UNIDIR

EXPLOSIVE WEAPONS MONITOR

WORKSHOP REPORT

Understanding Civilian Harm from the Indirect or Reverberating Effects of the Use of Explosive Weapons in Populated Areas

Strengthening Data Collection to Implement the Political Declaration

BÁRBARA MORAIS FIGUEIREDO • KATHERINE YOUNG

Acknowledgments

Support from UNIDIR core funders provides the foundation for all the Institute's activities. The workshop and this report is supported by the Governments of Germany and Norway. Special thanks go to all participants in the multi-stakeholder workshop "Implementing the data-collection provisions of the EWIPA Political Declaration: Effective measures and practices for strengthening the collection of data on reverberating effects", held on 29 February and 1 March 2024 in Geneva, Switzerland. The research partners would also like to thank Mae Ballena, Matthew Currie, Matilde Vecchioni, Hana Salama and Paul Holtom of UNIDIR and Loren Persi Vicentic and Camilla Molyneux of the Explosive Weapons Monitor for their support for the workshop, as well as Paula Soumaya Domit for her assistance in preparing this publication.

About UNIDIR

UNIDIR is a voluntarily funded, autonomous institute within the United Nations. One of the few policy institutes worldwide focusing on disarmament, UNIDIR generates knowledge and promotes dialogue and action on disarmament and security. Based in Geneva, UNIDIR assists the international community to develop the practical, innovative ideas needed to find solutions to critical security problems.

About the Explosive Weapons Monitor

The Explosive Weapons Monitor is a civil society research initiative of the International Network on Explosive Weapons that conducts research on and analysis of explosive weapon use and the harms that arise. This research aims to advance the global recognition and understanding of the impact on civilians of the use of explosive weapons; strengthen research and monitoring on civilian harm; and strengthen collaboration and information-sharing between stakeholders undertaking research and monitoring of the use and impact of explosive weapons. The Explosive Weapons Monitor also observes and promotes the universalization of the *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas* and supports and monitors its implementation.

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Cover Image: Yemen, 2017. Credit: UN OCHA / Giles Clark

Authors

Bárbara Morais Figueiredo

Researcher, Conventional Arms and Ammunition Programme

Bárbara Morais Figueiredo is a Researcher in the Conventional Arms and Ammunition Programme of UNIDIR, where she leads the work on the issue of explosive weapons in populated areas and covers a range of other conventional weapon files, including uncrewed systems. Prior to joining UNIDIR, Bárbara worked for the International Committee of the Red Cross (ICRC) in Geneva and the Center for Strategic and International Studies (CSIS) in Washington, DC. She is a Brazilian-qualified lawyer and holds a master's degree in international affairs from the Geneva Graduate Institute.

Katherine Young

Research and Monitoring Manager, Explosive Weapons Monitor

Katherine Young is the Research and Monitoring Manager of the Explosive Weapons Monitor, where she undertakes and oversees the development of research and provides overall programmatic management. Young was previously Senior Researcher of the Arms Trade Treaty Monitor, a project of Control Arms, as well as Program Manager of the Human Rights Program at Harvard Law School, where she managed the day-to-day operations of the International Human Rights Clinic. She holds a master's degree in government and politics from St. John's University, New York.

Acronyms & Abbreviations

ACLED	Armed Conflict Location and Event Data
ERW	Explosive remnants of war
HRMMU	United Nations Human Rights Monitoring Mission
GASWAC	Global Alliance to Spare Water from Armed Conflicts
GCPEA	Global Coalition on the Protection of Education from Attacks
HBDA	Household and Building Damage Assessment
ICRC	International Committee of the Red Cross
NGO	Non-governmental organization
OCHA	United Nations Office for Humanitarian Affairs
OHCHR	Office of the United Nations High Commissioner for Human Rights
SDG	Sustainable Development Goal
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNMAS	United Nations Mine Action Service

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Executive Summary

On 29 February and 1 March 2024, the United Nations Institute for Disarmament Research (UNIDIR) and the Explosive Weapons Monitor organized a multi-stakeholder workshop on "Implementing the data-collection provisions of the EWIPA Political Declaration: Effective measures and practices for strengthening the collection of data on reverberating effects". The workshop brought together policy-makers and practitioners from across the peace and security, humanitarian, and development fields to explore how to enhance efforts to collect data on the indirect or reverberating effects of the use of explosive weapons in populated areas (EWIPA). It promoted discussions on how the collection and sharing of data on these effects can contribute to the implementation of the EWIPA Political Declaration, as well as on how the Declaration can be leveraged as a tool to support improved efforts to document and address patterns of civilian harm.

During the workshop, participants explored the current landscape of data collection on the indirect or reverberating effects of the use of EWIPA and identified the ways in which different stakeholders from international organizations, civil society and academia approach the collection of data and use different tools and methodologies. Participants discussed concrete examples of data collection in various contexts and thematic areas and they identified existing effective practices, challenges and gaps in current efforts to document these effects. The exchanges contributed to the identification of areas and opportunities for future collaborative work by these stakeholders, including:

- Considering the **varied purposes** for which different stakeholders collect and share data on indirect or reverberating effects **before, during and after armed conflicts**
- Strengthening **engagement with local organizations and affected communities** in the collection of data on indirect or reverberating effects
- Collecting data to improve understanding of the i**nterconnected and interdependent nature of civilian infrastructure and essential services** in urban and other populated areas
- Advancing **methodological discussions** to overcome challenges in the reporting, analysis and sharing of data on indirect or reverberating effects
- Fostering **multi-stakeholder and cross-disciplinary dialogue and collaboration** around the collection of data on indirect or reverberating effects
- Promoting **transparency and encouraging the sharing of data** on the indirect or reverberating effects among a range of stakeholders

In addition, workshop discussions supported recommendations put forward by UNIDIR and the Explosive Weapons Monitor to states that have endorsed the Political Declaration. These recommendations aim to help advance the implementation of relevant commitments on the collection of data on indirect or reverberating effects within the framework of the Declaration in collaboration with relevant stakeholders.

This includes recommendations to:

- Consider the establishment of **formal or informal structures** (such as standing or ad hoc working groups) to promote collaborative work and exchanges to improve understanding of indirect or reverberating effects, their nature, scale and foreseeability
- Consider the establishment of a **mechanism to support independent research** (such as a voluntary trust fund) to improve the understanding of the nature, scope and foreseeability of the indirect or reverberating effects of the use of EWIPA
- Make use of the **international review conferences** of the Political Declaration, as well as other **regional and national-level implementation activities**, to exchange views on policies and good practices to prevent, minimize and respond to the indirect or reverberating effects of military operations involving the use of EWIPA

Somalia, 2017. Credit: AMISOM / Tobin Jones

1. Introduction

The *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas*, adopted in Dublin in 2022, represents a milestone in international efforts to strengthen the protection of civilians in armed conflicts.[1] The Political Declaration promotes a shared recognition by the 87 endorsing states of the devastating pattern of civilian harm resulting from the use of explosive weapons in populated areas (EWIPA), as well as of the need to take action to prevent and mitigate these harms.[2] The collection and sharing of data – both on how EWIPA are used and on their humanitarian impact – is a prerequisite for the implementation of several commitments of the Political Declaration.

The collection and sharing of data on both the direct and the indirect or reverberating effects of the use of explosive weapons is crucial to increasing the understanding of their severe and wide-ranging impacts on civilians (see Box 1), as well as to informing effective and appropriate responses to prevent, minimize and respond to these impacts. To advance discussions on the implementation of relevant commitments of the Political Declaration, UNIDIR and the Explosive Weapons Monitor organized a multi-stakeholder workshop on effective measures and practices for the collection of data on the indirect or reverberating effects of the use of EWIPA on 29 February and 1 March 2024 in Geneva.

The workshop, organized with the support of the Governments of Germany and Norway, brought together over 50 participants from international organisations, civil society and academia, as well as states.[3] This included policymakers and practitioners with extensive experience and expertise in the peace and security, humanitarian, and development fields, who exchanged views and perspectives on measures, tools and methodologies for collecting, analysing and sharing data on indirect or reverberating effects in line with the Political Declaration, in particular the commitment in its paragraph 4.3.[4] The workshop discussions focused on the role of international organizations, civil society and academia in collecting data and documenting these effects on different areas of civilian life. The workshop also addressed how an improved understanding of indirect or reverberating effects – enabled by data collection, analysis and sharing – can support operational responses and help inform policies and practices to strengthen the protection of civilians in armed conflict. Specifically, the workshop sought to achieve the following objectives:

- Raise awareness and enhance shared understanding of measures and effective practices for documenting the indirect or reverberating

[1] Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas, 18 November 2022, https://ewipa.org/the-political-declaration.

[2] Explosive Weapons in Populated Areas – Endorsements, 25 September 2024, https://ewipa.org/endorsement.

[3] The second day of the workshop included the participation of representatives from states, promoting a discussion between them and expert participants on the findings from the first day of the workshop.

[4] Paragraph 4.3. of the Political Declaration commits States to "Facilitate the work of the United Nations, the ICRC and relevant civil society organisations collecting data on the impact on civilians of military operations involving the use of explosive weapons in populated areas, as appropriate".

effects of the use of EWIPA, and identify relevant tools and methodologies

- Identify gaps and challenges in existing efforts to collect and share data on the indirect or reverberating effects of the use of EWIPA, as well as actions and resources needed to overcome these
- Strengthen and expand the communities of knowledge and practice for collecting and sharing data on the indirect or reverberating effects of the use of EWIPA, and identify opportunities for further collaboration within the framework of the Political Declaration
- Contribute to efforts to broaden and strengthen the evidence base that shows patterns of indirect and cumulative civilian harm resulting from military operations involving the use of EWIPA
- Help inform discussions on emerging concepts and terminology in the context of the follow-on process of the Political Declaration

The key insights from the workshop discussions were summarized in a working paper submitted by UNIDIR and the Explosive Weapons Monitor to the 2024 EWIPA Oslo Conference.[5] This report expands on the working paper's reflections, providing a more detailed account of the workshop discussions and highlighting the specific tools and initiatives discussed. **Section 2** provides an overview of the importance of the collection, analysis and sharing of data on indirect or reverberating effects by stakeholders from international organizations, civil society and academia in connection with relevant commitments in the Political Declaration. **Section 3** describes the different approaches, tools, and methodologies utilized by these stakeholders to collect and share such data, providing concrete examples in various contexts and thematic areas. **Section 4** identifies opportunities to leverage the Political Declaration to support enhanced data collection and sharing among relevant stakeholders and improve understanding of indirect or reverberating effects. **Section 5** outlines how such data can help inform states' policies and practices to prevent, mitigate and respond to civilian harm. **Section 6** concludes the report, summarizing the key findings and providing recommendations to states that have endorsed the Political Declaration on advancing the collection of data on indirect or reverberating effects.

[5] UNIDIR and Explosive Weapons Monitor, "Strengthening the Collection of Data on the Indirect or Reverberating Effects of the Use of Explosive Weapons in Populated Areas", Working Paper, 23 April 2024, https://cms.ewipa.org/uploads/UNIDIR_Explosive_Weapons_Monitor_Working_paper_on_strengthening_the_collection_of_data_on_indirect_or_reverberating_effects_db71d79fdc.pdf.

BOX 1.

Direct and Indirect or Reverberating Effects

Direct effects are effects that are caused directly by an explosion as a result of the high-pressure blast wave from the detonation and from the fragmentation of the munition. Direct effects can cause deaths and injuries, as well as damage to and destruction of civilian objects.

Indirect or reverberating effects are consequences of the direct effects, often causing harm to civilians beyond the time of the explosion and the immediate blast zone. For example, damage and destruction to critical civilian infrastructure caused by the use of explosive weapons may disrupt or impede access to essential services (e.g., education, health care, water and sanitation, etc.), which can result in death and injury, as well as both short- and long-term human suffering – as the reverberating consequences.

In this report, the terms "indirect" and "reverberating" effects are used synonymously. While relevant commitments in the operative section of the Political Declaration refer only to "indirect effects", paragraph 1.3. in the preamble equates indirect and reverberating effects. For researchers and practitioners, the term "reverberating effects" is often preferred given the perception that it more accurately captures the knock-on and cumulative nature of the impacts of the use of EWIPA on civilians.

Gaza, 2024. Credit: UN OCHA / Themba Linden

2. Setting the scene: The collection of data on reverberating effects and the EWIPA Political Declaration

The collection of data on the impact of the use of explosive weapons on civilians has long been recognized as critically important. In 2010, the United Nations Secretary-General called for more systematic data collection and analysis of the "human costs" of explosive weapon use as this was "essential to deepening the understanding of the humanitarian impact . . . and to informing the development of policy and practice that would strengthen the implementation of international humanitarian and human rights law".[6] Since 2011, the United Nations, the International Committee of the Red Cross (ICRC) and civil society have collected, analysed and shared data on the impacts on civilians of the use of explosive weapons globally and in relation to specific conflicts. These efforts established a credible evidence base to support efforts aimed at raising awareness of the broad range of harms to civilians resulting from the use of EWIPA and the need for state-led action to address them.[7]

As a result, the importance of data collection on the impacts of the use of explosive weapons on civilians is firmly recognized in the Political Declaration. The Declaration also provides a broadened understanding of the scope of data required to understand both the direct and the indirect or reverberating effects of EWIPA use. In its preamble, states explicitly acknowledge "the importance of efforts to record and track civilian casualties, and the use of all practicable measures to ensure appropriate data collection", noting that improved data can help "inform policies designed to avoid, and in any event minimize, civilian harm; aid efforts to investigate harm to civilians; support efforts to determine or establish accountability, and enhance lessons learned processes in armed forces."[8] In the operative section, states commit to collect and share disaggregated data on the direct and indirect effects on civilians and civilian objects of military operations involving the use of EWIPA,[9] as well as to facilitate the data-collection efforts of the United Nations, the ICRC and civil society organizations.[10]

The Political Declaration recognizes the severe and wide-ranging indirect or reverberating effects resulting from the use of EWIPA. As elaborated in the preamble, these effects often stem from damage to or destruction of critical civilian infrastructure. They can take multiple forms, including disruption to or deprivation of access to essential services, such as health care, education, and water and electricity supply, as well as environmental damage, large-scale displacement, permanent disability and psychological harm.[11] Given the complex

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[6] Security Council, "Report of the Secretary-General on the Protection of Civilians in Armed Conflict", S/2010/579, 11 November 2010, **https://undocs.org/S/2010/579**, para. 50.

[7] Simon Bagshaw, "Implementing the Political Declaration on Explosive Weapons in Populated Areas: Key Areas and Implementing Actions", Article 36, 2022, **https://article36.org/wp-content/uploads/2022/11/Article-36-Implementing-the-Political-Declaration-November-2022.pdf**

[8] Political Declaration, paragraph 1.8.

[9] Political Declaration, paragraph 4.2.

[10] Political Declaration, paragraph 4.3.

[11] Political Declaration, paragraphs 1.3–1.6.

interdependence of infrastructure and the interconnectivity of essential services in urban and other populated areas, as well as the intense and protracted nature of many armed conflicts, these impacts are often cumulative and can extend well beyond the immediate impact zone and time of an incident, spreading into multiple areas of civilian life. They also affect women, men, girls and boys differently.

An improved understanding of the nature and scale of these impacts, enabled by collection and sharing of data, is vital to states' implementation of several operational commitments of the Political Declaration. In addition, such data is essential for humanitarian and development actors to assess mechanisms for preparedness and response in urban ecosystems, as well as to develop and coordinate programmatic responses to address both the immediate and the long-term consequences for the civilian population.

Stakeholders from international and civil society organizations collect data for a variety of purposes. Much work has been done to harmonize and to continuously improve upon their methods and methodologies to better understand the wide range of humanitarian consequences of the use of EWIPA (see Boxes 2 and 3). However, a number of challenges associated with these data-collection efforts remain. The consequence of these challenges is often the underreporting of harm to civilians from the use of EWIPA. This may occur, for example, as a result of a lack of information available during peak conflict periods, constraints in language capacities for interpretation of local media and social media, a narrow focus on reporting on civilian fatalities, and shifting media attention on specific conflicts. Additionally, stakeholders involved in data collection may also report this data inconsistently. For example, one organization might regularly gather and disseminate incident data or reports of civilian harm immediately or shortly after an incident occurs, while another might collect and release aggregate casualty or incident numbers for a fixed period of time.[12] Addressing these challenges is important for facilitating improved data collection and sharing as well as for enhancing the understanding of indirect or reverberating effects.

[12] Loren Persi Vicentic, "Strengthening Data Collection on Civilian Harm from the Use of Explosive Weapons: Identifying and Overcoming Methodological Challenges", Fragments, VOL. 1, no. 2 (December 2023), https://explosiveweaponsmonitor.org/fragments/vol/1/issue/2/article/strengthening-data-collection-on-civilian-harm-from-the-use-of-explosive-weapons/.

BOX 2.

UNIDIR's research on the direct and indirect or reverberating effects of the use of EWIPA

UNIDIR has developed a research framework to support the collection of data to understand and document the direct and indirect or reverberating effects on civilians from the use of EWIPA and to help inform efforts to prevent, mitigate and respond to their humanitarian consequences.

- The **First Menu of Indicators** focuses on documenting civilian casualties and injuries, as well as disruptions to the infrastructure of sustainable cities and communities, good health, and education.
- The **Second Menu of Indicators** examines the consequences from disruptions as they affect water, sanitation and hygiene services, food security, environmental standards, and economic opportunity.

These menus provide a standardized set of indicators that can be used to capture, measure, compare and understand how the use of EWIPA has an impact on the survival, well-being, human rights and dignity of civilians in ways that are often overlooked or underestimated.

Moreover, UNIDIR produced a **fact sheet** to better understand the gendered impacts of the use of EWIPA. Improved understanding of the different risks and vulnerabilities faced by women, men, girls and boys can better inform prevention and protection strategies, as well as response and recovery efforts, including assistance to survivors.

Libya, 2019. Credit: UN OCHA / Giles Clark

BOX 3.

The Explosive Weapons Monitor's research and reporting on EWIPA

The Explosive Weapons Monitor undertakes research on and analysis of the use of explosive weapons and the harms that arise. Its aim is to advance global recognition and understanding of the impacts on civilians of the use of EWIPA and to strengthen research on and monitoring of civilian harm. This research includes:

- ***Fragments*** is a quarterly collection of articles for specialized audiences that address topics related to the use of EWIPA and contribute research or report on developments and news relevant to this issue area.
- **Monthly data bulletins** include data on incidents of explosive weapon use around the world as reported in open sources. Bulletins use data by Action on Armed Violence (AOAV) on incidents of explosive weapon use and casualties, including deaths and injuries, and data from Insecurity Insight on incidents of explosive weapon use that affect aid access, education and health care.
- **Annual reports**, such as the **Explosive Weapons Monitor 2023**, take stock of harm to civilians from the use of explosive weapons around the globe each year and identify the state and non-state actors reportedly responsible for this use. They also report on action taken by states to address this harm to civilians through the universalization and implementation of the Political Declaration.

Iraq, 2022. Credit: Humanity and Inclusion

3. Collecting and sharing data on indirect or reverberating effects: Existing approaches, tools and methodologies

International organizations, civil society and academia use various approaches, tools and methodologies to collect and analyse data on the indirect or reverberating effects of the use of EWIPA and of armed conflicts more broadly. During the workshop, participants identified many of these approaches, tools and methodologies and explored their practical application through data collection in different thematic areas or contexts. They also looked at existing platforms to facilitate the sharing of data. The exchanges contributed to identifying the risks and sensitivities of various approaches, challenges to improving collaboration in data collection among stakeholders, and opportunities to pursue greater coordination and harmonization of methodologies.

In these discussions, workshop participants shared that they often take a mixed-method approach to collecting and analysing data on indirect or reverberating effects. They stressed the value of such an approach in helping to better identify and document the broad range of harm to civilians caused by the use of EWIPA. As such, the examples of tools and methods provided below may be applied across multiple approaches to data collection. For example, both qualitative and quantitative research methods can be employed in incident- and impact-based approaches to data collection. Quantitative methods can play an important role in impact-based approaches in as far as quantitative data is available over a sufficient time period to identify indirect or reverberating effects of the use of EWIPA (e.g., a decline in school attendance or an increased incidence and prevalence of diseases). Qualitative research methods then provide insight to help further understand and contextualize these impacts, including how they might affect different segments of the population based on age, gender and disability factors for instance. Similarly, information available in open sources and digital investigative tools and methodologies can be used as part of both impact- and incident-based approaches to the documentation of these effects, in addition to supporting efforts to record casualties and to estimate indirect deaths resulting from impeded access to essential services as a result of conflict. Moreover, the sharing of both quantitative and qualitative data is important to increase the understanding of indirect or reverberating effects and facilitate coordination as well as the delivery of effective responses by relevant stakeholders.

3.1. Incident-based approaches

Incident-based methodologies for data collection develop qualitative or quantitative data that can be linked to incidents characterized by the use and impacts of explosive weapons. The information is recorded and categorized in a standardized manner that often identifies incident locations, dates, weapons or weapon categories, numbers of casualties or other indicators of harm, and event descriptions. While this methodology has been widely applied to collect data on the direct effects of the use of EWIPA, it is also of relevance to monitoring and understanding their indirect or reverberating effects.

3.1.1. Examples of tools and methods

There are numerous tools and methods available for undertaking incident-based monitoring of the use of EWIPA. Researchers that are local to conflict contexts and have relevant language skills can monitor local-language media and social media sites. **Natural language processing (NLP) classifiers** – which involve assigning predefined categories or labels to textual data – can be used to identify information on the effects of explosive weapons use in open sources available online (see Section 3.4).

Artificial intelligence (AI) and machine learning algorithms can be similarly developed to convert text-based descriptions of events into structured data as well as to support automated damage detection and classification that is then verified and analysed by qualified researchers. Some international and civil society organizations already rely on such methods to support both the collection and analysis of data. In addition, these methods can present new opportunities to enhance elements of data collection and to reduce the burden on human resources (see Box 4).

Yemen, 2017. Credit: UN OCHA /Giles Clark

BOX 4.

The use of AI and machine learning tools by international and civil society organizations

The private technology company Dataminr plans to work with Insecurity Insight, the United Nations Development Programme (UNDP) and other partners to provide AI technology to data-collection efforts. For Insecurity Insight,[13] this support will automate the identification and classification of attacks that affect food systems. This will complement Insecurity Insight's existing work on the impacts of conflict on such systems and will help inform responses by relevant humanitarian partners on the ground.[14]

In Ukraine, UNDP has **developed a model** that uses natural language processing techniques and machine learning to analyse thousands of reports relating to damaged infrastructure and to support granular-level assessments of their impacts in conflict-affected locations, while taking into account pre-conflict vulnerabilities. Using UNDP's combined experiential knowledge from other crisis zones, the unique model classifies a range of damaged infrastructure into nine categories – industrial, logistics, power/electricity, telecommunications, agriculture, health, education, shelter and businesses – in order to inform response and recovery efforts. By showing the geographical distribution of the infrastructure damage by type, it can also contribute to a further mapping to understand the causes and actors involved.[15]

3.1.2. Discussion points, challenges and gaps

During the discussions, participants highlighted the importance of considering both temporal and spatial dimensions in incident-based approaches to the documentation of indirect or reverberating effects, as the impacts of the use of EWIPA might differ across space and might only manifest themselves after a certain period of time. For instance, if health-care infrastructure is damaged or destroyed, the impacts might be felt not only in the area serviced by the affected facility, but also in overwhelmed medical facilities in the neighbouring cities and towns to where the flow of patients is redirected. At the same time, some of the impacts of disrupted health-care access may only become evident once the conflict subsides, or may be compounded or aggravated when the conflict is protracted.

In addition, the availability of accurate and reliable baseline data was identified as another critical factor in the use of incident-based approaches, as these should allow for a comparison of the effects observed after the use of EWIPA with the same indicators in the area from before such use. This should include data on the presence of civilians and civilian infrastructure,

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[13] On Insecurity Insight, see https://insecurityinsight.org/.

[14] Dataminr, "Dataminr Announces Its 2023 AI for Good Partners", 15 November 2023, https://www.dataminr.com/press/dataminr-announces-its-2023-ai-for-good-partners

[15] United Nations Development Programme (UNDP), " In Ukraine, machine-learning algorithms and big data scans used to identify war-damaged infrastructure", 5 July 2022, https://www.undp.org/blog/ukraine-machine-learning-algorithms-and-big-data-scans-used-identify-war-damaged-infrastructure.

Ukraine, 2024. Credit : UN OCHA / Viktoriia Andriievska

access to essential services, and other relevant indicators within affected areas.[16]

3.1.3. Good practices and opportunities

Incident-based approaches can be particularly useful for establishing the causal chain of the observed indirect or reverberating effects within a defined location and time period. Especially if used in conjunction with other methodologies that allow for a greater understanding of the specific circumstances in which incidents occurred and if linked to wider qualitative descriptions of such incidents, they can add significant value to efforts to understand, document and respond to indirect or reverberating effects (see Box 5). In particular, the reconstruction and analysis of specific incidents involving the use of EWIPA, especially of how their effects may unfold in space and time in urban and built environments, can provide important insights on the causal factors leading to civilian harm following an attack.[17] In addition, these efforts can help identify lessons learned as well as support investigative mechanisms and accountability processes.

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[16] See Human Rights Watch, "Safeguarding Civilians- A Humanitarian Interpretation of the Political Declaration on the Use of Explosive Weapons in Populated Areas", 26 October 2022, https://www.hrw.org/news/2022/10/26/safeguarding-civilians.

[17] See, for instance, the work of Forensic Architecture, which employs cutting-edge techniques in spatial analysis and digital modelling to reconstruct incidents of violence, https://forensic-architecture.org/, as well as the investigative work of Bellingcat, https://yemen.bellingcat.com/, Airwars, https://airwars.org/research/seeing-through-the-rubble-the-civilian-impact-of-the-use-of-explosive-weapons-in-the-fight-against-isis/.

BOX 5.

Humanitarian trauma care and good practices in the collection of data

In resource-constrained conflict settings affected by the use of EWIPA, system-wide trauma registries are typically not available. While incident-based data on the number of casualties from EWIPA events is critical to track civilian harm, such data typically only presents the number of dead and injured. From a clinical standpoint, this information is insufficient to understand the epidemiology of EWIPA-related injury and improve emergency care systems for victims. Further, the severely destructive nature of particular weapon types yields a human cost that is sometimes inadequately captured through casualty numbers alone, with injury-related mortality particularly high in low-resource settings.

Data-collection capacity is highly constrained in overburdened health facilities in conflict environments. Standardized minimum trauma data sets can nonetheless be defined in collaboration with emergency care providers. These instruments should be harmonized with World Health Organization (WHO) Emergency, Critical and Operative (ECO) care toolkits and adapted in partnership with healthcare providers in settings affected by the use of EWIPA.[18] Closer coordination with emergency healthcare providers holds potential to strengthen the base of evidence on the civilian harm resulting from the use of EWIPA and to inform appropriate interventions.

3.2. Impact-based approaches

Impact-based methodologies for data collection capture qualitative information that can provide greater context to the broad range of impacts of the use of EWIPA. Quantitative data alone cannot do this. As experiences of affected communities vary across contexts and as they change over time, employing **qualitative research methods** to understand the nuanced and evolving impacts of attacks involving the use of explosive weapons on civilians can be critical to understanding patterns of harm that extend beyond the time and location of specific incidents. They can also illuminate the multifaceted and contextual nature of such impacts on people and communities.

3.2.1. Examples of tools and methods

International organizations, civil society and academia often use **qualitative research methods** to document the indirect or reverberating effects of the use of EWIPA (see Box 6). **Field research**, for example, allows for on-the-ground documentation of permanent injuries and disabilities, as well as of the many ways in which impeded access to essential services affects the lives and well-being of civilians in both the short and long terms. **Interviews and surveys**, conducted either with individuals or with community groups, can similarly show how access to such services might be affected for entire communities as a result of damage or destruction of critical civilian infrastructure. They can also shed light on their differentiated impacts on specific groups based on gender, age and disability factors, for instance.

[18] See, for example, the World Health Organization standardized form, https://www.who.int/publications/i/item/who-standardized-clinical-form.

BOX 6.

Case studies from civil society organizations that utilize qualitative research methods

PAX for Peace and Harvard Law School's International Human Rights Clinic – "Operating under Fire: The Effects of Explosive Weapons on Health Care in the East of Ukraine"

PAX for Peace (PAX) and Harvard Law School's International Human Rights Clinic (IHRC) undertook qualitative research exercise in 2017, named "**Operating under fire**", to better understand the adverse effects of the use of EWIPA on the Ukrainian health-care system and the civilian population it serves. To do so, researchers interviewed 55 respondents who provided health care to civilians, including residents, health-care personnel, government health officials, members of local non-governmental organizations (NGOs) and military personnel. Researchers visited medical facilities, ambulance stations and other medical posts in order to document damage and destruction first-hand. Both PAX and the IHRC regularly include qualitative research methods in their research, as these methods help place human lived experiences as central to research narratives.

Humanity & Inclusion – "No safe recovery: The impact of explosive ordnance contamination on affected populations in Iraq"

Humanity & Inclusion (HI) makes use of qualitative research methods in numerous reports and case studies that identify the impacts on civilians of explosive weapons and contamination by explosive ordnance. In "**No safe recovery: The impact of explosive ordnance contamination on affected populations in Iraq**", HI recognizes the importance of identifying and examining the impact of explosive-ordnance contamination beyond civilian death and injury to also include access to services and the socio-economic recovery of affected communities in the Ninewa governate of Iraq. To do so, HI conducted 69 interviews with 39 different stakeholders, including humanitarian actors, mine action operators, community leaders, survivors of explosive-ordnance accidents and community members living in contaminated areas. HI made efforts to ensure that the community members who were interviewed represented a range of experiences across gender, age and disability status. Although there were limitations to this approach, it nonetheless ensured that researchers were able to speak with persons with physical, visual, hearing, voice and concentration impairments. In doing so, researchers were able to gain a better understanding of the range of impacts of explosive ordnance on civilians, beyond the physical effects on those who survived accidents, to show how different victim-assistance activities can have a positive impact in affected communities.[19]

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[19] Humanity & Inclusion (HI), No Safe Recovery: The Impact of Explosive Ordnance Contamination on Affected Populations in Iraq (HI, October 2021), **https://www.hi-us.org/en/news/no-safe-recovery-new-report-on-iraq-and-explosive-weapons#report**.

3.2.2. Discussion points, challenges and gaps

During the discussions, participants noted the critical importance of impact-based approaches in the documentation of indirect or reverberating effects, especially as the consequences of the use of EWIPA for affected populations and individuals depend on specific circumstances and may vary significantly from one context to another. For instance, it was noted that, in certain contexts, the damage to or destruction of maternity hospitals resulted in an increase in the number of caesarean sections, while in others it prompted women to return to traditional health-care practices or to seek care in neighbouring countries.

Participants also exchanged views on the challenges associated with the use of impact-based approaches. These include access and security constraints, especially in complex and protracted conflict environments, as well as language barriers and ethical concerns. Moreover, the difficulty in attributing some indirect or reverberating impacts to the use of EWIPA – as opposed to other variables in conflict-affected environments – was further underlined, as was the fact that many of these effects may only become apparent or materialize once hostilities have ended. This is compounded by the cumulative nature of many of these effects, which often intersect with and aggravate each other, especially with the multiple use of explosive weapons in high-intensity or protracted armed conflicts, causing severe and widespread harm to civilians.

3.2.3. Good practices and opportunities

In terms of good practices and opportunities, participants noted the potential of improved cross-disciplinary collaboration, including through joint assessments, as well as of closer engagement with local organizations and communities in strengthening the collection or data and improving understanding of indirect or reverberating effects. In particular, the importance of working cooperatively to reach affected populations and of promoting efforts to engage them in data collection was underlined. It was noted that the documentation efforts of human rights groups can provide important lessons on training local organizations and communities to undertake or support data collection.[20] At the same time, it was emphasized that only a few actors have the presence, access and technical expertise that is necessary to assess some of these effects as well as to identify the types of weapons or munitions on the ground, for instance. Establishing partnerships with local actors as well as specialized organizations with expertise in relevant areas (e.g., mine action, public health and system dynamics)[21] was identified as a potential avenue to build on.

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[20] See, for instance, the work of organizations such as Human Rights Watch or Amnesty International documenting human rights violations.

[21] On the use of system-based approaches to analyse these impacts on infrastructure and essential services, see J. Schillinger, G. Özerol and M. Heldeweg, "A Social-Ecological Systems Perspective on the Impacts of Armed Conflict on Water Resources Management: Case Studies from the Middle East", Geoforum, vol. 133, nos 2–3 (2022): 101–116, https://doi.org/10.1016/j.geoforum.2022.05.001; E. Houiellebecq, K. MacAskill and F. Sittaro, "Using Systems-Thinking Approaches to Evaluate Impacts to Essential Services in Fragile Contexts: A Case Study on Venezuela", Civil Engineering and Environmental Systems, vol 40, no. 3 (2023): 91–128, https://doi.org/10.1080/10286608.2023.2288611.

3.3. Recording and estimating casualties

Casualty recording is the systematic collection and verification of information on individual deaths and, in some instances, also injuries in situations of violence (including unrest and crisis) and of armed conflict.[22] It is typically undertaken by international and civil society organizations, national human rights institutions, government bodies, or academic institutions.

The availability of verified and disaggregated casualty records is essential for producing accurate estimates of undocumented and indirect deaths. Casualty recording (see e.g. Box 7), including details on the cause of death and types of weapon used, contributes, among others things, to:

- Identifying patterns of harm and shedding light on the behaviour that has the most adverse effect on civilians and, in some instances, revealing those responsible;
- Supporting evidence-based dialogue that assists parties to conflict and other actors in the review and development of practices, policies and norms to prevent and address patterns of harm and protect civilians; and
- Helping to strengthen dialogue and coordination with other actors involved in protection work, including by helping to direct resources to communities with pressing protection needs[23]

Casualty recording is therefore viewed as an important practical step that the United Nations, civil society, parties to armed conflict, humanitarian entities, and other interested actors can take to collect data and improve understanding of the humanitarian consequences of military operations involving the use of EWIPA.

3.3.1. Examples of tools and methods

The **concentric approach** uses individually documented direct deaths as a starting point and builds thereon to statistically estimate undocumented direct deaths and then indirect deaths. A **direct death** is a death where there are reasonable grounds to believe that it resulted directly from military operations and that the acts, decisions or purposes that caused the death was in furtherance of or under the guise of armed conflict. **Indirect deaths** are those that mainly result from a loss of access to essential goods and services in armed conflict. The approach was developed by the Office of the United Nations High Commissioner for Human Rights (OHCHR) as part of its human rights work and in its capacity as custodian agency for the conflict-related death indicator (16.1.2.) of the Sustainable Development Goals (SDGs).[24]

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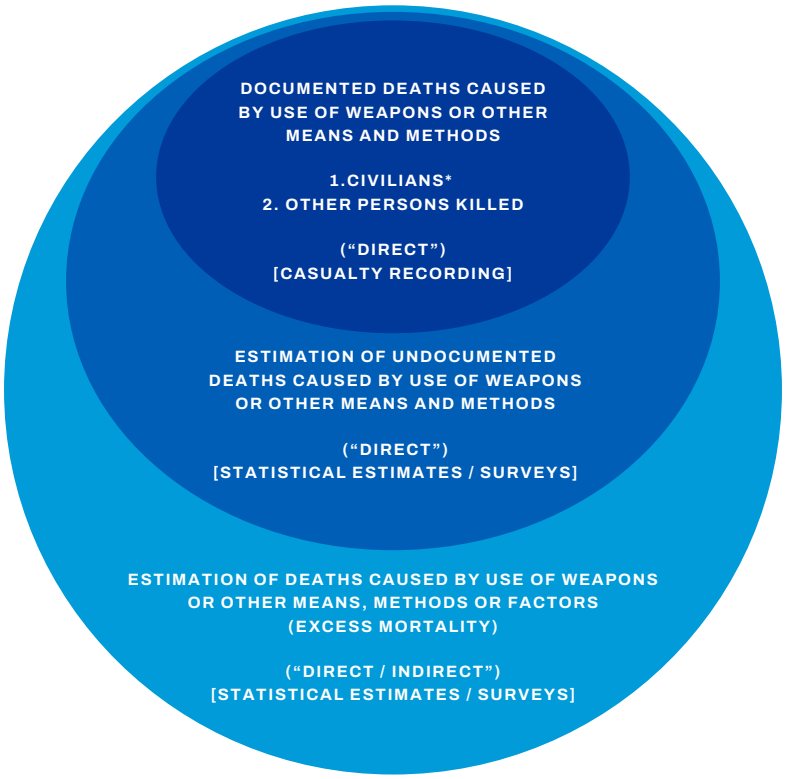
[22] OHCHR, Guidance on Casualty Recording (Geneva: OHCHR, 2019), https://www.ohchr.org/Documents/Publications/Guidance_on_Casualty_Recording.pdf. For more information on defining "casualty recording", see also Every Casualty Counts et. al., "Definition of Terms: Casualty Recording, Casualty Tracking, Casualty Estimation", 2024, https://everycasualty.org/casualty-recording-casualty-tracking-whats-the-difference/.

[23] See also Office for Disarmament Affairs, "Securing our Common Future: An Agenda for Disarmament", Action 15, 2018, https://www.un.org/disarmament/sg-agenda/en/.

[24] See the 2024 Global Progress Report on SDG 16, United Nations Department of Economic and Social Affairs (DESA), "The Sustainable Development Goals Report 2024", 2024, https://unstats.un.org/sdgs/report/2024/The-Sustainable-Development-Goals-Report-2024.pdf. See also the 2nd Global Progress Report on SDG 16 Indicators, : UNDP, UNODC, and OHCHR, "Global Progress Report on Sustainable Development Goal 16 Indicators. At the Crossroads: Breakdown or Breakthrough for Peace, Justice and Strong Institutions", 17 July 2024, https://www.undp.org/publications/2nd-global-progress-report-sdg-16-indicators

FIGURE 1.

Concentric approach[25]



Each circle provides data and analysis that can contribute to an understanding of the impact of the use of EWIPA.[26]

The tools and methods utilized within this methodological approach include:

- Counting documented direct deaths recorded through a range of possible sources
- Estimating undocumented direct deaths by employing statistical estimations and techniques based on documented direct deaths[27]
- Estimating indirect deaths by using additional records or statistical surveys to measure "excess mortality", or deaths that would not have occurred in the absence of conflict

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[25] OHCHR, "Technical Guidance Note on SDG Indicator 16.1.2".

[26] See OHCHR, "Technical Guidance Note on SDG Indicator 16.1.2 Number of Conflict-Related Deaths per 100,000 Population, by Sex, Age and Cause", n.d., https://www.ohchr.org/sites/default/files/Documents/Issues/HRIndicators/SDG_Indicator_16_1_2_Guidance_Note.pdf.

[27] In 2022, OHCHR prepared a report on the estimation of undocumented (direct) civilian deaths in the Syrian conflict, OHCHR, "Civilian Deaths in the Syrian Arab Republic Report of the United Nations High Commissioner for Human Rights", 28 June 2022, https://www.ohchr.org/en/documents/reports/ahrc5068-civilian-deaths-syrian-arab-republic-report-united-nations-high; see also Human Rights Council, "Impact of Casualty Recording on the Promotion and Protection of Human Rights", A/HRC/53/48, 16 May 2023, https://undocs.org/A/HRC/53/48, paras 8–10.

BOX 7.

OHCHR's casualty-recording work

OHCHR has developed significant expertise in casualty recording.[28] The first United Nations' casualty-recording system was established by the United Nations Assistance Mission in Afghanistan (UNAMA) in 2007.[29] Since then, the United Nations has operated casualty-recording systems in Iraq, Libya, Somalia, the State of Palestine, Ukraine and Yemen. As the custodian agency of SDG Indicator 16.1.2, OHCHR also reports on conflict-related deaths for 14 armed conflicts worldwide, including "cause of death", which includes the types of weapons used.[30]

In Ukraine, for instance, the United Nations Human Rights Monitoring Mission (HRMMU) has been comprehensively recording and reporting on civilian casualties since 2014.[31] HRMMU collects information about civilian harm from conflict-related violence from a wide range of sources. These include interviews with victims, their relatives and witnesses; open-source information, including photo and video material; forensic records and reports; criminal investigation materials; court documents; reports by international and national NGOs; public reports by law enforcement and military actors; and data from medical facilities and local authorities. The data is published in the monthly updates on the protection of civilians in armed conflict for Ukraine, which contain casualty figures disaggregated by age and sex, as well as by type of weapon or incident. The use of explosive weapons with wide area effects has been often identified as one of the primary causes of civilian deaths and injuries.[32]

Casualty recorders aim to document individual deaths in detail, often including information about the victim's profession and family relationships, for example, which can be used to predict or corroborate indirect or reverberating effects. For example, if several health workers in the same community are known to have been killed as a result of EWIPA use, this is likely to have a significant impact on the provision of health-care services in the short to medium term. Since casualty records document which people were killed rather than just how many, they can enable researchers to identify the indirect impacts resulting from loss of skilled personnel.

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[28] OHCHR defines casualty recording as the systematic collection and verification of information on individual deaths and, in some instances, also injuries, in situations of violence, including unrest and crisis, and of armed conflict. See OHCHR, Guidance on Casualty Recording, pp. 8–10. See also see Every Casualty Worldwide, "Standards for Casualty Recording" at https://everycasualty.org/standards/ (London: Every Casualty Counts, 2020).

[29] The reports are available on the UNAMA website at https://unama.unmissions.org/protection-of-civilians-reports.

[30] For the purposes of the SDG Indicator 16.1.2on conflict-related deaths, disaggregation for the cause of death is as follows: heavy weapons and explosive munitions; planted explosives and unexploded ordnance; small arms and light weapons; incendiary; chemical, biological, radiological, nuclear; electromagnetic weapons; less lethal weapons; denial of access to/destruction of objects indispensable to survival; accidents related to conflict; use of objects and other means; and unknown.

[31] OHCHR, "UN Human Rights in Ukraine", December 2022, https://www.ohchr.org/en/countries/ukraine/our-presence

[32] For the monthly updates, including the latest (August 2024), see OHCHR, " Protection of Civilians in Armed Conflict — August 2024", 6 September 2024, https://ukraine.un.org/en/278125-protection-civilians-armed-conflict-—-august-2024. See also: United Nations Human Rights Monitoring Mission in Ukraine, "Attacks on Ukraine's Energy Infrastructure - Harm to the Civilian Population", 2024, https://storymaps.arcgis.com/stories/2a2d87ae29f34207909828d7198c337c.

International and civil society organizations have developed additional tools and methodologies to categorize and filter dense digital environments where information useful can be found (see Section 3.4). Casualty recorders, for example, have produced reliable data sets that document direct civilian deaths and injuries from conflict using open-source material associated with individual incidents of explosive weapon use (see Box 8). These casualty records can be useful resources for those seeking to identify indirect or reverberating effects of EWIPA.

Lebanon, 2016. Credit UN OCHA / Julie Melichar

BOX 8.

Examples of civil society casualty-recording work

Airwars

Airwars tracks and assesses claims of casualties from international military actions, primarily air and artillery strikes. It employs an incident-based methodology that relies on a specialist team of casualty recorders who identify all open-source material on a single event in which a civilian was reported killed or injured by an explosive weapon. Sources are predominantly in the language local to the conflict; they can range from testimonies posted on social media by relatives of those harmed to statements released by local first responders. For some events in remote locations, such as Yemen, Airwars teams are only able to identify a handful of sources, while in others, such as in areas like Gaza, more than a hundred sources might be found.

Identifying sources relevant to specific events is typically driven by an understanding of the information environment particular to that context. For example, Airwars researchers will seek to map out how harm is reported and on what platforms. In Gaza, lists of the dead are often posted by relatives on Facebook, including among diaspora groups; in Ukraine, events where explosive weapons were used are more likely to be posted through Telegram channels, especially among first responders.

Understanding the wider harm related to conflict beyond fatalities and injuries, Airwars has also included an advanced tagging system for "civilian infrastructure", as well as an evolving list of "observations" to facilitate future analysis. This includes coding for damage in or on religious institutions, residential buildings, energy supplies and gas facilities, health-care facilities, and schools or educational facilities, alongside each casualty record. This list is evolving, with Airwars teams seeking to share definitions and build a common language among all data-collection teams in this space.

Every Casualty Counts

Every Casualty Counts is a civil society organization that educates policymakers about the legal basis and practical benefits of effective casualty recording. It also fosters international understanding of casualty recording in practice, including the specific roles of different stakeholders within this process.

In 2016, Every Casualty Counts developed Standards for Casualty Recording that provide guidance on best practice in all areas of the casualty-recording process and include recommendations on transparency, methodology, definitions and categorization, security, publication, and sharing. In addition to providing guidance for casualty-recording practitioners themselves, the Standards can help other actors evaluate the reliability of casualty data they receive.[33]

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[33] For more information on casualty-recording standards, see Every Casualty Worldwide, "Standards for Casualty Recording", 2020.

Yemen, 2017. Credit: UN OCHA /Giles Clark

3.3.2. Discussion points, challenges and gaps

The lack of accurate and reliable national data on mortality rates as a baseline and over time, especially in protracted conflict settings, compounded by population movements and demographics in areas most affected by conflicts, was highlighted as an important limitation to understanding the scale of indirect deaths, including those resulting from the use of EWIPA. In addition, only a limited number of conflicts are currently covered as part of OHCHR's monitoring work for SDG Indicator 16.1.2. Additional efforts are needed to both expand data availability and harmonize reporting to facilitate the compilation of data. In particular, greater investment in independent casualty-recording initiatives is crucial to ensure adequate documentation of direct deaths, as well as to produce reliable estimates of undocumented and indirect conflict-related deaths.

3.3.3. Good practices and opportunities

Workshop participants exchanged views on the potential for applying the methodology used to monitor SDG Indicator 16.1.2 to promote standardized data-collection efforts by other stakeholders, especially with respect to the disaggregation by "type of weapon". It was also noted that improved collaboration among casualty recorders is needed to further develop and implement internationally agreed definitions, principles and standards for casualty recording and other relevant monitoring activities, while recognizing the diversity of resource contexts.[34] While guidance and standards exist, more work is needed to ensure that these are applied consistently by all those involved. Moreover, discussions identified the need for increased efforts and resources to further develop and refine methodologies for estimating conflict-related "indirect deaths", as well as to improve both the accuracy and coverage of SDG Indicator 16.1.2 monitoring and reporting.

[34] See OHCHR, Guidance on Casualty Recording; Every Casualty Worldwide, "Standards for Casualty Recording".

3.4. Digital open-source investigations[35]

Digital open-source information and open-source investigative methodologies can also generate data that is useful for documenting and assessing both the direct and the indirect or reverberating effects of the use of EWIPA. For instance, they can support the verification of the accuracy of reports in media or elsewhere of an incident of explosive weapon use, attribute an attack to specific actors, and identify the types of weapons (see Box 9). They can also show how the use of EWIPA can have an impact on critical civilian infrastructure in urban or other populated areas over time. These methods can be particularly valuable in supporting assessments of indirect or reverberating effects in conflict-affected and hard-to-reach areas. There has been a significant recent growth in their relevance and use given the prevalence and central role of digital technologies in contemporary societies. They can be used as part of both incident- and impact-based approaches to the documentation of indirect or reverberating effects (see Sections 3.1 and 3.2), as well as support efforts to record and estimate casualties (see Section 3.3).

3.4.1. Examples of tools and methods

Open-source investigative methods include **geolocation** – that is, identification or estimation of an otherwise unknown location of an incident – as well as **chronolocation** – that is, the corroboration of the dates and times of an incident. Both methods can contribute to assessments of the authenticity and veracity of information, and in particular visual imagery, concerning specific incidents involving the use of EWIPA.[36]

Open-source investigative methods also include the use of **satellite imagery** and **other remote-sensing data**. Assessments based on satellite imagery can provide important insights into the circumstances in an area in the aftermath of an incident. They can also support assessments of the nature and extent of the damage caused to critical civilian infrastructure by an attack, including the impacts on specific sectors or activities (e.g. environment, cultural heritage, agriculture, economic activities, etc.).[37] Such methods are extensively used

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[35] Digital open-source investigations are investigations based on digital open-source information, which comprises both user-generated and machine-generated data. Such information may include, for example, content posted on social media; documents, images, videos and audio recordings on websites and information-sharing platforms; satellite imagery; and government-published data. See Human Rights Center, University of California, Berkeley and OHCHR, "Berkeley Protocol on Digital Open-Source-Investigations: A Practical Guide on the Effective Use of Digital Open-Source Information in Investigating Violations of International Criminal, Human Rights and Humanitarian Law (Berkely Protocol)", 2020, https://www.ohchr.org/en/publications/policy-and-methodological-publications/berkeley-protocol-digital-open-source.

[36] Berkeley Protocol. See also Daragh Murray, Yvonne McDermott, K Alexa Koenig, "Mapping the Use of Open Source Research in UN Human Rights Investigations", Journal of Human Rights Practice, vol. 14, no. 2 (July 2022), https://academic.oup.com/jhrp/article/14/2/554/6573245.

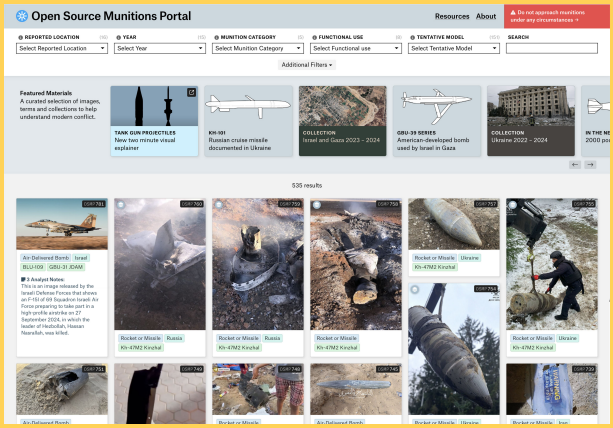
[37] See UNESCO-UNOSAT, "Satellite-Based Damage Assessment of Cultural Heritage Sites: 2015 Summary Report of Iraq, Nepal, Syria and Yemen", June 2016, https://www.unitar.org/sites/default/files/media/file/Full_CHS_Report_0.pdf; Zwijnenburg, et al., "After the Blast - Mapping environmental risks from explosive weapons in Ukrainian towns and cities", PAX, 22 April 2024, https://paxforpeace.nl/wp-content/uploads/sites/2/2024/04/PAX_After-the-Blast.pdf; "FAO, The Food and Agriculture Organization (FAO) and UNOSAT used satellite data to assess damage to farmland and agricultural infrastructure in the Gaza Strip", 3 October 2024, https://www.fao.org/newsroom/detail/gaza-geospatial-data-shows-intensifying-damage-to-cropland/en

to support operational planning and recovery efforts during humanitarian emergencies related to disasters (see Box 10).[38] They have also increasingly been employed to support assessments of the impacts of armed conflicts on a wide range of sectors and activities. For instance, satellite measurements of airborne substances and pollutants can be used to assess the environmental impacts of the use of EWIPA,[39] while night-time lights can be used as a measure of negative effects on socio-economic activities and other human development indicators within affected areas.[40]

In addition, **social media content analysis** can be an important tool for monitoring and documenting the indirect or reverberating impacts of the use of EWIPA on civilians and civilian infrastructure. In some contexts, content made available online in social media platforms is often the first indication of the occurrence of an attack, as well as of its immediate repercussions for the civilian population in the affected area. This includes both visual imagery (e.g., photos or videos showing the damaged infrastructure, casualties, etc.), as well as textual data (e.g., names of victims and descriptions of events and their impacts on civilians).

BOX 9.

Open Source Munitions Portal



In an effort to enhance the understanding of specific munition types, their use and their impact in today's modern battlefields, Airwars together with munitions experts at **Armament Research Services (ARES)** developed an open-source resource, the **Open Source Munitions Portal**. It contains expert classifications of munitions based primarily on open-source material, often post-explosion.

The munitions portal supports those working with digital investigations, particularly those relating to the use of explosive weapons. For instance, a page on the portal outlines the functional aspects of an air-delivered bomb, including descriptors relevant to those attempting to identify munitions fragments through open-source material. The portal also includes a **full archive** of images of munitions in this and other relevant categories, with **specific examples** of munition types that Airwars has been able to link to wider civilian harm.

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[38] See, for instance, F. Lashi, F. Andreuzzi, S.R. Jegillos, and G. Rigodanza, "Remote Sensing Tools for Crisis Assessment in DRR", in A. Singh (ed.), International Handbook of Disaster Research (Singapore: Springer, 2023), https://doi.org/10.1007/978-981-19-8388-7_171.

[39] Zwijnenburg, et al., "After the Blast - Mapping environmental risks from explosive weapons in Ukrainian towns and cities", PAX, 22 April 2024, https://paxforpeace.nl/publications/after-the-blast/.

[40] On UNCTAD's use of satellite imagery combined with night-time lights to understand the impacts of military operations on economic activities in Gaza, see for instance UNCTAD, "Preliminary Assessment Of The Economic Impact Of The Destruction In Gaza And Prospects For Economic Recovery - Unctad Rapid Assessment", January 2024, https://unctad.org/publication/preliminary-assessment-economic-impact-destruction-gaza-and-prospects-economic-recovery

BOX 10.

UNDP's Household and Building Damage Assessment (HBDA) and the Digital Socio-Economic Impact Assessment (SEIA)

UNDP's Surge Data Hub has developed several tools to support assessments of the impacts of conflicts and other crisis situations on local infrastructure and essential services, and inform prevention, preparedness and response efforts. Among them are the Household and Building Damage Assessment (HBDA)[41] and the Digital Socio-Economic Impact Assessment (SEIA)[42] tools. In Gaza, for instance, UNDP leveraged the HBDA toolkit to support assessments of damage to housing and buildings after the hostilities of 2008/2009, 2014 and **May 2021**. It is also currently relying on remote sensing for damage assessments of community infrastructure, debris management and other critical sectors based on satellite imagery and analysis from the United Nations Satellite Centre (UNOSAT) and the European Union's Copernicus programme.

3.4.2. Discussion points, challenges and gaps

While information obtained through remote-based assessments can be critical to the understanding of indirect or reverberating effects, it only provides a partial picture of their impacts, which may not necessarily correspond to the perception of affected individuals and communities. Some workshop participants noted that this discrepancy is often observed and highlighted the importance of relying on other methods to both verify and complement information obtained through such assessments. Similarly, it was emphasized that, while remote assessments can be particularly useful for evaluating structural damage resulting from the use of EWIPA, they may be less suitable for providing insights on the wider repercussions of, for instance, disrupted access to essential services for the civilian population. The importance of developing and investing in tools to support the analysis, interpretation and verification of data obtained through remote methods was also highlighted. In doing so, particular care should be taken to avoid biases in data collection and reporting and to ensure that the data is accurate and representative.

3.4.3. Good practices and opportunities

Participants noted the importance of investing in training in the use of remote-sensing tools and methodologies, as well as in leveraging them to support more granular sector-specific assessments, including through partnerships with specialized entities. Likewise, it was underlined that more efforts are needed to integrate relevant EWIPA concepts and terminology into existing assessment frameworks, tools and methodologies, including by identifying and incorporating different categories and types of explosive weapons. Establishing in-house capacity for undertaking digital investigations (see Box 11), as well as providing training on relevant tools and methods to relevant staff, was highlighted as another good practice that could be implemented by different international and civil society organizations.

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[41] On the use of HBDA, see UNDP SURGE, " Innovate and empower: Boosting UNDP's crisis response through digital assessments", Medium, 23 March 2021, https://undpsurge.medium.com/innovate-and-empower-boosting-undps-crisis-response-through-digital-assessments-a7a416759832.

[42] UNDP, "Socio Economic Impact Assessment (SEIA)", ND, https://www.undp.org/lebanon/seia-msme-explorer.

BOX 11.

Leveraging open-source information and tools for collection and analysis of data: The ICRC's perspective

Recognizing the need for the ICRC to invest in the use of open-source information and methods to both verify and analyse sources of online information, the ICRC's Unit for the Protection of the Civilian seeks to leverage open-source tools and methodologies to enhance its capacity to monitor, document and analyse violations of international humanitarian law and other bodies of law. Open-source methods are particularly relevant for a timely analysis of information to understand individual incidents and broad trends, as well as to assess their humanitarian consequences, including those arising from the use of EWIPA. Digital open-source information has also proven useful, for example, in conducting weapons analysis, accounting for casualties, as well as assessing indirect impacts such as those stemming from damage to or destruction of critical infrastructure. This work contributes towards a multi-disciplinary, all-source approach to the documentation and analysis of such impacts, complementing on-the-ground data collection efforts in order strengthen operational interventions and deliver more effective responses.

3.5. Sharing data on indirect or reverberating effects: Opportunities and challenges

While the collection of data on the reverberating effects of the use of explosive weapons is crucial to increasing the understanding of the impacts on civilians, sharing this data is equally important. It enables collaborative work that can inform effective and appropriate responses to mitigate and address these impacts, as well as to improve understanding of their nature, scope and foreseeability.

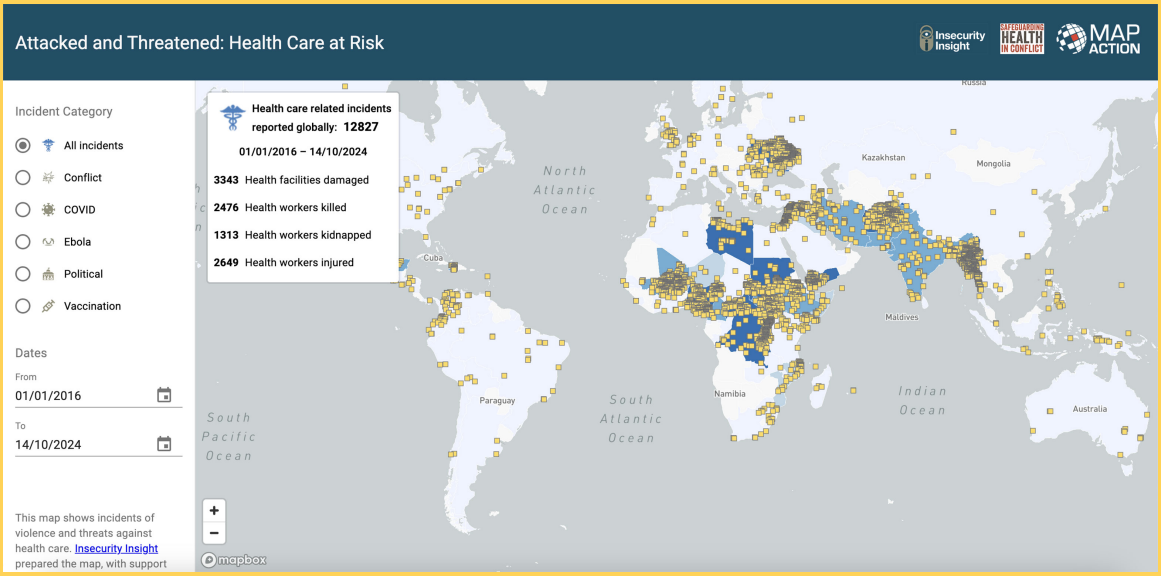
Several tools and platforms have been established to compile and make easily accessible a range of relevant data sources on both direct and indirect or reverberating effects. This includes the **Humanitarian Data Exchange (HDX)** which, since 2014, has aimed to make humanitarian data easy to find and use for analysis, including baseline data (context), situational data (affected communities and their needs) and response data (humanitarian response). Interactive maps and dashboards can similarly display data from multiple sources in easily accessible formats (see Box 12).[43]

[43] See, for instance, the dashboard on Children and Armed Conflict (CAAC) from Watchlist, which collates data on verified, attributable instances of grave violations against children during armed conflict, bringing together and displaying data from the UN Secretary-General's annual reports on CAAC in a manner intended to be easily digestible and useful for advocacy, analysis, and research within this issue area, see **https://watchlist.org/resources/caac-global-dashboard/**. The use of EWIPA can contribute directly to such grave violations, including by through the killing or maiming of children, attacks against schools and hospitals, and denial of humanitarian access for children. By destroying and damaging safe spaces such as homes, schools and hospitals, the impacts of the use of explosive weapons can also render children particularly vulnerable to other dangers, exposing them to heightened risks of being abducted or recruited and used by armed groups, as well as of becoming victims of sexual and gender-based violence. On explosive weapons and the CAAC agenda, see also: **https://watchlist.org/wp-content/uploads/explosive-weapons-and-the-children-and-armed-conflict-agenda_final_digital.pdf**.

BOX 12.

Attacked and Threatened: Health Care at Risk Interactive Map

The **Attacked and Threatened: Health Care at Risk interactive map**, produced by Insecurity Insight and MapAction for the safeguarding Health in Conflict Coalition, shares data on attacks on health care that includes incidents recorded using open-source intelligence methods and contributions from aid agency partners. The interactive map provides global figures of health care related incidents, damaged health facilities, and health worker deaths, injuries and kidnappings. It also included country-specific data that is disaggregated according to both perpetrator and weapons categories. This information can be filtered by date. In addition, the map displays locations of recorded incidents, along with brief descriptions of the incident and its impacts.



Challenges to effective sharing of data on indirect or reverberating effects identified by participants include a reluctance by relevant stakeholders to share information, which in turn can limit verification and cross-sectorial use of data. Similarly, a lack of commonly agreed definitions and terminology and harmonization of key concepts and limited compatibility and interoperability of data sets represents another challenge to improved data sharing.[44] Participants noted that increased transparency in the use of methodologies is also important to enable the sharing of relevant data on indirect or reverberating effects. In addition, coordination among relevant stakeholders across relevant fields is critical to strengthen verification as well as to avoid duplication of efforts.

Finally, while data sharing is primarily considered in terms of quantitative data, participants stressed the importance of exploring options to promote the sharing of relevant qualitative data, which can provide greater context to enhance the understanding of indirect or reverberating effects.

[44] Airwars, "Methodology note: Civilian harm from explosive weapons use in Gaza", October 2023, https://airwars.org/research/methodology-note-civilian-harm-from-explosive-weapons-use-in-gaza/https://airwars.org/about/methodology/.

4. Opportunities to strengthen the collection of data on indirect or reverberating effects

Workshop discussions on the various approaches, methodologies and tools to collect, analyse and share data on the direct and indirect or reverberating effects of the use of EWIPA enabled the sharing of good practices and the identification of current challenges and gaps in existing efforts to document these effects. This prompted reflections and recommendations on opportunities for future collaborative work by stakeholders from international organizations, civil society and academia.

4.1. Considering the varied purposes for which data on indirect or reverberating effects is collected and shared before, during and after armed conflicts

Different stakeholders collect, share and use data on indirect and reverberating effects at different times before, during and after conflict, for a variety of purposes based on their different mandates, objectives, technical expertise and operational capacities (see Box 14). Depending on these factors, stakeholders may have varying resource needs, may utilize different tools and methodologies, and may identify opportunities for collaboration among a range of actors. These may include:

- **Early warning and prevention** data collection to inform prevention, humanitarian preparedness and contingency planning;
- **Crisis response and assistance** data collection to inform operational and humanitarian responses, including assistance and protection activities, victim assistance, clearance operations, and rehabilitation and reconstruction efforts (see Box 13); and
- **Post-conflict impact assessments** or data collection to understand the indirect or reverberating effects of the use of EWIPA after conflict has ended, including how the needs of affected communities might evolve across space and over time.

Iraq, 2018. Credit: UNMAS

BOX 13.

Navigating impacts: Operational challenges of conducting clearance operations and collecting data in conflict-affected urban environments

The collection and sharing of data by various stakeholders – including operational data on the number, type and location of the explosive weapons used – is vital to efforts to protect civilians from the risks of explosive remnants of war (ERW) The means of doing this include ERW marking and clearance, as well as risk reduction. The presence of ERW, especially in urban and built-up environments, has severe direct and indirect or reverberating impacts for civilians both during hostilities and in their aftermath. It also presents unique challenges to clearance efforts, which are critical to enable the provision of safe and unhindered humanitarian access, assistance to victims, as well as wider rehabilitation and reconstruction efforts.[45] In Iraq, for instance, the United Nations Mine Action Service (UNMAS) has surveyed and cleared explosive ordnance at more than 2,000 sites with critical infrastructure since 2017. During 2017- 18, a highly complex and resource-intensive operation was undertaken to clear improvised explosive devices from the "Iron Bridge" in Fallujah, so that it could subsequently be rehabilitated by UNDP. The bridge had been partially destroyed by ISIL during hostilities in 2016.[46] The bridge had a strategic position, in addition to serving the only maternity hospital in the area and providing direct access to the city's central market. The operation was therefore critical to restore access to essential services by the affected population of Fallujah.

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[45] See Eirini Giorgou, "Preventing and eradicating the deadly legacy of explosive remnants of war", 23 February 2023, ICRC Humanitarian Law & Policy Blog, **https://blogs.icrc.org/law-and-policy/2023/02/23/preventing-eradicating-explosive-remnants-of-war/**.

[46] See UNMAS, "Underwater Clearance in Fallujah, Iraq", 26 April 2018, **https://www.unmas.org/en/underwater-clearance-fallujah-iraq**; UNDP, "An Ancient River With A Modern Bridge", 5 August 2018, **https://www.undp.org/iraq/stories/ancient-river-modttackedern-bridge**.

Ukraine, 2024. Credit: Laurin Strele-Pupp

BOX 14.

Cultural heritage: Explosive weapons' effects and the importance of data collection

By Bonnie Docherty, Human Rights Watch and Harvard Law School's International Human Rights Clinic

Damage and destruction of cultural heritage due to the use of explosive weapons has significant humanitarian effects.[47] It directly damages cultural sites and kills and injures civilians sheltering inside. The use of explosive weapons indirectly inflicts further negative effects on cultural heritage and harms civilians by leading to a loss of local and world history, undermining a community's identity and unity, interfering with tourism, and taking away people's jobs.

To protect civilians comprehensively, cultural heritage should be taken into account during collection and sharing of data related to the use of explosive weapons in populated areas. Gathering information about buildings, museum collections, archives and other cultural heritage before an armed conflict preserves knowledge in case that heritage is completely destroyed. Such information can also facilitate reconstruction or restoration of partially damaged heritage.

Documentation after an attack is equally important. By identifying significant places and objects that may be in a state of disrepair, it advances short-term protection and makes restoration easier. Data-gathering preserves knowledge about a place or object that may not survive after an attack. Collection and sharing of information about the range of harm to a community, especially the less obvious indirect effects, bolster efforts to recognize that harm and efforts to address it. If done to certain standards, documentation of effects can be used to support legal accountability. In addition, information about damage and destruction of cultural heritage, combined with data about how explosive weapons were used, can help armed forces to identify lessons learned in order to avoid future harm.

Data-gathering and -sharing should adhere to multiple principles. First, the process should involve consultations with community members, especially on the harm they have experienced. Second, it should happen as soon as possible to preserve evidence before it disappears. Finally, the results should be made public to facilitate analysis and promote accountability, unless releasing information would endanger civilians or the cultural heritage itself.

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[47] For more on the effects of explosive weapons on cultural heritage and the importance of data collection in this area, see Human Rights Watch (HRW) and Harvard Law School's International Human Rights Clinic (IHRC), Destroying Cultural Heritage: Explosive Weapons' Effects in Armed Conflict and Measures to Strengthen Protection (New York: HRW, April 2024), **https://www.hrw.org/sites/default/files/media_2024/04/arms0424web.pdf**.

4.2. Strengthening engagement with local organizations and affected communities in the collection of data on indirect or reverberating effects

The indirect or reverberating effects of the use of EWIPA on people and communities can vary significantly depending on specific contexts and circumstances. Engagement with conflict-affected communities is crucial to understanding the nature and extent of these effects, including the differentiated impacts on women, men, girls and boys. Stakeholders could consider initiatives that both build capacity within communities and enable those communities to play a key role in data collection (see Box 15). This would not only benefit efforts to better understand the indirect or reverberating effects but also support and empower communities to contribute to crisis response and recovery.

BOX 15.

Engaging with local organizations to document the impacts of explosive weapons use on civilians

PAX has collaborated with the Yemeni organization **Mwatana for Human Rights** to document the impacts of the use of explosive weapons on civilians in different cities and towns in Yemen. Between January 2019 and March 2021, Mwatana research staff conducted field research that included in-depth semi-structured interviews and inspections of the sites where attacks and incidents occurred in consultation with an independent weapons expert to identify the types of weapon used in the incidents. Mwatana interviewed witnesses, relatives of victims, survivors and doctors, and examined documents, photos, videos and other forms of physical evidence This evidence was thereafter analysed and described by PAX and Mwatana in the report "**Not a single body in one piece**" (2022), which documents 10 different incidents of harm resulting from attacks involving the use of EWIPA by different conflict actors.

4.3. Collecting data to improve understanding of the interdependent and interconnected nature of civilian infrastructure and essential services in urban and other populated areas

To assess the indirect or reverberating effects on civilians of the use of EWIPA, data should be collected to understand the interconnected nature of civilian infrastructure and services in urban and other populated areas, including civilians' reliance on such services (see Box 16). This includes baseline data on the location of systems and the availability of services in urban areas, as well as population numbers, demographics and mortality rates, which are needed to determine "excess mortality" and indirect deaths that may occur as a result of disrupted

access to essential services. It also includes information that allows for an understanding of what is required to keep such services functional, including supply routes and the locations of power and water supply lines, as well as the availability of personnel and consumables.

BOX 16.

GICHD's Characteristics of Explosive Weapons Project and Explosive Weapons Effects Simulator

The **Geneva International Centre for Humanitarian Demining (GICHD)** focuses on reducing the impact of mines, cluster munitions and other explosive hazards in collaboration with states and human security actors. In 2015, the GICHD launched a **research project** on explosive weapons, focusing on their characteristics and immediate effects on people and infrastructure in populated areas. The final report, published in 2017, was produced with contributions from international experts from a range of international and civil society organizations. The project also led to the development of a simulator that models the effects of five explosive weapon systems, using accuracy, precision and known munitions effects. The simulator supports analyses of the primary and secondary damage mechanisms in various populated area scenarios (e.g. open area, hamlet, village, town and city), reflecting typical rural and urban features. It also accounts for differences in population density, infrastructure and vehicles between day and night, with less traffic and more people in residential areas at night.

4.4. Advancing methodological discussions to overcome challenges in the reporting, analysis and sharing of data on indirect or reverberating effects

To facilitate coordination and collaboration among relevant stakeholders, discussions should continue to address the different methodological challenges to collecting data that can support the many roles these stakeholders play in addressing and mitigating harm to civilians from the use of EWIPA (see Box 17). This includes exploring options to harmonize key terminology and concepts guiding the collection of data on indirect or reverberating effects, as well as to tailor existing data-collection practices to improve levels of disaggregation (e.g. sex, age, disability, population density, weapon types, etc.). Methodological discussions should also aim to identify and incorporate the different categories and types of explosive weapon.

BOX 17.

Global Coalition on the Protection of Education from Attacks: Toolkit for collecting and analysing data on attacks on education

Information on the scope and impacts of attacks on education remains limited or variable across countries and over time. To address this, the **Global Coalition on the Protection of Education from Attacks (GCPEA)** has developed a **toolkit** for collecting and analysing data on attacks on education. The toolkit offers guidance on collecting and analysing data to strengthen monitoring systems and improve responses to attacks. It also contributes to the harmonisation of terminology used in data collection on attacks on education, which allows for better comparisons across countries and over time. GCPEA recommends that the toolkit be used for improved understanding of the scope and impact of attacks on education and the military use of schools and universities. To address underreporting, data gaps and limited impact analyses, the toolkit provides guidance to governments, civil society organizations, the United Nations, and humanitarian and development agencies on data collection, analysis and reporting. The toolkit can be used by organisations already collecting data on attacks on education, as well as those looking to build new monitoring and reporting systems.

4.5. Fostering multi-stakeholder and cross-disciplinary dialogue and collaboration around the collection of data on indirect or reverberating effects

Other knowledge communities have valuable expertise in documenting indirect or reverberating effects (e.g. environmental and disaster risk reduction, public health and epidemiological studies, system dynamics, etc., see e.g. Box 18). There are many opportunities to build bridges with these other communities. Further discussions could explore complementarities and synergies with relevant initiatives and processes beyond EWIPA to prevent siloes and promote effective collaboration across disciplines and organizations. Such efforts could

also identify opportunities for integrating considerations on the collection of data on indirect or reverberating effects of the use of EWIPA into relevant existing frameworks, impact-assessment tools and methodologies, and guidance materials to ensure the complementarity and sustainability of efforts to document their wide-ranging impacts on civilians. This includes identifying and making better use of existing platforms for the sharing of relevant data, as well investing in independent research to improve understanding of these impacts based on the collected data.

BOX 18.

The Global Alliance to Spare Water from Armed Conflicts

The **Global Alliance to Spare Water from Armed Conflicts (GASWAC)**, led by Switzerland and Slovenia and hosted by the **Geneva Water Hub** as the Secretariat, exemplifies an initiative aimed at fostering multi-stakeholder and cross-disciplinary dialogue on the protection of water resources from the impacts of armed conflict. As a community of member states, international governmental organizations and NGOs, academia and think tanks, GASWAC leverages the diverse expertise of its members to promote the dissemination and respect for international law and strengthen the protection of water and water infrastructure. Furthermore, it seeks to harness insights from the development and humanitarian sectors to identify actions that can enhance resilience of water infrastructure to humanitarian crisis and inform preparedness and response activities. This includes improving the understanding of the indirect or reverberating effects for the civilian population and the environment of attacks on, and military use of, freshwater and water-related installations.[48]

4.6. Promoting transparency and encouraging the sharing of data on the indirect or reverberating effects of the use of EWIPA among a wide range of stakeholders

A wide range of stakeholders from international organisations, civil society, academia and states have a role to play in collecting and sharing data on the indirect or reverberating effects of the use of EWIPA to strengthen understanding of these effects and to support the development of policy and practice to address them. To do so, all stakeholders, including states, should commit to transparency in the sharing of relevant data (see Box 19).

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[48] In November 2023, the Geneva Water Hub organized a workshop with Ministry of Foreign and European Affairs of Slovenia on the "Global Alliance to Spare Water from Armed Conflicts", which led to the official launch of the Alliance in May 2024. The workshop's discussions focused on both the direct impacts resulting from attacks, such as damage or destruction of water infrastructure and related-facilities, military use of these resources, and harm to individuals, as well as the indirect or reverberating effects, including the spread of waterborne diseases, disruption of the supply chain and livelihoods, displacement of civilians and service personnel, and environmental degradation. For the report of the workshop, see Geneva Water Hub, "Report of the 22-23 November 2023 Workshop Geneva Water Hub office, WMO building, Geneva", 2023, https://www.genevawaterhub.org/resources/report-global-alliance-spare-water-armed-conflicts.

Syria, 2024. Credit: UNOCHA / Matteo Minasi

It would be useful, for example, to have publicly available satellite imagery that shows blast impacts, including damage to and destruction of critical infrastructure. Where appropriate, states could consider reporting on civilian harm resulting from their military operations, including by publicly releasing information on specific incidents.

BOX 19.

Airwars engagement with the United States-led anti-ISIL coalition

In Iraq and the Syrian Arab Republic, Airwars has developed a project aimed at recording victims of the United States-led Coalition airstrike campaign against ISIL. In 2020, following years of engagement with Airwars, the United States Department of Defense 's Military Grid Reference System (MGRS) released data on the precise location of 340 incidents, mostly caused by United States-led coalition air and artillery strikes. These had resulted in more than 1,000 civilian deaths in Iraq and Syria between 2014 and 2020. Airwars created an online digital map of these incidents, allowing Iraqis and Syrians to know the fate of their relatives.[49] The decision by the United States military constitutes a transparency benchmark for other military actors.[50]

[49] Airwars, "The Credibles", https://airwars.org/conflict-data-v1/the-credibles/.

[50] See Human Rights Council, A/HRC/53/48, para. 70, https://documents.un.org/doc/undoc/gen/g23/095/08/pdf/g2309508.pdf; "Coalition airstrikes against ISIS resulted in more than 1,400 civilian deaths, according to data made public for first time", Washington Post, 18 November 2020, https://www.washingtonpost.com/graphics/2020/world/coalition-airstrikes-isis-civilian-death-toll/.

5. Translating data into action: Leveraging the EWIPA Political Declaration to promote improved data collection on indirect or reverberating effects

As documented above, much of the workshop's discussions focused on the role of international organizations, civil society and academia in collecting data and documenting indirect or reverberating effects on different areas of civilian life. However, it also addressed how an improved understanding of these effects – enabled by data collection, analysis and sharing – can inform states' policies and practices to prevent, mitigate and respond to these harms. Discussions therefore provided an opportunity for participants to consider both how data on indirect or reverberating effects collected by various stakeholders can be used by states, as well as how states can facilitate data-collection efforts by these stakeholders in the context of the implementation of the Political Declaration.

5.1. Utilizing data from external sources to support state-led assessments of civilian harm

While states and their armed forces should have processes and mechanisms in place to enable the collection of data on the impacts of their military operations on civilians, data collected by other stakeholders can be used to both complement and strengthen assessments of these impacts.[51] In addition to military operational data, documentation and credible reporting by third parties, including international and civil society organizations could play a key role in enhancing assessments of civilian harm caused by militaries.[52] Some armed forces already rely on external sources to cross-check information gathered through internal reporting and to verify details of specific incidents or allegations of harm. However, there is room to further strengthen the use of these sources and ensure that relevant assessments can benefit from the best information and expertise available and more accurately reflect the patterns of civilian harm resulting from the use of EWIPA (see Box 20).[53]

To this end, it was noted that states should develop protocols and procedures to both guide and improve their engagement with stakeholders collecting data on the ground, as well as to evaluate data obtained from external sources.[54] Furthermore, while the latter tends to be mainly

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[51] See, for instance, Larry Lewis, "Promoting Civilian Protection during Security Assistance: Learning from Yemen", CNA, 2019, https://www.cna.org/archive/CNA_Files/pdf/irm-2019-u-019749-final.pdf.

[52] The US Department of Defense 2018 Joint Chiefs of Staff review found that reports of civilian casualties from external sources constituted 58% of the total number of civilian casualties that the US Department of Defense identified from 2015 to 2017. See Joint Staff, Civilian Casualty (CIVCAS) Review (Washington, DC: Department of Defense, 17 April 2018).

[53] See, for instance, CIVIC, "Limiting the Humanitarian Consequences from the Use of Explosive Weapons in Populated Areas Next Steps in Implementation of the Political Declaration", 2022, https://civiliansinconflict.org/wp-content/uploads/2022/11/CIVIC-Explosive-Weapons-in-Populated-Areas-Political-Declaration-Implementation-Briefer.pdf.

[54] Roger Lane, Larry Lewis and Himayu Shiotani, Opportunities to Improve Military Policies and Practices to Reduce Civilian Harm From Explosive Weapons in Urban Conflict (Geneva: UNIDIR, 2019), https://unidir.org/publication/opportunities-to-improve-military-policies-and-practices-to-reduce-civilian-harm-from-explosive-weapons-in-urban-conflict/, p. 20.

used by militaries to support assessments of direct effects, particularly incidents resulting in the immediate death or injury of civilians, there is considerable scope for leveraging such data to support assessments of indirect civilian harm (see Section 3).

BOX 20.

Civil Society Engagement with the Netherlands Ministry of Defence

Since 2020, a consortium of academic and civil society organisations, including PAX, Airwars, Center for Civilians in Conflict and Utrecht University, has regularly engaged with the Netherlands Ministry of Defence (MoD). These discussions, called the 'Roadmap Process', aim to improve Dutch policy and practice on the prevention, reduction and response to civilian harm resulting from Dutch military operations. This opportunity for engagement between the Dutch MoD and civil society organisations arose after public reporting on civilian deaths that occurred as a result of airstrikes in Mosul and Hawija, Iraq, prompted the MoD to order a review of its civilian harm mitigation and response policies and practices. Exchanges between the MoD and the civil society consortium have resulted in two sets of recommendations to the MoD on its civilian harm mitigation policies. The Dutch MoD has since created an internal task force focused on the protection of civilians and developed new transparency and investigation procedures. Recent engagement between civil society and the MoD has also focused on the interpretation and implementation of the Political Declaration, with recommendations developed to actively promote the Political Declaration and place limits on the use of EWIPA. Moreover, it also included recommendations on the collection and reporting of data on civilian harm – both direct and indirect or reverberating harm – including by utilizing information obtained from external sources.

5.2. States' policies and practices relevant to the collection of data on indirect or reverberating effects

Workshop discussions touched upon how indirect or reverberating effects can be considered by states and their armed forces during the planning and execution of military operations in urban and other populated areas. The ICRC shared preliminary insights from a military expert meeting held in October 2023 on "Preventing and mitigating the indirect effects on essential services of the use of explosive weapons in populated areas".[55] The findings from this expert meeting highlighted that current military practices on data collection and analysis depend on an interplay of several factors, including resources, operational tempo, and the accessibility and reliability of information (see Box 21 for an overview of the ICRC meeting's recommendations).

[55] For the full report of the military expert meeting, see ICRC, Expert Meeting: Preventing and Mitigating the Indirect Effects on Essential Services from the Use of Explosive Weapons in Populated Areas (Geneva: ICRC, April 2024), https://www.icrc.org/en/document/addressing-indirect-effects-explosive-weapons. For ICRC recommendations on this topic, see ICRC, " Preventing and mitigating the indirect effects on essential services from the use of explosive weapons in populated areas - ICRC recommendations", ICRC, April 2024, https://cms.ewipa.org/uploads/Indirect_Effects_of_Explosive_Weapons_in_Populated_Area_ICRC_Recommendations_Apr_2024_fc0184fc1b.pdf.

In terms of **resources**, a military often needs to strike a balance between achieving the desired effects on its adversary, protecting its own forces, and avoiding and minimizing civilian harm, including indirect effects. In practice, this means that insufficient resources in terms of qualified personnel and intelligence capabilities are allocated to the protection of civilians. Intelligence collection remains mainly "enemy-oriented", and there is usually a lack of technical expertise (e.g. engineers, urban planners, etc.) that can support assessments of indirect effects at both operational and tactical levels.

At the same time, the **operational tempo** can influence how indirect effects are considered during military operations. When military forces conduct lower-intensity operations, such as counter-insurgency or counter-terrorism campaigns, they typically have more time to consider indirect effects in their operational planning and intelligence support than when conducting high-intensity warfare or large-scale combat operations. Similarly, the time available for planning may differ significantly between situations of deliberate and dynamic targeting, as well as in other situations when troops are under attack, such as "troops-in-contact" or "self-defence" scenarios.

Finally, there is a significant variation in the **accessibility and reliability of information** between operations conducted by a military on its own territory and those on foreign territory when it comes to understanding the civilian environment. While military forces typically have information that facilitates the assessment of indirect effects when operating on their own territory, such evaluations are more challenging in a foreign territory, particularly regarding the location and interconnectivity of critical infrastructure and services. In both situations, a military can face an oversaturation of information on the civilian environment, compounded by disinformation campaigns. This can make it difficult for it to prioritize, analyse and feed information back into relevant military decision-making processes.

Philippines, 2024. Credit: UNODC / Laura Gil

BOX 21.

Recommendations from the ICRC's miliary expert meeting related to the collection and analysis of data on indirect effects

The discussions in the ICRC military expert meeting of October 2023 also allowed for the identification of good practices and recommendations for states and their armed forces to help overcome challenges related to data collection and analysis on indirect effects. These include:

- **Putting in place national mechanisms and staffing civilian harm-tracking mechanisms to collect data on indirect effects.** This should help improve understanding of the foreseeability of these effects and ensure that relevant information is integrated into military decision-making processes at all levels.
- **Using different sources of intelligence and different intelligence, surveillance and reconnaissance (ISR) capabilities,** as well as open and indirect sources of information and intelligence, and remote assessment tools and techniques. The aim of this is to increase accessibility and reliability of information, especially in the absence of troops on the ground.
- **Strengthening engagement with humanitarian organizations and NGOs.** This is a recognition that these actors play a key role in efforts to prevent and mitigate indirect effects on essential services and that they can provide relevant information. This information can cover context dynamics, the location of critical civilian infrastructure, patterns of civilian life and the likely impacts on civilians from disrupted access to essential services. Such engagement should be pursued at various stages – for example, from military training and simulations to operational planning and execution and as part of lessons learned exercises – while respecting the working modalities of these organizations.
- **Improving foreseeability of indirect effects,** including by leveraging tools for data modelling that can help in predicting indirect effects and their impacts on civilians. For instance, military forces could use such tools and others at their disposal to compare the consequences of different courses of action on essential services. Moreover, a basis of knowledge on the civilian environment, including on the interconnectivity of essential services, should be created already in peacetime in collaboration with relevant civilian authorities and institutions.

Ukraine, 2024. Credit: Laurin Strele-Pupp

6. Conclusions and recommendations to advance the collection of data on indirect or reverberating effects within the framework of the Political Declaration

The workshop provided an opportunity for stakeholders from international organizations, civil society and academia to discuss various approaches, methodologies and tools to collect, analyse and share data on the direct and indirect or reverberating effects of the use of EWIPA. It enabled the identification of challenges and gaps in existing efforts to document these effects and promoted the sharing of good practices as well as opportunities to leverage the Political Declaration to support improved data-collection efforts. Among the opportunities identified are:

- Considering the varied purposes for which different stakeholders collect and share data on indirect or reverberating effects before, during and after armed conflicts;
- Strengthening engagement with local organizations and affected communities in the collection of data on indirect or reverberating effects;
- Collecting data to improve understanding of the interconnected and interdependent nature of civilian infrastructure and essential services in urban and other populated areas;
- Advancing methodological discussions to overcome challenges in the reporting, analysis and sharing of data on indirect or reverberating effects;
- Fostering multi-stakeholder and cross-disciplinary dialogue and collaboration on the collection of data on indirect or reverberating effects; and
- Promoting transparency and encouraging the sharing of data on the indirect or reverberating effects among a range of stakeholders.

The workshop also provided an opportunity for participants to consider both how data on indirect or reverberating effects collected by various stakeholders can be used by states, as well as how states can facilitate data-collection efforts by these stakeholders in the context of the implementation of the Political Declaration. Based on these considerations at the workshop, the following recommendations are put forward by UNIDIR and the Explosive Weapons Monitor to the states that have endorsed the Political Declaration. The aim of the recommendations is to help advance, in collaboration with relevant stakeholders, the implementation of the Declaration's commitments on the collection of data on indirect or reverberating effects.

- Endorsing states should consider the establishment of formal or informal structures (e.g., standing or ad hoc working groups) to promote collaborative work and exchanges to improve understanding of indirect or reverberating effects, and their nature, scale and foreseeability. Such an approach would help to operationalize the Political Declaration's commitments, including on exchanges of policies and good practices in relation to "emerging concepts and terminology", as foreseen in paragraph 4.7.

- **Possible composition:** The working group or groups could be composed of representatives from interested endorsing states and their armed forces, as well as from relevant stakeholders from United Nations entities, the ICRC, civil society and academia with different thematic or geographical expertise.
- **Mandate and activities:** The working group or groups could convene regular meetings to promote exchanges among stakeholders and deepen engagement with the broader community of practice, including academia. Such meetings could invite external experts to present on topics and issues of relevance across contexts and thematic areas. The regular meetings would help to:
  - » Enable the identification of good practices in documenting the foreseeable indirect or reverberating effects on civilians and civilian objects of military operations involving the use of EWIPA
  - » Identify existing gaps in knowledge as well as capacity needs based on the varied challenges faced by different stakeholders in collecting data on these effects
  - » Support the development of tools and other voluntary guidance materials, as well as scenario-based exercises, simulations and other activities that can be incorporated into training and other capacity-building efforts
  - » Promote initiatives to further build and strengthen the community of practice around the documentation of indirect or reverberating effects

- ▶ Endorsing states should consider the establishment of a voluntary "trust fund" or another type of mechanism to support independent research to improve the understanding of the nature, scope and foreseeability of the indirect or reverberating effects of the use of EWIPA. This could include, for instance, support for the development of case studies focused on different contexts and thematic areas to strengthen and promote the diversification of the evidence base. Consideration could also be given to tasking a group or consortium of organizations to conduct a pilot project to develop or test different approaches and methodologies for documenting these effects over time and across different geographical contexts.
- ▶ Endorsing states should make use of the international review meetings of the Political Declaration, as well as other regional and national-level implementation activities, to exchange views and information on policies and good practices to prevent, minimize and respond to the indirect or reverberating effects of military operations involving the use of EWIPA. This should include policies, practices or mechanisms that can be established or adapted to track, monitor and respond to these effects in a way that promotes operational and institutional learning within states and their armed forces. Such activities should help identify the types of resource and expertise needed to build or strengthen such mechanisms, taking into account the varied needs, challenges and capabilities of endorsing states. This would support efforts to "identify any relevant additional measures that may need to be taken" to promote and strengthen the implementation of relevant commitments of the Political Declaration, in line with the commitment in paragraph 4.7.

Annex: Workshop Programme

Implementing the data collection provisions of the EWIPA Political Declaration: Effective measures and practices for strengthening the collection of data on indirect or reverberating effects

DAY 1: THURSDAY, 29 FEBRUARY 2024	
08:30–09:00	**Arrival of participants, registration, and coffee**
09:00–09:30	**Opening session and welcome remarks** Ambassador Thomas Goebel, Permanent Mission of the Federal Republic of Germany to the Conference on Disarmament in Geneva Dr. Paul Holtom, Head of UNIDIR's Conventional Arms and Ammunition Programme *Tour de Table* introductions
09:30– 10:30	**Session 1 – Setting the Scene: the collection of data on reverberating effects and the EWIPA Political Declaration** This session will introduce the EWIPA Political Declaration and the key provisions relevant to data collection on the indirect or reverberating effects of the use of explosive weapons. It will provide context on the importance of understanding and documenting reverberating effects and the role of this documentation in the development of the EWIPA Political Declaration. The different challenges faced by stakeholders undertaking data collection on reverberating effects to date will also be outlined. **Kick-off presentations:** Bárbara Morais Figueiredo, Associate Researcher, Conventional Arms and Ammunition Programme, UNIDIR Katherine Young, Research and Monitoring Manager, Explosive Weapons Monitor Loren Persi Vicentic, Data Specialist, Explosive Weapons Monitor **Guiding questions:** • What are "reverberating effects", and why is the collection and sharing of data on them important? • What is the EWIPA Political Declaration and what are the key commitments relevant to data collection and reverberating effects? • What role did the documentation of reverberating effects play in the development of the EWIPA Political Declaration? • What are some of the key challenges in collecting data and documenting reverberating effects, and how have they been addressed to date?
10:30–10:45	**Coffee Break**

10:45–12:15 **Session 2 – Relevant tools and methodologies for collecting, analysing, and sharing data on reverberating effects**

This session will introduce relevant tools and methodologies guiding the collection and analysis of data on reverberating effects. It will identify existing methods for data collection, platforms for sharing this data, and promote a discussion on the different ways in which these tools, methods and platforms can be better leveraged in the context of the implementation of the EWIPA Political Declaration.

Facilitation: Bárbara Morais Figueiredo, Associate Researcher, Conventional Arms and Ammunition Programme, UNIDIR

Kick-off presentations:

Documenting reverberating effects to mitigate their impact, Christina Wille, Director, Insecurity Insight

OHCHR casualty recording and casualty estimations, Sonia Muller-Rappard, Human Rights Officer, OHCHR

Leveraging open-source information and tools for collecting and analysing data: the ICRC's perspective, Mitchell Paquette, Open-Source Information and Analysis Manager, Protection of Civilian Population Unit, ICRC

The role of qualitative reporting in documenting the reverberating impacts of the use of EWIPA, Roos Boer, Project Leader, Humanitarian Disarmament, PAX

The Humanitarian Data Exchange platform and opportunities for improving the sharing of data on reverberating effects, Javier Teran Castro, Data Partnerships Team Lead, Centre for Humanitarian Data, OCHA

Guiding questions:

- What are the existing tools and methodologies relevant to the collection and analysis of data on reverberating effects?
- What are the sensitivities and risks involved in the collection and sharing of data on reverberating effects, and how might these be mitigated?
- Which existing platforms might facilitate the sharing of data on reverberating effects?
- What are the main challenges to improving collaboration in relation to the collection and sharing of data on reverberating effects, and what opportunities might exist in pursuing greater coordination?
- How do states facilitate the collection of relevant data on reverberating effects by other stakeholders, and how can such data be utilized inform their own understanding of these effects?
- How might existing tools and methodologies be better leveraged in the context of the implementation of the EWIPA Political Declaration? What additional guidance or resources might be needed?
- How might efforts to collect, analyse and share data on reverberating effects be strengthened in line with the EWIPA Political Declaration?

12:15–13:15 **Lunch break**

13:15–14:45 **Session 3 – Tools in action: identifying good practices and challenges in collecting, analysing and sharing data on reverberating effect**

This session will explore the current landscape of data collection on reverberating effects and identify the ways in which different actors approach the collection of data and utilize tools and methodologies. It will discuss concrete examples of data collection in different contexts and/or thematic areas to identify good practices, challenges, and areas for potential collaboration between relevant stakeholders to the EWIPA Political Declaration.

Facilitation: Katherine Young, Research and Monitoring Manager, Explosive Weapons Monitor

Kick-off presentations:

Navigating impact: Examining explosive weapons in Iraq's urban landscape, Pehr Lodhammar, Chief Mine Action Programme Iraq, UNMAS

Impact of armed conflicts on complex essential services systems in urban settings: An illustration from Syria, David Kaelin, Policy Adviser, Water and Habitat, ICRC,

Building a shared codebook: documenting harm in Gaza using a collaborative tagging approach, Emily Tripp, Director, Airwars

Digital Impact Assessments in Sudden Crisis and Conflict Situations, Use Cases from UNDP, Fabjan Lashi, SURGE Data Hub Manager, UNDP

Leveraging emerging technologies to enable the documentation of the reverberating impacts of the use of EWIPA on the environment, Wim Zwijnenburg, Project Leader, Humanitarian Disarmament, PAX

Harmonization of EWIPA casualty data with humanitarian trauma care, Hannah Wild, General Surgery Resident, University of Washington

Guiding questions:

- What are the key principles and considerations guiding the collection and sharing of data on reverberating effects on different areas of civilian life?
- What are existing good practices and data collection methods or methodologies that work well in these different contexts?
- What are the key methodological and practical challenges to collecting, analysing and sharing such data, and what is needed to address them?
- How can collaboration between relevant stakeholders on the collection of data on reverberating effects be improved, and what are the benefits from such improved collaboration?
- What can be done to make relevant data and analysis available in a timelier manner and to the right stakeholders?

14:45–15:00	**Coffee break**
15:00–17:00	**Session 4 – Breakout group discussions** Participants will be divided into four break-out groups focusing on different thematic areas to exchange on methodologies, tools, challenges, and opportunities for collecting data on the reverberating effects of explosive weapon use (e.g. education, gender equality, and economic opportunity; health, WASH and food security; infrastructure and environment; and indirect death and injury). Summaries of breakout group discussions will be shared in Session 5. These summaries will support discussion on how the EWIPA Political Declaration might be leveraged to strengthen data collection on reverberating effects.
19:00	**Reception dinner at Restaurant La Perle du Lac**

DAY 2: FRIDAY, 1 MARCH 2024

08:30–09:00 **Arrival of participants and coffee**

09:00–10:30 **Session 5 – Translating data into action: Leveraging the Political Declaration to strengthen the collection and sharing of data on reverberating effects**

Building on Sessions 1 to 4, this session will be a facilitated, interactive discussion about the findings from the first day. It will also provide an opportunity for states to share national practices relevant to the collection of data on reverberating effects, as well as views on how data collection efforts by other stakeholders are utilized or otherwise supported by states and what additional action or resources may be needed to facilitate such efforts in the context of the implementation of the EWIPA Political Declaration.

Kick-off presentations:

Hana Salama, Break out group 1 rapporteur

Juliane Schillinger, Break out group 2 rapporteur

Camila Molyneux, Break out group 3 rapporteur

Loren Persi Vicentic, Break out group 4 rapporteur

Reflections from the ICRC-military expert workshop on 'Preventing and mitigating the indirect effects on essential services of the use of explosive weapons in populated areas', Caroline Baudot, Policy Adviser, Arms and Conduct of Hostilities, ICRC

Reflections from the Geneva Water Hub workshop on the protection of water and water infrastructure in conflict, Tadesse Kebebew, Researcher, Geneva Water Hub/UNIGE

Facilitation: Dr. Paul Holtom, Head of UNIDIR's Conventional Arms and Ammunition Programme

Guiding questions:

- What are some of the existing measures and good practices for collecting data on reverberating effects?
- How can states facilitate the collection of data on reverberating effects by relevant stakeholders? What are existing good practices in this context?
- In what ways can an improved understanding of reverberating effects enabled by data collection efforts help inform military policies and practices to prevent and respond to civilian harm? What good practices and lessons learned are there in this regard?
- What additional actions and resources are needed to strengthen efforts to collect data on reverberating effects in the context of the implementation of the EWIPA Political Declaration?

10:30–11:00 **Coffee break**

11:00–12:30 **Session 6 – Preparing for the EWIPA Oslo Conference and the work ahead**

This session will provide an overview of preparations for the EWIPA 2024 Oslo Conference, the Protection Forum and the Thematic Workshops on military policy and practice and humanitarian access and assistance. It will promote a discussion on how the issue of reverberating effects should be addressed at the Conference, as well as of action needed to advance the implementation of relevant commitments of the EWIPA Political Declaration.

Kick off presentations:

The 2024 EWIPA Oslo Conference, Mr. Fredrik Brogeland Laache, First Secretary, Permanent Mission of Norway to the United Nations Office in Geneva

The Protection Forum and Thematic Workshops on Military Policy and Practice and Humanitarian Access and Assistance, Camilla Molyneux, Researcher and Project Lead, Explosive Weapons Monitor and Article 36

Facilitation: Juliana Helou van der Berg, Political Affairs Officer, UNODA

Guiding questions:

- How should good practices and efforts to strengthen the collection of data on reverberating effects be shared at the EWIPA Oslo Conference?
- What outcomes can be expected coming out of the Oslo Conference in relation to data collection on reverberating effects?
- Which areas would benefit from further discussions and research? How can the follow-on process from the EWIPA Political Declaration provide the space for such discussions and research?
- How can efforts to collect data on reverberating effects be considered as part of the work on the implementation of the Declaration beyond the Oslo Conference? What are some of the good practices and lessons learned from similar processes?

12:30–13:00	**Wrap up and closing remarks** UNIDIR and Explosive Weapons Monitor
13:00–14:00	**Informal lunch**

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