of the environment is essential for the enjoyment of all human rights¹⁵⁵. Although the Advisory Opinion addresses IHL directly, it recognises the climate

may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.]

¹⁵⁰ Tuiloma Neroni Slade, 'International Humanitarian Law and Climate Change' in Suzannah Linton, Tim McCormack and Sandesh Sivakumaran (eds), *Asia-Pacific Perspectives on International Humanitarian Law* (Cambridge University Press 2019) pp. 645, Mario Pasquale Amoroso, 'Fighting in a Warming World: The Emergence of Climatic Considerations in the Conduct of Hostilities under International Humanitarian Law' (2026) 35 *Review of European, Comparative & International Environmental Law* 198 p.200-203, Stavros-Evdokimos Pantazopoulos, 'Navigating legal frontiers: Climate change, environmental protection and armed conflict' (2024), Cambridge University Press on behalf of *International Review of the Red Cross* (2024), 106 (925)

¹⁵¹ International Committee of the Red Cross (ICRC), 'Guidelines on the Protection of the Natural Environment in Armed Conflict' (2020)

<https://www.icrc.org/sites/default/files/document_new/file_list/guidelines_on_the_protection_of_the_natural_environment_in_armed_conflict_advance-copy.pdf>

¹⁵² *ibid* par.15-17

¹⁵³ Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331 (VCLT) art 31.

¹⁵⁴ *Obligations of States in Respect of Climate Change (Advisory Opinion)* (ICJ 2025)

¹⁵⁵ *Ibid* par.371,387- 393

protection climate as bringing legal obligation reinforcing the due diligence obligation¹⁵⁶. As the result in following an interpretation of Articles 35(3) and 55(1) AP I that encompass climate change induced effects meet the direction that ICJ presented.

Having established that climate constitutes part of the natural environment within the meaning of AP I, the question becomes what protection those provisions actually provide. These provisions cover the protection of the natural environment, introducing an absolute prohibition on the use of means and methods of warfare that ‘intend or may cause widespread, long-term and severe damage to the natural environment’. However, there has been criticism regarding the high threshold of the three cumulative elements of the widespread, long-term, and severe damage that, in reality, can not provide sufficient protection to the environment¹⁵⁷. The criticism is also supported by the absence of any interpretation of those terms in the text, giving space to different understandings of each state¹⁵⁸. In fact, new initiatives have been developed recently, attempting to fill the gap in the connection between the two fields of law. Such initiatives are the updated Guidelines on ICRC¹⁵⁹ and the Draft Principles of ICL¹⁶⁰. Although these are not legally binding texts provide an important tool in order to interpret the existing legal texts according to the recent developments.

The ICRC guidelines highlight that all three cumulative elements have a vague legal definition. However, the important element is that the ICRC interpretation integrates the reverberating effects arising in the context of water scarcity and climate change, as part of the assessment under all terms. Particularly, the term widespread can be qualified when the effects happen in different geographic spaces from the space in which the means or methods have been employed, having the elements “several hundred square kilometres” as a starting point¹⁶¹. Another example, particularly important for the effects on water impacted infrastructure, is when smaller damage happens but in numerous areas, for instance, in the case of contamination of water systems, this can be qualified as ‘widespread’¹⁶².

¹⁵⁶ Ibid par.300

¹⁵⁷ Stavros-Evdokimos Pantazopoulos, p.15

¹⁵⁸ Tuiloma Neroni Slade, ‘International Humanitarian Law and Climate Change’ in Suzannah Linton, Tim McCormack and Sandesh Sivakumaran (eds), *Asia-Pacific Perspectives on International Humanitarian Law* (1st edn, Cambridge University Press 2019)

¹⁵⁹ International Committee of the Red Cross (ICRC), *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law* (ICRC 2020)

¹⁶⁰ ILC, ‘Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries’ (2022) UN Doc A/77/10

¹⁶¹ International Committee of the Red Cross (ICRC), ‘Guidelines on the Protection of the Natural Environment in Armed Conflict’, par.56-60

¹⁶² ibid par. 57

Moreover, regarding the term long-term, the ICRC position is that the reverberating effects of the destruction or the pollution of water can be classified as long-term damage following the contemporary knowledge¹⁶³. Lastly, under the notion of severe damage, the interdependence of the natural environment should be taken into account. For instance, the destruction of a natural space that can cause an imbalance to the flora and fauna of the area can lead to the instability of the area¹⁶⁴. As a result, the lack of a specific definition and the cumulative element set a high threshold in order to enforce this prohibition. At this point, it should be underlined that the AP II, which includes rules regarding the NIAC, does not provide similar protection of the natural environment¹⁶⁵, creating a gap of environmental protection in these cases, such as in Sudan. In addition, these provisions do not apply to non-international armed conflicts, despite the fact that many environmental consequences of warfare occur precisely in such conflicts¹⁶⁶.

However, aside from the prohibition of widespread, long-term, and severe damage, the natural environment also informs protection by virtue of its recognition as a civilian object. Therefore, the rules of conduct of hostilities that cover the protection of civilian objects are also in place and remain relevant also for the NIAC, as they have gained the status of customary law¹⁶⁷. The analysis of the rules introduced in Chapter 2 will be developed here with a focus on climate change considerations regarding climate-change induced water scarcity and the reverberating harm that occurs when an attack is launched in a water impacted infrastructure.

3.3 Climate-change consideration before the attack

In that regard, the ICRC Guidelines provide important guidance on how the existing rules of conduct of hostilities apply to the natural environment. Particularly relevant for the present analysis are Rules 5

¹⁶³ *ibid* par.65-66

¹⁶⁴ *ibid* par. 71

¹⁶⁵ Henckaerts/Doswald-Beck (eds), ICRC Study on Customary International Humanitarian Law, Vol. I, Rule Rule 45 <https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule7 >

Jeanique Pretorius 'Protecting the environment in non-international armed conflicts means looking beyond international humanitarian law alone.' (2019) Conflict and Environment Observatory <https://ceobs.org/environmental-protection-in-non-international-armed-conflicts-finding-the-way-forward/&sa=D&source=docs&ust=1782034921821153&usg=AOvVaw1h_KQtIYoELZ3TgYmBqXaq >

¹⁶⁶ The Kvinna till Kvinna Foundation, *The Climate, Gender and Conflict Nexus* (Position Paper, 2022) https://kvinnatillkvinna.org/wp-content/uploads/2022/04/TheKvinnatillKvinnaFoundation-Position-Paper_The-Climate-Gen-der-and-Conflict-Nexus.pdf

¹⁶⁷ Additional Protocol I (1977), Arts 48 and 52, Henckaerts/Doswald-Beck (eds), Rule 7-10

through 8. More specifically, Rule 5¹⁶⁸ establishes that no part of the natural environment may be attacked unless it qualifies as a military objective, which is a direct application of the principle of distinction. Rule 6 introduces the prohibition of indiscriminate attacks in relation to the environment, establishing that attacks whose effects cannot be limited as required by IHL and which are therefore of a nature to strike the natural environment without distinction are prohibited. Moving forward, Rule 7 extends the proportionality assessment to environmental damage, prohibiting attacks against military objectives that may be expected to cause incidental damage to the natural environment that would be excessive in relation to the concrete and direct military advantage anticipated. Finally, Rule 8 introduces the precaution obligation in relation to the environment, requiring that constant care be taken to spare the natural environment and that all feasible precautions be taken to avoid or minimise incidental damage to it. At this point, the combination of these IHL rules with the principles that are developed in IEL can strengthen the argument of connecting both fields, aiming to better protect the environment from the effects of climate change. Therefore, the interpretation of the principle of prevention under IEL, which addresses risks that are certain and foreseeable, can inform the interpretation of precaution obligations under IHL¹⁶⁹.

The legal consequence of that reality is significant for the present analysis. As has been established in Chapter 2, the proportionality and precaution assessment requires commanders to take into account the foreseeable consequences of an attack at the moment of planning. The reasonable foreseeability standard does not require certainty about the outcomes of an attack, but rather that a reasonable commander, making use of the information available at the time, could have anticipated those consequences. In that regard, pre-existing climate conditions, such as the water scarcity documented in Sudan before the eruption of the conflict, constitute part of the information available to a commander planning an attack on water infrastructure or interconnected systems. Therefore, those conditions are not external to the legal assessment but rather shape the foreseeable consequences of the attack and must be factored into the proportionality and precaution analysis. As Pantazopoulos argues, as climate impacts associated with conflict become increasingly foreseeable, military commanders must respectively adapt by starting to integrate them into their targeting decisions. Furthermore, climate-induced water scarcity increases civilian dependence on existing water infrastructure and

¹⁶⁸ International Committee of the Red Cross (ICRC), 'Guidelines on the Protection of the Natural Environment in Armed Conflict' p.47

¹⁶⁹ Stavros-Evdokimos Pantazopoulos, 'Navigating legal frontiers: Climate change, environmental protection and armed conflict' (2024), Cambridge University Press on behalf of International Review of the Red Cross (2024), 106 (925), 366–392.

reduces the availability of alternative sources of water. Consequently, where attacks damage water systems in climate-vulnerable environments, civilians face greater difficulties in accessing substitute sources and recovery efforts become more difficult. The same attack may therefore generate more severe civilian consequences in a climate-vulnerable context than it would in a context where water resources are abundant. This relationship reinforces the need to account for climate conditions when assessing foreseeable civilian harm. In a context like Sudan, where the climate-induced vulnerability of the water system is well documented before any attack takes place, a commander cannot conduct a legally adequate assessment of the foreseeable civilian harm of targeting water impacted infrastructure without accounting for the pre-existing conditions on the ground. The failure to do so, does not only produce an incomplete assessment but also risks leaving the most significant and lasting civilian harm legally invisible, precisely because it unfolds not at the moment of the attack but through the interaction of the strike with conditions that already existed.

3.4 The gender aspect of climate-induced effects

The previous sections established that climate change can act as a stressor during armed conflicts and its effects on access to water must be assessed under the proportionality and precaution test. However, the effects do not fall equally on all members of the civilian population. As Catherine O'Rourke and Ana Martin reflect there is a need to incorporate women's experience regarding climate-induced effects and conflict effects in the existing IHL rules by moving both gender and environment from the periphery to the centre¹⁷⁰. Indeed, climate change induced effects do not operate in isolation rather in a context of pre-existing gender inequalities that determine the way and the scale at which individuals experience the compounding effects of climate change and conflict. Therefore, a 'gender-conflict-environment nexus' should be adopted during the targeting process in order to detect the gendered pattern of harm that forms foreseeable consequences from attacks on impacted water infrastructures in climate-vulnerable contexts.

Taking specifically the example of climate change-induced water scarcity, women and girls are affected disproportionately because pre-existing gender inequalities shape their social roles that make them more dependent on water scarcity and exposed in the destruction of the infrastructure that support the

¹⁷⁰ Catherine O'Rourke and Ana Martin p.1619-1622, Judith Gardam and Hilary Charlesworth, 'Protection of Women in Armed Conflict', Human Rights Quarterly, Feb. 2000, Vol. 22, No. 1, p. 148–166.

normal function of water systems.¹⁷¹ Particularly, water scarcity affects access to water in terms of quality and quantity and disrupts the cycle of the activities that women and girls are assigned to do, such as collecting water and cooking¹⁷². As a result, they are forced to walk longer distances in order to complete those responsibilities, something that exposes them to heightened risks of insecurity¹⁷³ and increase of risk of sexual and gender based violence¹⁷⁴. Many of the consequences do not arise immediately from the attack on water or power infrastructure itself but emerge over time through the progressive disruption of access to water. Consequently, the interaction between climate vulnerability and attacks on water impacted infrastructure can generate forms of harm that are not only reverberating but also distinctly gendered and foreseeable¹⁷⁵. That leads to the next chapter, which examines how these reverberating harms emerge and whether the existing framework of IHL is capable of accounting for them within the assessment of civilian harm.

Chapter IV The gendered reverberating harm

The analysis developed in the preceding chapters has established that an attack on water impacted infrastructure creates consequences that extend far beyond the moment of the attack and the mere physical harm. These harm can be described by the concept of reverberating harm, a concept that State's practice and ICRC interpretation has integrated in their understanding about incidental harm¹⁷⁶. Moreover, climate change as a stressor exacerbates the reverberating harm that occurs from the attacks on water impacted infrastructure for instance due to the already scarcity of resources such as water. However, the reality illustrates that there is a missing lens/point of reference in this analysis. Particularly the conflict in Sudan as was introduced in Chapter 1, that the reverberating harm has a clear gender dimension and therefore, the question that arises is 'To what extent does the interpretation

¹⁷¹ Catherine O'Rourke and Ana Martin, 'Gender, Conflict and the Environment: Surfacing Connections in International Humanitarian Law' (2023) 105 International Review of the Red Cross 1600

¹⁷² Catherine O'Rourke and Ana Martin, Jody Prescott, "Climate Change, Gender and Rethinking Military Operations", (2014) Vermont Journal of Environmental Law, Vol. 15, No. 4, p 775-777

¹⁷³ Charlotte Lindsey-Curtet, Florence Tercier Holst-Roness and Letitia Anderson, 'Addressing the Needs of Women Affected by Armed Conflict' (2004), ICRC, Geneva p.57
<https://www.icrc.org/sites/default/files/external/doc/en/assets/files/other/icrc_002_0840_women_guidance.pdf>

¹⁷⁴ Bharat H Desai and Moumita Mandal, 'Role of Climate Change in Exacerbating Sexual and Gender-Based Violence against Women: A New Challenge for International Law' (2021) 51 Environmental Policy and Law 137, Paula S Tallman and others, 'Water Insecurity and Gender-based Violence: A Global Review of the Evidence' (2023) 10 WIREs Water e1619

¹⁷⁵ Catherine O'Rourke and Ana Martin

¹⁷⁶ Chapter 2

of incidental harm under the current framework of international humanitarian law take into account the gendered reverberating harms resulting from attacks on water infrastructure in climate-vulnerable contexts?

The term 'gendered reverberating harm' is used in this thesis to describe the indirect, time-delayed consequences of attacks affecting access to water that fall disproportionately on women and girls because of the socially assigned roles and pre-existing inequalities that shape their experience in armed conflict. It combines the concept of reverberating harm that is already under the understanding of incidental civilian harm with the feminist lens of the gender dimension of those consequences. Therefore this thesis argues that gender footprint of those consequences is sufficiently foreseeable to be incorporated into the proportionality and precaution principle.

4.1.1 The structural exclusion of gender from IHL

One of the foundations of the feminist critiques is the realisation/statement that even though military operations take place on gendered terrain¹⁷⁷, IHL has failed to incorporate a gender perspective into the understanding of civilian harm. The exclusion of women's experiences is structural rather than incidental, considering the inherent bias of the text and the vulnerability of biased interpretation of some of its rules¹⁷⁸. Indeed, as Judith Gardam underlines in her work¹⁷⁹, there is a pre-existing understanding of femininity and masculinity incorporated into the structure of war and the law regulating it. Historically, the participation in war was constructed as a male activity associated with bravery, honour, courage, and strength. In contrast, combatancy became connected with masculine characteristics, while civilians were already placed in a lower category associated with absence from the battlefield, weakness, dependency, and femininity¹⁸⁰.

Within that background the development and codification of the Geneva Conventions and the Additional Protocols happened at time that, the contemporary distinction between sex as a biological

¹⁷⁷ Helen Durham, Cordula Broege, Lindsey Cameron and Vanesa Murphy, 'Gendered impacts of armed conflict and implication for the application of IHL' (2022), ICRC < <https://blogs.icrc.org/law-and-policy/2022/06/30/gendered-impacts-of-armed-conflict-and-implications-for-the-application-of-ihl/> >

¹⁷⁸ Nivedita Raju and Laura Bruun, 'Integrating Gender Perspectives into International Humanitarian Law' (2023) (Stockholm International Peace Research Institute No. 2023/08), Judith G Gardam and Michelle J. Javris. 'Women, Armed Conflict and International Law' (1st ed, BRILL 2001). p. 93

¹⁷⁹ Judith Gardam 'Women and the Law of Armed Conflict: Why the Silence?' (1997) The International and Comparative Law Quarterly, Vol. 46, No. 1 p. 55-80

¹⁸⁰ Frédéric Mégret, 'The laws of war and the structure of masculine power' (2018) 19(1) Melbourne Journal of International Law 200

characteristic and gender as a socially constructed set of roles and expectations had not yet been fully incorporated into the international humanitarian law discourse¹⁸¹. Consequently, IHL largely approached differences between men and women through a sex-based framework, focusing on biological vulnerability and special protection rather than on the broader social structures that shape individuals' experiences of armed conflict¹⁸². It is exactly the understanding of roles that males and females can have during the armed conflict that reinforces the gender essentialism¹⁸³. More specifically, IHL is embedded within a “masculinity of power”, according to which the law of war reflects masculine understandings of restraint, violence, and military conduct¹⁸⁴. The rules of warfare, therefore, reproduce broader historical ideas regarding masculinity, authority, and power. In that sense, already at the basis of the creation of the law, the distinction between combatants and civilians incorporated relations of hierarchy and power. However, ICRC today has updated the wording and the understanding of the term sex inside the original text, arguing for a broader and more contemporary interpretation¹⁸⁵.

Moreover, another gap that is marked is the failure of the system of IHL to recognise women as autonomous subjects of protection rather than in relation to other categories, such as mothers, wives, or dependants¹⁸⁶. In fact the tendency to merge women and children into one vulnerable category reinforce an image of vulnerability of women rather than agency¹⁸⁷. More particularly, taking the male experience as the norm, IHL reinforces patriarchal norms and standards, excluding the experiences of other individuals who fall outside of the norm¹⁸⁸. This is particularly relevant with the stereotypical roles that are assigned to women and girls.

Therefore, the representation and understanding of the civilian population as a uniform group with the same characteristics and therefore the need for the same protection during the armed conflict, limits the

¹⁸¹ Judith Gardam & Michelle Jarvis, *Women, Armed Conflict and International Law* (Kluwer Law International, 2001).

¹⁸² Helen Durham and Katie O'Byrne, 'The Dialogue of Difference: Gender Perspectives on International Humanitarian Law' (2010) 92 *International Review of the Red Cross*

¹⁸³ Nivedita Raju and Laura Bruun, Judith G Gardam and Michelle J. Jarvis. 'Women, Armed Conflict and International Law' (1st ed, BRILL 2001). p. 35

¹⁸⁴ *ibid* p.205

¹⁸⁵ International Committee of the Red Cross (ICRC), 'Gendered Impacts of Armed Conflict and Implications for the Application of International Humanitarian Law' (2022), ICRC, Geneva, p.11 <<https://www.icrc.org/en/publication/4634-gendered-impact-armed-conflict-and-ihl>>

¹⁸⁶ Judith Gardam and Hilary Charlesworth, 'Protection of Women in Armed Conflict', *Human Rights Quarterly*, Feb. 2000, Vol. 22, No. 1, p. 148–166.

¹⁸⁷ Hilary Charlesworth and Christine Chinkin, 'An Alien's Review of Women and Armed Conflict' in Dale Stephens and Paul Babie (eds), *Imagining Law: Essays in Conversation with Judith Gardam* (University of Adelaide Press 2016)

¹⁸⁸ Nivedita Raju and Laura Bruun, 'Integrating Gender Perspectives into International Humanitarian Law' (Stockholm International Peace Research Institute 2023) p. 3–6

capture of the harm that individuals experience on the grounds of gender. At the same time, the concept of intersectionality¹⁸⁹ challenge the assumption that women constitute a homogenous group. Instead, based on intersectionality, gender intersects with race, age, and sexuality, grounds that intersect with pre-existing inequalities and social dynamics shaping the experience of individual and within the context of armed conflict¹⁹⁰. As a result, concerning the fact that gender roles influence both exposure to harm and the capacity to respond to it during armed conflict, the integration of a gender analysis and interpretation of the IHL rules is essential.

4.1.2 The narrow understanding of gender harm

Historically, the conceptualisation of harm that women experienced was limited and disconnected from the effects of armed conflict. For instance, regarding rape, although a forbidden practice, the justification was on the grounds of honour and not of the integrity of women as human beings¹⁹¹. At the same time, ICRC in the past also had adopted a limited understanding of rape as an instance of a medical condition rather than a structural gender harm¹⁹². The historical limited understanding of gender harm affects the development of that term

More recently, the feminist scholars underscore that although the developments regarding sexual and gender based violence in armed conflict are considered a victory for the feminist movement and are indisputably important legal developments¹⁹³ the narrow understanding of harm as solely or primarily sexual violence limits the understanding of gendered harm within IHL¹⁹⁴. Feminist scholarship increasingly understands gender as social constructed roles and power relations¹⁹⁵. As a result gender

¹⁸⁹ Kimberlé Crenshaw, 'Demarginalizing the Intersection of Race and Sex' (1989) 140 University of Chicago Legal Forum 139.

¹⁹⁰ Helen Durham, Cordula Broege, Lindsey Cameron and Vanesa Murphy, Kimberle Crenshaw, 'Mapping the Margins: Intersectionality, Identity Politics, and Violence against Women of Color' (1991) Stanford Law Review, 43(6), 1241–1299.

¹⁹¹ Kailash Jeenger, A Humanitarian Critique of International Humanitarian Law (Springer Nature Singapore 2025) p.130-132

¹⁹² Daniel Palmieri, 'Sexual violence in armed conflicts: the historical limits of humanitarian action and the ICRC in the 20th Century' (2021), ICRC Geneva <<https://blogs.icrc.org/law-and-policy/2021/12/02/sexual-violence-icrc-20th-century/>>

¹⁹³ Karen Engle, Vasuki Nesiah and Dianne Otto, 'Feminist Approaches to International Law' (2021). U of Texas Law, Public Law Research Paper No. 716 p.1

¹⁹⁴ Helen Durham & Katie O'Byrne, "The Dialogue of Difference: Gender Perspectives on International Humanitarian Law", (2010) 92 International Review of the Red Cross 31.

¹⁹⁵ Rosemary Grey, 'Seeing Gender amid 'Unimaginable Atrocities. (2019)' In: Prosecuting Sexual and Gender-Based Crimes at the International Criminal Court: Practice, Progress and Potential. Cambridge Studies in International and Comparative Law. Cambridge University Press p. 20-28 <<https://www.cambridge.org/core/books/abs/prosecuting-sexual-and-genderbased-crimes-at-the-international-criminal-court/seeing-gender-amid-unimaginable-atrocities/BB0DC7C64441E8AE63D6AE72E271A0B0>>

harm is developing to encompass the experiences of all individuals during armed conflict not solely women's experience or the harm occurring from sexual violence¹⁹⁶.

Against that background, feminist scholars have developed theoretical concepts of cumulative harm¹⁹⁷ and substantial harm¹⁹⁸ aiming to illustrate the complexity of harm that women experienced¹⁹⁹. Firstly, regarding the cumulative harm, Ní Aoláin argues that civilian harm should be understood as composite, aggregate, and layered, recognising that sustained violations build upon pre-existing social inequalities and that the impact on women and girls is particularly grave precisely because of those structural conditions. More specifically, that concept challenges the artificial frame of assessing each attack in isolation, arguing instead that where the same population is repeatedly subjected to connected military decisions, the cumulative effect of those decisions, not merely the consequence of one specific strike, is decisive for their protection. On the other hand, Sankey develops the concept of substantial harm, which attempts to move beyond the exclusive recognition of physical injury by incorporating the interrelated physical, mental, and social consequences of deprivations of subsistence needs, such as forced displacement and attacks on homes, livelihoods, and basic resources.

Both consist of important theoretical development and expand the understanding of what gender harm means in the context of armed conflict.. However, neither concept directly addresses the question of how harm that is indirect, time-delayed, and causally connected to a specific category of attack, such as the targeting of water impacted infrastructure, should be anticipated and factored into the targeting assessment process at the moment of planning. It is at this point that the concept of gendered reverberating harm becomes relevant, as it addresses not only what harm women and girls experience from attacks affecting water access in climate-vulnerable contexts, but also why those harms were foreseeable and therefore should have been incorporated into the targeting assessment

¹⁹⁶Rosemary Grey, 'Seeing Gender amid 'Unimaginable Atrocities. (2019)' In: Prosecuting Sexual and Gender-Based Crimes at the International Criminal Court: Practice, Progress and Potential. Cambridge Studies in International and Comparative Law. Cambridge University Press p. 20-28
<<https://www.cambridge.org/core/books/abs/prosecuting-sexual-and-genderbased-crimes-at-the-international-criminal-court/seeing-gender-amid-unimaginable-atrocities/BB0DC7C64441E8AE63D6AE72E271A0B0>>

¹⁹⁷ Fionnuala D Ni Aolain, 'Cumulative civilian harm in Gaza: A gendered view. (2025) Just Security <<https://www.justsecurity.org/115407/cumulative-civilian-harm-gaza-gendered-view/>> accessed

¹⁹⁸ Diana Sankey, 'Gendered Experiences of Subsistence Harms: A Possible Contribution to Feminist Discourse on Gendered Harm?' (2015) 24 Social & Legal Studies 25

¹⁹⁹ Fionnuala D Ni Aolain, 'Exploring a Feminist Theory of Harm in the Context of Conflicted and Post-Conflict Societies' (2009) SSRN Electronic Journal p.222-226

4.1.3 The absence of gender in the proportionality and precaution framework.

The proportionality principle and precaution were introduced in Chapter 2, but here, after the establishment of the gender representation gap on IHL rules, it is important to apply a gender lens also in the analysis of those principles, considering that both incorporate the notion of incidental harm as part of their realisation.

Firstly, as indicated in Chapter 2, according to the rule of proportionality, in favor of a concrete military advantage, a non-exhaustive incidental harm is allowed. However, following the text, there is no explanation of how the term ‘incidental harm’ should be understood. Following the feminist argument of the lack of gender representation and inherent bias of the text IHL, there is a gap for a biased interpretation of the term incidental harm without encompassing women's experiences at all.

Furthermore, the lack of a gender perspective is evident in the understanding of the application of the principle of precaution. More particularly, according to that principle, belligerents have an obligation to exercise constant care to protect civilian and civilian objects and to take all feasible precautions to minimize civilian harm. In the absence of a gendered understanding of civilian harm, the understanding of reverberating harm continued to stay silent about the precise way that effects arising from attacks on water infrastructure and the interconnected systems affect women and girls. As a result, there is space for the person to assess the attack planning to adopt a personal and prejudiced interpretation regarding the value of the harm occurring for the targeting²⁰⁰. A concrete illustration of the gendered dimension of precaution obligations is provided by the ICRC report on the gendered impacts of armed conflict and IHL. According to that report²⁰¹, even when belligerents comply with the obligation to issue warnings prior to an attack, the effectiveness of those warnings depends on whether they are accessible to the entire civilian population. More specifically, the choice of warning methods, such as written notices or mobile device alerts, may systematically exclude those who lack literacy skills or access to technology. Women and girls are disproportionately represented among those groups, given that gender inequalities in education and access to digital devices remain documented realities in many conflict-affected contexts, including Sudan. As a result, a warning that is formally issued but practically inaccessible to a

²⁰⁰ Nivedita Raju and Laura Bruun, ‘Integrating Gender Perspectives into International Humanitarian Law’ (2023) (Stockholm International Peace Research Institute) p.13, ICRC report 2020 p.17

²⁰¹ International Committee of the Red Cross (ICRC), ‘Gendered Impacts of Armed Conflict and Implications for the Application of International Humanitarian Law’ (2022) p.18

significant portion of the civilian population cannot be considered adequate under the precaution standard. This example illustrates precisely the argument developed in this section. The absence of a systematic gender analysis²⁰² in the planning and execution of attacks means that obligations that appear formally fulfilled may, in practice, leave women and girls unprotected.

4.2 The gender reverberating harm from attacking the water impacted infrastructure and the climate change

This section will incorporate the concept of the reverberating harm introduced in Chapter 2 through a gender lens, demonstrating that the indirect consequences of water infrastructure attacks fall disproportionately on women and girls in a climate-vulnerable context. In recent years, there have been reports that measure reverberating harm in the context of explosive weapons in populated areas integrated a gender lens, due to the increase in devastating results of explosive weapons on civilians' infrastructure²⁰³. These reports do not use the term 'gender reverberating harm' but the intersection of a gender lens in the documentation of the disproportionate impact of these consequences constitute the empirical ground on which the legal argument is developed. The conclusions of these reports can equally apply to the attacks on water impacted infrastructure, as long as the destruction of essential civilian infrastructure, such as water systems, is part of the effects²⁰⁴. Moreover, it is easy to understand that there is a common, shared logic in the way the consequences occur. Particularly, the reverberating effects spread through interconnected systems and affect civilians differently depending on their social roles²⁰⁵.

Therefore, the reverberating harm from attacks on water impacted infrastructure includes a clear gendered dimension connected to the realisation of the rights to water and sanitation. The implication is significant regarding the deterioration of WASH services²⁰⁶. Starting with access to water, the destruction of water infrastructure affects access to safe and drinkable water. While this can affect the

²⁰² Helen Durham, Cordula Broege, Lindsey Cameron and Vanesa Murphy

²⁰³ Bárbara Morais Figueiredo, 'Strengthening the Protection of Civilian Infrastructure in Armed Conflict: Practical Measures to Operationalize IHL and Reduce Civilian Harm' (2026) International Review of the Red Cross 1, Christina Wille and Alfredo Malaret Baldo, 'Menu of Indicators to Measure the Reverberating Effects on Civilians from the Use of Explosive Weapons in Populated Areas', (2021) UNIDIR, Geneva, Switzerland, Alfredo Malaret Baldo and Francesca Batault, 'Second Menu of Indicators to Measure the Reverberating Effects on Civilians from the Use of Explosive Weapons in Populated Areas', (2022) UNIDIR, Geneva, Switzerland

²⁰⁴ Bárbara Morais Figueiredo,

²⁰⁵ *ibid* p.10

²⁰⁶ Alfredo Malaret Baldo Francesca Batault p.10-12

well-being and dignity of the whole civilian population²⁰⁷, women and girls are the ones responsible for safeguarding the water adequacy within the family structure. This gendered role has multiple implications for the livelihood of girls and women, creating a pattern of harm. Speaking of the girls, the water fetching role is connected to the absence of the educational system, undermining their future development and literacy skills, while for the women, the responsibility for securing water for all the household activities is equivalent to many hours of unpaid work, a condition that reinforces their economic dependency on the male figure. Adding on top of that, the reality of climate-induced water scarcity, the water finding becomes more challenging, pushing women and girls to overcome these difficulties by walking longer distances²⁰⁸. The necessity for walking long distances in a context of ongoing armed conflict exposed women and girls to security risks such as sexual and gender based violence²⁰⁹ while also causing physical pain to them²¹⁰. At the same time, the interdependence of water systems with other states' facilities, including electricity systems that power water systems, creates consequences over time as a continuum far from the direct physical damage of a pipe²¹¹. Particularly, regarding sanitation, the outbreak of waterborne diseases presents gender characteristics because women and girls are the one that reach water first, and at the same time, pregnant women are more vulnerabilities towards that diseases²¹². At the same time, water infrastructure is also connected to hospital outages, a situation that raises barriers to health access, such as during childbirth, which creates compounding risks for pregnant women and newborns. Lastly, disruption of the water system aggravates hygienic conditions²¹³, such as menstrual hygiene, safe spaces for sanitation, and maternal and reproductive health. For instance, in the absence of the proper facilities, girls miss school during their menstrual cycle²¹⁴ and women and girls are forced to use open spaces for defecation and bathing, which increases their exposure to sexual violence²¹⁵.

²⁰⁷ David Kaelin, Caroline Pellaton and Tadesse Kebebew, 'Water and Survival in War: Upholding IHL's Protective Purpose and Documenting the Hidden Toll' (2025) 107 International Review of the Red Cross 1141

²⁰⁸ IWRM Toolbox, Tool B5 'Addressing Gender Inclusion' <<https://waterknowledgehub.org/learn/iwrm-tools/wash-and-gender>>

²⁰⁹ Paula S Tallman and others, 'Water Insecurity and Gender-based Violence: A Global Review of the Evidence' (2023) 10 WIREs Water e1619 p. 5-12, IWRM Toolbox, Tool B5

²¹⁰ Paula S Tallman and others p.14

²¹¹ David Kaelin, Caroline Pellaton and Tadesse Kebebew

²¹² Oluwasanya, G., Omoniyi, A., Perera, D., Qadir, M. and Madani, K., 'Unmasking the Unseen: The Gendered Impacts of Water Quality, Sanitation and Hygiene'(2024) United Nations University Institute for Water, Environment and Health (UNU-INWEH), Richmond Hill, Ontario, Canada. p.27-31

²¹³ IWRM Toolbox, Tool B5

²¹⁴ Alfredo Malaret Baldo Francesca Batault, p.16 [indicator 2.G]

²¹⁵ IWRM Toolbox, Tool B5

4.3 Gender reverberating harm under the proportionality and precaution assessment

The reality from the current battlefields, with a paradigmatic example the case of Sudan, demonstrates the devastating presence of gendered-reverberating harm arising from attacks on water infrastructure and interconnected systems that further affect and disrupt the livelihood of civilians long after the targeting. Therefore, the question that arises is whether gendered reverberating harm can be included in the assessment conducted before the attack in order to determine whether the specific target meets the criteria of proportionality and precaution as defined by the law. As introduced in Chapter 2, there are two criteria to meet in order for the incidental harm, in this case, the gender reverberating harm, to be justified under the proportionality and precaution test. The criterion of causation and the criterion of foreseeability²¹⁶. Therefore, in the following section, it will be a demonstration whether those criteria are fulfilled in the case of gendered reverberating harm arising from the targeting of water impacted infrastructure in a climate-change vulnerable context.

Starting with the first criterion, the establishment of a causal link between the attack and the consequences is necessary. As indicated earlier, there is no required time or space limit for the occurrence of incidental harm based on the text²¹⁷. Therefore, the reverberating harm that arose after the targeting of water impacted infrastructure can be concluded to be causally linked to the strike. More particularly, the contemporary water systems are complex and deeply interdependent²¹⁸ with other crucial infrastructure. Therefore, attacks on infrastructure such as electricity, water and health is efficient to trigger consequences to the others' function²¹⁹. An example of that is that attacking a power infrastructure that is connected with a water pumping system can cause reverberating harm by affecting the proper function of the health system, or by the outbreak of waterborne diseases²²⁰. Targeting infrastructures that affect water access leads to a chain of consequences, without the targeting, will not be triggered such as implications on the proper realisation of WASH needs. All those events present a clear gender dimension as long as women and girls carry the main responsibilities of water fetching,

²¹⁶Emanuela-Chiara Gillard, 'Proportionality in the Conduct of Hostilities The Incidental Harm Side of the Assessment' (2018), Chatham House The Royal Institute of International Affairs

²¹⁷ Emanuela-Chiara Gillard par. 63, Isabel Robinson and Ellen Nohle, p.125-131

²¹⁸ International Committee of the Red Cross (ICRC), 'Urban Services During Protracted Armed Conflict, A Call for Better Approach to Assisting Affected People' (2015) p.8
<<https://www.icrc.org/en/publication/4249-urban-services-during-protracted-armed-conflict>>

²¹⁹ Bárbara Morais Figueiredo

²²⁰ David Kaelin, Caroline Pellaton and Tadesse Kebebew, 'Water and Survival in War: Upholding IHL's Protective Purpose and Documenting the Hidden Toll' (2025) 107 International Review of the Red Cross 1141 p.1146-1149

which, especially in the context of climate vulnerability, increases the security risks and challenges. In fact, the attack is the element that ignited and accelerated the unfolding of events in a context where structural inequality and climate change-induced effects prevail.

Moving to the examination of the second criterion, foreseeability, the decisive element is the availability of information at the moment of planning²²¹. As Gillard establishes, the standard does not require certainty about outcomes but rather that a reasonable person, making use of the information available at the time, could have predicted those consequences. In fact, the greater the risk to the civilian population, the higher the standard of care required from those planning the attack²²². Therefore, the commander applying the model of reasonable foreseeability, in order to fulfil the obligation to take all feasible precautions, should evaluate all the information available to them regarding the effects that a planned attack will have.

However, in practice, the determination of what information is available at the time of the attack presents its own challenges. State practice reveals different interpretations of what information is considered 'readily available' and what requires specialised expertise to obtain²²³. Assessing reverberating effects demands, in some cases, expert knowledge that may not always be immediately accessible to military commanders. Moreover, the absence of systematic data collection on civilian harm from infrastructure attacks²²⁴ and particularly on its gendered dimensions means that the information gap itself becomes an obstacle to the adequate application of the foreseeability standard. It is precisely for that reason that the integration of gender analysis into targeting procedures is essential²²⁵. A systematic gender analysis before targeting would generate the data that is currently missing and make the foreseeability standard operable in relation to gendered harm.

That structural absence in the data, however, is compounded by a deeper limitation in the framework itself. The proportionality and precaution framework assesses each attack as a discrete event whose consequences can be evaluated at the moment it occurs. This atomic understanding of attack is considered a structural limitation, because it fails to recognise patterns of harm²²⁶. It has been suggested that, in the context of health infrastructure, the failure to incorporate the reverberating harm in the assessment procedure undermines the proportionality test's intended effect, which is the protection of

²²¹ *ibid* par. 53

²²² Bárbara Morais Figueiredo p.10

²²³ Isabel Robinson and Ellen Nohle p.135-139

²²⁴ Bárbara Morais Figueiredo

²²⁵ Helen Durham, Cordula Broege, Lindsey Cameron and Vanesa Murphy

²²⁶ Alfredo Malaret Baldo Francesca Batault p.4,

the civilian population from the attack ²²⁷. The same reasoning can be applied to the gendered reverberating harm arising from the targeting of water-impacted infrastructure. Precisely, the interconnectedness of the civilian infrastructure and the reverberating harm occurring over time after the attack disrupts the women's and girls' livelihoods in multiple ways, reinforcing social inequalities and gender norms in a way that is repetitive and predictable. As a result, whether the proportionality and precaution assessment focuses only on the direct and physical consequences of the attack, the gendered reverberating harm will systematically remain unseen by falling outside the scope of the assessment, not because it is not foreseeable, but because the framework is not designed to look for it.

Following the whole argument described so far, chain of effects²²⁸ occurring from an attack affecting water access is not speculative but rather highly documented. Particularly, in the case of Sudan, already before the eruption of the conflict, there were documented reports regarding the climate change vulnerability which expose the country to phenomena such as droughts, floods that affect and disrupt the livelihood of Sudanese people. There were also reports regarding the women's difficulties in covering water responsibilities and food demand as well as reports that interpret a gender lens into the reverberating harm taking the example of explosive weapons and the connection of the social inequalities and the harm that women and girls experience. Therefore, it is safe to argue that the military participants prior to the attack had sufficient availability of free access information regarding the gender reverberating effects and the gender climate-induced effects. Therefore, based on that, a reasonable commander is or should be aware of that information that connects gender aspects with water scarcity arising for attack in water infrastructure in the context of climate change. Moreover, a reasonable commander should be aware of the interconnectedness of the system and particularly in the field of the attack takes place²²⁹. Therefore, when commanders are aware of the connection between water and power infrastructure, the decision to proceed with an attack without taking into account the gender reverberating harm does not satisfy the rules of proportionality, as it fails to take all feasible precautions.

Overall, the analysis developed in this chapter demonstrates that gendered reverberating harm satisfies both the criterion of causal link and the criterion of foreseeability required for its incorporation into the

²²⁷ Ana Elisa Barbar, Lea Gauthier, Evan Harary and Uliana Poltavets, 'How the law of war can reckon with longer-term harms of attacks on health' (2026), Just Security <<https://www.justsecurity.org/137470/law-of-war-attacks-healthcare/>>

²²⁸ Emanuela-Chiara Gillard, par 45-47

²²⁹ Marco Sassòli and Lindsey Cameron, "The Protection of Civilian Objects: Current State of the Law and Issues de Lege Ferenda", (2006) In: The Law of Air Warfare : Contemporary Issues. Ronzitti, Natalino and Venturini, Gabriella (Ed.). The Hague : Eleven International, p.65

proportionality and precaution assessment prior to the launching of an attack. The well-documented gendered consequences of the disruption of water infrastructure that affects the WASH needs, food security, displacement, and exposure to violence in conjunction with the available information regarding climate change-induced water effects, including water scarcity constitute a sufficient basis for establishing that these harms are both causally connected to the attack and reasonably predictable at the moment of planning.

Therefore, the omission by belligerents to include a gender analysis of the reverberating harm of a planned strike results in non-compliance with the principle of proportionality and precaution, as it does not take into account the full extent of foreseeable civilian harm which these principles are intended to address. At the same time the chain of consequences are directly connected with the non-fulfillment of the fundamental rights to safe water and sanitation which, as indicated in the introduction, continues to apply during armed conflict and whose fulfillment depends on the same infrastructure that the attacks destroy. As a result, it does not require the development of new rules. The existing framework of IHL, through the proper application of the foreseeability standard under proportionality and precaution, is already capable of incorporating gendered reverberating harm, provided that commanders integrate gender and climate considerations into their targeting assessments.

Conclusions

The research question in that thesis was formed as ‘To what extent can IHL be interpreted to encompass gendered reverberating harm arising from attacks that affect access to water in climate-vulnerable contexts, a case study of the conflict in Sudan.’ This thesis argues that, following a progressive interpretation of the rules of proportionality and precaution, a reasonable commander should integrate consideration regarding the gendered reverberating harm arising from attacks that affect access to water in climate-vulnerable contexts before launching an attack. In cases such as the Sudan, where the climate vulnerability and gendered patterns of harm are sufficiently documented prior to the attack, those consequences satisfy the requirements of causation and reasonable foreseeability and should be incorporated into the assessment of the commander during the targeting process. That conclusion was reached by combining the logical thread that Sudan illustrates, that the interconnection of conflict, climate change, and gender results in women and girls experiencing disproportionate harm due to the destruction of infrastructure that affects access to water, in a condition where water scarcity

already undermines their enjoyment of the right to water and sanitation. Drawing on that, the legal analysis concluded that the reverberating harm from the attacks affect water access and is considered under proportionality and precaution assessment prior to the attack. Then the role of climate change, as a stressor, shapes the condition that a reasonable commander should take into account based on its foreseeable elements. And, lastly, applying the feminist lens found that the social inequalities and gender roles regarding water access are exacerbated in the context of climate vulnerability, and are sufficient to create foreseeable gendered reverberating harms.

This thesis contribution stems from the development of the understanding of civilian harm in the following ways. Firstly, the development of the concept of gender reverberating harm as a tool to reflect the indirect civilian harm through a feminist lens. Second, by the connection of climate change considerations based on their foreseeable element in the targeting procedure. Lastly, by the integration of rights to water and sanitation as a framework regarding the incidental harm arising from attacks affecting access to water.

Moreover, the example of Sudan represents an unprecedented humanitarian disaster, but unfortunately, it is not an exception but rather, it confirms that the implementation of IHL is being severely compromised. This observation is not a proposal to abolish the rules, but rather an observation that will lead to a reflection on existing gaps in order to strengthen the role and authority of IHL and, more fundamentally, to reinforce the framework for the protection of civilians and civilian infrastructure. In this regard, the ICRC's 'The Global Initiative to Galvanize Political Commitment to International Humanitarian Law'²³⁰ is a significant example. Although this is a political commitment rather than a legally binding one, it can serve as a means of pressuring states to reconsider the commitments they have already made under the Geneva Conventions and the body of customary law²³¹.

Furthermore, this thesis argues that a progressive interpretation of the law can strengthen the interaction between branches of law, contributing to the recognition of legal gaps in the existing framework of IHL and thus providing more effective protection for civilians and civilian objects. Therefore, practitioners, researchers, and academics of IHL must deconstruct IHL from traditional patriarchal norms that allow unseen violations and crimes committed outside the binary, stereotypical view of gender roles, as the

²³⁰ International Committee of the Red Cross (ICRC), 'Global Initiative on IHL: Engagement in First Phase of Consultations' (2025) <<https://www.icrc.org/en/article/global-initiative-ihl-first-phase-consultations>> accessed 8 June 2026

²³¹ Mirjana Spoljaric, 'A call to make international humanitarian law a political priority' (2025) Humanitarian Law & Policy <<https://blogs.icrc.org/law-and-policy/2025/02/06/a-call-to-make-international-humanitarian-law-a-political-priority/#>> accessed 8 June 2026

concept of gendered reverberating harm illustrates. As long as the rules fail to recognize the differing impact of conflict in relation to gender and intersectionality, the protection of civilians will remain incomplete. On the same basis, the interaction of IHL norms with the environment is a key issue, given the rapid and growing development of science and technology that highlight the impact of warfare on the environment. At this point, it is important to recognize the fundamental principle of environmental law, which incorporates the well-being of future generations as an obligation of States when they take action regarding climate change²³². That understanding can contribute to strengthening the humanitarian role of IHL in a broader, more inclusive way.

Furthermore, part of addressing gaps in the law is also ensuring its sufficient application. In this regard, the Women, Peace, and Security framework²³³ is helpful because their main goal is gender mainstreaming in all four pillars. Also, the CEDAW General Recommendation No.30²³⁴ requires States to integrate gender perspectives into conflict-related decision-making. While none of that framework addresses targeting decisions, both support the incorporation of a gender perspective. Therefore, incorporating the progressive interpretation of the concept of gender reverberating harm in the military manuals could lead to improvement in targeting practices. Moreover, gender-aware training as well as inclusive representation at every stage of decision-making, training, and peacebuilding processes are essential for the better realisation of gender-differentiated effects during and after conflicts.

Finally, this thesis does not overlook the value of the critique regarding the fact that the integration of women into a system created based on masculine perspectives and standards does not constitute progress²³⁵. Nor the developments of post-human theories that question the anthropocentric and human-centric framework in the light of environmental harm and technological development²³⁶. Although these critiques raise fundamental issues that merit ongoing scholarly attention, this thesis is built on the assumption that a progressive interpretation of existing rules offers a more immediately

²³² Obligations of States in Respect of Climate Change (Advisory Opinion) (ICJ 2025)

²³³ United Nations Security Council (UNSC), 'Resolution 1325 (2000)' (31 October 2000) UN Doc S/RES/1325(2000)

²³⁴ UN Committee on the Elimination of Discrimination against Women, General recommendation No. 30 on women in conflict prevention, conflict and post-conflict situations (2013) CEDAW/C/GC/30, UN Committee on the Elimination of Discrimination against Women, 'Addendum to General Recommendation No. 30 (2013) on women in conflict prevention, conflict and post conflict situations in relation to the Women Peace and Security (WPS) agenda (2026) CEDAW/C/GC/30/Add.1

²³⁵ Dianne Otto, 'A Sign of "Weakness"? Disrupting Gender Certainties in the Implementation of Security Council Resolution 1325' (2006). *GENDER & L.* 113 (2006).

²³⁶ Emily Jones, 'Feminist theory and international law : posthuman perspectives' Abingdon, Oxon ; New York, NY : Routledge, (2023) Chapter 2

feasible path toward strengthening the protection of civilians, compared to a complete reconstruction of the legal framework.

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