Put Out the **Fire**

Strengthening International Law and Divestment Policies on Incendiary Weapons

PAX

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PAX is a Dutch peace organization, working with local partners in 14 conflict zones. We work to protect civilians against acts of war, to end armed violence and to build inclusive peace. PAX has strived to achieve the highest level of accuracy in this paper. If you have any questions or comments, please contact us at info@paxforpeace.nl.

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FRONT COVER
Artillery projectiles containing white phosphorus ignite over the area east of Jabalia in the northern Gaza Strip on January 11, 2009. ©AFP Photo/ Mahmud Hams.

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Summary

Incendiary weapons produce heat and fire through the chemical reaction of a flammable substance. Having been used in at least six countries in the past fifteen years, they have caused immense harm to their civilian victims, both in the short and the long run. In addition to experiencing excruciating physical pain, survivors often suffer from profound psychological and socioeconomic problems.

While international regulations still allow for continued use of some incendiary weapons, quite a number of financial institutions and their research providers consider incendiary weapons, and white phosphorus in particular, as 'controversial'.

This paper draws a connection between the human cost of incendiary weapons, international law, key producers, and divestment policies of financial institutions.

The Convention on Certain Conventional Weapons (CCW) regulates the use of incendiary weapons in its Protocol III. This protocol is formulated around the design of the weapons, and not so much the impact they have on civilians, however. Its definition and regulations, formulated more than forty years ago, are outdated and lead to dangerous loopholes in existing international law that allow for continued use and inadequate protection of civilians.

Since the 2000s, more and more financial institutions are excluding incendiary weapons from their portfolio. Following IHL in its general provisions rather than Protocol III, they focus on the effects of incendiary weapons and the civilian harm they cause when making their investment choices. Many financial institutions conclude that they do not want to be involved with producers of incendiary weapons or its components.

Humanitarian disarmament treaties like the bans on landmines, cluster munitions and nuclear weapons have led many financial institutions to investigate their financial links to arms producers in general. In doing so, they followed the logic of these treaties, and concluded that the underpinnings of these treaties should lead to policy to exclude producers of white phosphorus as well.

PAX calls upon states to take leadership in preventing the civilian harm these weapons cause. We call upon states, most notably the CCW High Contracting Parties, to review and strengthen international law on incendiary weapons. States should ban the use of all incendiary weapons in at least populated areas and adopt an effects-based definition in Protocol III that covers multipurpose munitions such as white phosphorus. A complete ban on the use of incendiary weapons would benefit civilians most.

Introduction

"Everything caught fire. My husband and four of my children burned alive in front of my eyes; my baby girl, …., my only girl, melted in my arms. How can a mother have to see her children burn alive?"

Sabah Abu Halima, survivor of a 2009 incendiary weapon attack in Palestine.[1]

Incendiary weapons produce heat and fire through the chemical reaction of a flammable substance.[2] While existing regulations in Protocol III of the Convention on Certain Conventional Weapons restricts their use, the protocol contains certain loopholes that allow for continued use.

The human suffering inflicted by these weapons is extremely agonizing. Victims often experience immediate and lifelong physical pain, as well as profound psychological and socioeconomic problems.

In the past fifteen years, incendiary weapons have been used at least in Afghanistan, Palestine, Iraq, Syria, Ukraine, and Yemen, and there have been allegations of use in other places.[3] Reports of civilian casualties and survivors' testimonies about incendiary weapon attacks prove that existing international law by no means provides sufficient protection to civilians.

This paper first of all describes the different aspects of civilian harm caused by incendiary weapons. Chapter one lays out both the direct and indirect aspects of civilian harm, and describes existing rules in international law in CCW Protocol III.

In the second chapter we look at several types of incendiary weapons, their key producers, and instances of use in Palestine, Ukraine, and Syria, illustrating the link between civilian harm and the industry behind these weapons.

Lastly we look at a sample of policies of financial institutions that have excluded investments in incendiary weapons, providing a comparison of whether and why some financial institutions add incendiary weapons, and in particular white phosphorus, to their divestment policies.

This paper is not meant to provide an exhaustive overview of all companies that are involved in

1 Amnesty International, 'Operation "Cast Lead": 22 Days of Death and Destruction', July 2009, p. 28, available at: https://www.amnesty.or/en/documents/MDE15/015/2009/en/.

2 Human Rights Watch and Harvard Law School's International Human Rights Clinic (IHRC), 'They Burn Through Everything', November 2020, p. 1, available at: https://www.hrw.org/sites/default/files/media_2020/11/arms1120_web.pdf.

3 Reaching Critical Will, CCW report, article by Bonnie Docherty, November 2018, p. 5, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/ccw/2018/hcp-meeting/CCWR6.12.pdf.

Incendiary elements of artillery shells ignite over the Palestinian town of Beit Lahia in the northern Gaza strip on January 10, 2009. © AFP Photo/ Patrick Baz.

the production of incendiary or multipurpose munitions, nor does it provide a complete list of all financial institutions that have divested from these weapons. Instead, we have created two shortlists based on geographical diversity and prominence to create an image of current types of incendiary weapons and how the financial sector deals with the issue.

While we have not strived to be comprehensive in our approach, we believe that the trends described in this paper are illustrative of the grave civilian harm caused by incendiary weapons, the shift to stigmatization in the financial sector, and why international law should be strengthened.

1. Civilian Harm from Incendiary Weapons and Overcoming the Limitations of Protocol III

"Burn injuries inflict immense physical and emotional suffering, which will be aggravated in the absence of specialized care. Severe burns affect so much more than skin, with almost every organ system in the body potentially affected, and their lifelong consequences constitute a chronic condition. In addition, survivors often face psychological trauma and societal stigma. The injury completely changes the trajectory of one's life, and redefines the kind of life one will have, the issues one faces, and how one has to manage them."

Dr Jeffrey Schneider, Medical Director, Burn and Trauma Rehabilitation, Spaulding Rehabilitation Hospital, Harvard Medical School, Boston.

Incendiary weapons are one of the most brutal means of modern warfare. They cause excruciating physical pain and the harm often reverberates into profound psychological and socioeconomic problems. This chapter details the direct and indirect civilian harm effects, followed by an explanation of the main limitations of Protocol III and the required action from states to close its loopholes and prevent further suffering.

1.1 Civilian harm effects

In this paper, we define civilian harm as:

"Negative effects on civilian individual or community well-being caused by use of force in hostilities. Effects can occur directly (death, physical or mental trauma, property damage) or indirectly through the destruction of critical infrastructure, disruption of access to basic needs and services, or loss of livelihood".[4]

1.1.1 DIRECT EFFECTS

Incendiary weapons inflict extremely painful burns, sometimes to the bone. These burns can be fatal or cause severe and lifelong injuries that are physical and psychological. In many cases,

4 Erin Bijl, Welmoet Wels, and Wilbert van der Zeijden, 'On Civilian Harm: Examining the Complex Negative Effects of Violent Conflict on the Lives of Civilians', June 2021, p. 296, available at: https://paxforpeace.nl/media/download/PAX-PoC-Book-On-Civilian-Harm.pdf.

over 15 percent of the body's surface area is harmed by burn wounds.[5] Inflamed airways and toxic fumes can cause respiratory damage. The initial injuries can also lead to infection, shock, extreme dehydration and organ failure. Incendiary weapons are especially lethal for children, as the younger the victim and the larger the surface of burns, the lower the chances of survival are.[6]

In the longer term, survivors experience additional forms of harm, including intense chronic pain, severe scarring, contractures, disabilities, hypersensitivity to temperature, excessive skin dryness, dead nerve endings, brain damage, and stunted growth in children.[7] The long treatment and recovery often have a great impact on patients. A doctor likened the daily changing of dressings and removal of dead skin to being "flayed alive".[8] Remnants of, for example, white phosphorus continue to enlarge and deepen the wounds, and can reignite every time dressings are changed and the burns are exposed to oxygen.[9]

The incident, and the resulting injuries and treatment, often cause immediate and long-term psychological trauma. Survivors can suffer from post-traumatic stress disorder, anxiety, and depression. Many survivors relive the incident in recurring nightmares and feel lonely, despondent and helpless.[10]

Finally, incendiary weapons can destroy civilian infrastructures, such as homes, markets, hospitals and schools,[11] and can demolish property, damage crops, and kill livestock.[12]

1.1.2 INDIRECT EFFECTS

Civilians are affected for many years after the attack with the harm extending to socioeconomic areas of life. Survivors often experience social isolation and exclusion due to their appearance-changing scarring and psychological status. Children sometimes cannot return to school due to a lack of accommodation of their disabilities or out of fear of being bullied.[13] The destruction of civilian infrastructure can moreover lead to displacement.[14]

Survivors often also experience economic harm from the attack. They may be unable to return to work because of long-term disabilities, stigma or psychological problems resulting from their injuries.

5 Human Rights Watch and IHRC, 'They Burn Through Everything', November 2020, p. 4-7, available at: https://www.hrw.org/sites/default/files/media_2020/11/arms1120_web.pdf.

6 Ibid., p. 5.

7 Ibid., p. 10-15.

8 Denise Chong, 'The Girl in the Picture: The Story of Kim Phuc, the Photograph, and the Vietnam War', January 1999, Penguin Group, p. 94.

9 Human Rights Watch and IHRC, 'Incendiary Weapons: Assessing the Problem', February 2021, p. 2, available at: https://www.hrw.org/sites/default/files/media_2021/02/IW_final2.pdf.

10 Human Rights Watch and IHRC, 'They Burn Through Everything', November 2020, p. 13-15, available at: https://www.hrw.org/sites/default/files/media_2020/11/arms1120_web.pdf.

11 Human Rights Watch and IHRC, 'Standing Firm Against Incendiary Weapons', November 2019, available at: https://www.hrw.org/news/2019/11/11/standing-firm-against-incendiary-weapons.

12 Human Rights Watch and IHRC, 'They Burn Through Everything', November 2020, p. 1, available at: https://www.hrw.org/sites/default/files/media_2020/11/arms1120_web.pdf.

13 Ibid., p. 16.

14 Human Rights Watch and IHRC, 'Standing Firm Against Incendiary Weapons', November 2019, available at: https://www.hrw.org/news/2019/11/11/standing-firm-against-incendiary-weapons.

Palestinian civilians and medics run to safety during a white phosphorus attack on a school in Gaza, January 17, 2009. © AFP Photo/ Mohammed Abed.

Damage of property and infrastructure can be financially draining, while the long-term treatment involves high medical costs placing an additional financial burden on survivors and their communities.[15]

1.1.3 LACK OF MEDICAL ACCESS, RESOURCES AND EXPERTISE

The difficult recovery is exacerbated by a lack of medical access, resources and expertise in conflict areas. Poor infrastructure, long travel distances and lack of medical transport make it difficult for victims to reach the hospital and receive adequate medical care. Supplies and equipment for treating burn injuries are often not available, and intensive care facilities are often not in place. The chance of adequate treatment is lowered even more by the shortage of medical personnel in conflict areas, lack of expertise in burn care, unavailability of information that allows medics to recognize the specific weapons that caused the burns, and gaps in the continuity of long-term care. Lastly, psychological support is frequently deprioritized and staff themselves can suffer from trauma.[16]

15 Human Rights Watch and IHRC, 'They Burn Through Everything', November 2020, p. 17, available at: https://www.hrw.org/sites/default/files/media_2020/11/arms1120_web.pdf.

16 Ibid., p. 19-21; Human Rights Watch and IHRC, 'Incendiary Weapons: Assessing the Problem', February 2021, p. 2, available at: https://www.hrw.org/sites/default/files/media_2021/02/IW_final2.pdf.

1.2 Limitations of Protocol III and required action

Protocol III of the Convention on Certain Conventional Weapons is the only international instrument that regulates the use of incendiary weapons. It restricts the use of incendiary weapons on "concentrations of civilians" and "forests or other kinds of plant cover".[17]

However, Protocol III has two major loopholes that limit its legal and normative power. First, the current definition in Article 1 of the protocol does not cover multipurpose munitions, such as white phosphorus. The definition is based on the purpose for which the weapons were "primarily designed", namely "to set fire to objects or cause burn injury to persons…", rather than on their effects.[18] This definition excludes, for example, white phosphorus, which is primarily designed to create a smokescreen yet inflicts particularly deep burns and can reignite when in touch with oxygen.[19] Whether a certain munition falls outside the scope of the protocol's regulations may depend on the description of its purpose provided by the producer, manufacturer and/or user, rather than on its effects.[20]

Second, Article 2 prohibits the use of air-delivered incendiary weapons on concentrations of civilians, but has weaker regulations for ground-launched models. The protocol allows ground-launched attacks when "the military objective is clearly separated from the concentration of civilians" and "all feasible precautions are taken" to minimize impact on civilians.[21] Evidence indicates however that both air-delivered and ground-launched incendiary weapons cause grave civilian harm. The distinction between modes of delivery therefore makes the protocol inconsistent and incapable of providing sufficient protection to civilians.[22]

Civil society organizations, including Human Rights Watch and PAX, have often expressed concerns about these shortcomings, most recently in a joint statement on incendiary weapons during the UN General Assembly First Committee in October 2021.[23] The International Committee of the Red Cross has highlighted the human harm caused by incendiary weapons and weapons with incendiary

17 Convention on Certain Conventional Weapons Protocol III on Prohibitions or Restrictions on the Use of Incendiary Weapons, adopted October 10, 1980, entered into force December 2, 1983, art. 2, available at: https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/.

18 ""*Incendiary weapon" means any weapon or munition which is primarily designed to set fire to objects or to cause burn injury to persons through the action of flame, heat, or combination thereof, produced by a chemical reaction of a substance delivered on the target".* Convention on Certain Conventional Weapons Protocol III on Prohibitions or Restrictions on the Use of Incendiary Weapons, adopted October 10, 1980, entered into force December 2, 1983, art. 1, available at: https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/.

19 Human Rights Watch and IHRC, 'Incendiary Weapons: Recent Use and Growing Opposition', p. 10-12, November 2014, available at: https://www.hrw.org/news/2014/11/10/incendiary-weapons-recent-use-and-growing-opposition.

20 Human Rights Watch and IHRC, 'From Condemnation to Concrete Action: A Five-Year Review of Incendiary Weapons', November 2015, p. 6-7, available at: https://www.hrw.org/news/2015/11/05/condemnation-concrete-action-five-year-review-incendiary-weapons.

21 Convention on Certain Conventional Weapons Protocol III on Prohibitions or Restrictions on the Use of Incendiary Weapons, adopted October 10, 1980, entered into force December 2, 1983, art. 2, available at: https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/.

22 Human Rights Watch and IHRC, 'Incendiary Weapons: Recent Use and Growing Opposition', November 2014, p. 10-12, available at: https://www.hrw.org/news/2014/11/10/incendiary-weapons-recent-use-and-growing-opposition.

23 'Statement on Incendiary Weapons, General Assembly First Committee', Geneva, October 8, 2021, available at: https://www.hrw.org/news/2021/10/08/statement-incendiary-weapons-un-general-assembly-first-committee.

effects and called on states to consider the adequacy of Protocol III.[24] Those who have treated or experienced burns and thus understand the suffering experienced by incendiary weapon victims have also called for stronger laws on incendiary weapons. At the time this paper was written, an open letter from healthcare professionals and burn survivor organizations, which was launched in November 2021, had already attracted dozens of signatures from seven countries.[25]

States have a key responsibility in preventing further civilian harm, as they are the only actors that have decision-making power in the CCW, or that can agree upon legally binding international treaties of other kinds. A growing number of states has raised concerns about the use of incendiary weapons, but thus far there have been no concrete results.[26] High Contracting Parties of the CCW should therefore initiate a process to discuss the (in)adequacy of Protocol III, condemn the use of incendiary weapons and recognize the harm they cause, and finally close the protocol's loopholes by adopting an effects-based definition and a prohibition on the use of both air- and ground-launched incendiary weapons in at least populated areas. A complete ban on the use of incendiary weapons would benefit civilians most.

Due to the consensus mechanism within the CCW, a small group of states is able to block progress and instead moves the debate away from revising the protocol towards whether it should be discussed at all. Indeed, the protocol was on the agenda of the CCW meetings of states parties in 2017-2018, but was removed in 2019 because a few High Contracting Parties opposed it. It is crucial that these states in particular acknowledge the immense humanitarian consequences incendiary weapons cause and consent to CCW discussions of Protocol III.

Outside of the CCW, states can also make progress on stigmatizing the use of incendiary weapons. An example is how in December 2018 the European Parliament proposed a list of weapon types to be excluded from the European Defence Fund, which contained "incendiary weapons including white phosphorus". Unfortunately, this part was removed from the final regulation.[27]

The next chapter zooms in on different incendiary weapon types, key producers, and instances of use in Palestine, Ukraine and Syria to illustrate the link between civilian harm and the industry behind these weapons.

24 'Statement of the International Committee of the Red Cross (ICRC) to the CCW Meeting of High Contracting Parties', Geneva, November 14, 2019, available at: https://www.icrc.org/en/document/states-autonomous-weapons.

25 'Open Letter on Incendiary Weapons from Healthcare Professionals and Burn Survivor Organizations', November 2021, available at: https://humanitariandisarmament.org/initiatives/open-letter-on-incendiary-weapons/.

26 Human Rights Watch and IHRC, 'Incendiary Weapons: Assessing the Problem', February 2021, p. 2, available at: https://www.hrw.org/sites/default/files/media_2021/02/IW_final2.pdf.

27 V.E., 'The European Defence Fund and its Impact on the EU Defence Industry', May 2021, available at: https://vigeo-eiris.com/wp-content/uploads/2021/05/EuropeanDefenceFund.pdf.

2. Production and Use of Incendiary Weapons

In this chapter we look at several types of incendiary weapons, their key producers, and instances of use in Palestine, Ukraine and Syria, illustrating the link between civilian harm and the industry behind these weapons.[28]

2.1 Incendiary payloads

As outlined in the introduction, incendiary warheads produce heat and fire through a chemical reaction of a flammable substance. It is well known that white phosphorus (WP) has this ability, in addition to the ability to create smoke screens. Other materials that produce incendiary effects include thermite (aluminium powder mixed with iron oxide), magnesium powder, and liquid hydrocarbons, such as napalm.

Fuel-air explosives (FAE) and thermobaric weapons (TBX) warheads are sometimes called incendiary warheads, which may be somewhat inaccurate, as those warheads should rather be called explosive, or "enhanced blast", and are therefore not included here.[29]

2.2 Producers of incendiary weapons and case studies

Our research reveals a few dozen producers of incendiary weapons that are in military arsenals and/or in production. From this longer list, we have selected seventeen companies for our shortlist below. These companies were selected because they represent different countries or make commonly used products.

- *Arcus (Bulgaria)*
  Bulgarian company Arcus offers on its website 23x152mm incendiary rounds for ZU-23 anti-aircraft guns and 30x165mm incendiary rounds for GSh-6-30 antiaircraft guns.[30]

- *BAE Systems (United Kingdom)*
  British company BAE Systems produces the L42A3 WP 81mm mortar bomb.[31] It is

28 The companies reported here are mostly based on Jane's Weapons: Ammunition 2019-2020, which we consider as a reliable source. Any additions or comments to the listed information are welcomed at info@paxforpeace.nl.

29 Ove Dullum, 'The Rocket Artillery Reference Book', June 2010, Norwegian Defence Research Establishment (FFI), available at: https://publications.ffi.no/nb/item/asset/dspace:3520/09-00179.pdf.

30 Arcus JSC, 'Ammunition', available at: https://arcus.bg/ammunition/.

31 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 653-4.

intended for use with point-detonating fuzes. The smoke mortar bomb is in use with the British Army.[32]

- *Defence Industries Organisation (DIO) (Iran)*
  Ammunition & Metallurgy Industries Group (AMIG) is part of Iran's state-owned military-industrial conglomerate DIO, and produces the 60mm M49A2, 81mm and 120mm M48 mortar bombs with white phosphorus for smoke effects. According to Jane's, it is in production and available, and in service with the Iranian armed forces.[33] The first two appear to be derived from US versions, whereas the 120mm variant looks nearly identical to the M48 manufactured by Israeli company Soltam (now Elbit Systems).

- *Dunarit (Bulgaria)*
  Dunarit is another Bulgarian ammunition producer of incendiary rounds. Among others it produces 60, 81, 82 and 12mm mortar rounds, of which the smoke variant contains WP and "is designed to create smoke screen, causes fire in enemy locations, destroys flammable buildings and structures, warehouses with fuel and lubricants".[34] It also offers the 82mm mortar bomb D-832 DU with WP, according to Jane's.[35] Another incendiary product are two variants of 120mm smoke mortar rounds.[36]

- *Elbit Systems (Israel)*
  Elbit subsidiaries Israel Military Industries (IMI) and Soltam Systems produce smoke munitions with white phosphorus warheads. IMI produces the 60mm M817 and M818 SMK-WP mortar bombs. Jane's describes both variants as "in production and available", as well as "in service with the Israeli Armed Forces".[37] Soltam makes the 81mm M61A1 WP, M64 WP and M98 WP mortar bombs (standard-range, long-range and extended-range respectively) and the 120mm M84 WP smoke, M95 WP smoke and M110 WP smoke.[38] All six variants are quoted by Jane's as "in production and available".[39] In a 2019 presentation, Elbit acknowledges the harm WP ammunition can cause and Israel's recent policy not to use WP in "urban terrain involving civilians", for which it has developed the Smoke HC (hexachloroethane) version.[40]

32 Ibid.

33 Ibid., p.624-5, 650-1, 693-4.

34 Ibid., p. 625; Dunarit, '60mm Mortar Smoke Round', available at: http://www.dunarit.com/products/60-mm-mortar-smoke-round/?lang=en;
Dunarit, '81mm Mortar Smoke Round', available at: http://www.dunarit.com/products/81-mm-mortar-smoke-round/?lang=en;
Dunarit, '82mm Mortar Smoke Round', available at: http://www.dunarit.com/products/82-mm-mortar-smoke-round/?lang=en.

35 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 681-2.

36 Dunarit, '120mm Mortar Smoke Round', available at: http://www.dunarit.com/products/120-mm-mortar-smoke-round/?lang=en;
Dunarit, '120mm Mortar Smoke Round Long Range', available at: http://www.dunarit.com/products/120-mm-mortar-smoke-round-long-range/?lang=en.

37 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 633.

38 Ibid., p.670-1 and 720-1.

39 Also see: Elbit Systems, 'Mortar Ammunitions', available at: https://elbitsystems.com/products/artillery-systems/mortar-ammunitions/.

40 NDIA, 'Elbit Systems, Land: Comprehensive Advanced Artillery Solutions', June 2019, available at: https://ndiastorage.blob.core.usgovcloudapi.net/ndia/2019/armament/Schirding.pdf.

White phosphorus attack in Sayafa, Palestine (2009)

In the afternoon of January 4, 2009, the home of the Abu Halima family in the north-west of Gaza was hit by white phosphorus artillery shells. The fire from the white phosphorus directly killed five family members - including four children - and injured five more.[41] Ghada Abu Halima passed away from her injuries nearly three months after the attack. This painfully demonstrates the inhumane impact of the substance. The white phosphorus, still inside her body, had triggered a chain reaction that shut down her cells.[42]

Shortly after the attack, Amnesty International and Human Rights Watch visited the site. The family's son Mahmoud showed Amnesty International the remnants of the 155m artillery white phosphorus carrier shells that had struck the roof. Outside the house, the researchers found other fragments of the shells.[43] According to Human Rights Watch, the shells were made in the United States and each contained the same mark: THS89D112-003 155MM M825E1.[44] Their following report explains that "THS89D is the manufacturer identification code denoting that the shells and contents were produced in April 1989 by Thiokol Aerospace, which operated the Louisiana Army Ammunition Plant at the time; 112-003 are the interfix and sequence numbers, which denote that several lots of the same ammunition were being produced simultaneously; 155mm stands for the caliber of the artillery shell. M825E1 is the US military designation for an older remanufactured M825 white phosphorus shell that has been brought up to the current M825A1 standard".[45] These specific artillery shells can spread burning white phosphorus wedges across a distance of 125 meters in every direction, generating broad area effects.[46]

Photographs from Reuters news agency moreover revealed an Israeli IDF artillery unit close to Gaza holding M825A1 projectiles on the day of the incident with the lot number PB-91J011-002A. This reveals that the shells were produced in the United States at the Pine Bluff Arsenal in September 1991.[47] [48]

Israel's extensive use of white phosphorus in Gaza in 2009 provoked international and domestic outrage. The growing stigmatization of incendiary weapons led Israel to change

41 Amnesty International, 'Operation "Cast Lead": 22 Days of Death and Destruction', July 2009, p. 28-29, available at: https://www.amnesty.org/en/documents/MDE15/015/2009/en/.

42 B'Tselem, 'Testimony: Members of Abu Halima family killed and burned in army's bombing of their house, 4 January 2009' available at: https://www.btselem.org/testimonies/20090104_abu_halima_home_set_on_fire_by_shelling; B'Tselem, 'Just the Tip of the Iceberg: One Victim a Year, Times Thirty Years', 2019, available at: https://www.btselem.org/sites/default/files/publications/30_years_just_the_tip_of_the_iceberg_eng.pdf.

43 Amnesty International, 'Operation "Cast Lead": 22 Days of Death and Destruction', July 2009, p. 29, available at: https://www.amnesty.org/en/documents/MDE15/015/2009/en/.

44 Human Rights Watch, 'Rain of Fire: Israel's Unlawful Use of White Phosphorus in Gaza', March 2009, p. 13, available at: https://www.hrw.org/report/2009/03/25/rain-fire/israels-unlawful-use-white-phosphorus-gaza.

45 Ibid.

46 Ibid., p. 8.

47 Ibid., p. 13.

48 Pine Bluff is a government-owned facility that "loads, assembles, and packs" (LAP) all of the components into the munition. The WP cartridge/contents is made at another government-owned facility called Crane Army Ammunition Activity in Indiana and is shipped in a cartridge to Pine Bluff. See: https://www.asafm.army.mil/.

its policy and practice. During its 2014 military operations there were no reported incidents of the use of white phosphorus munitions.[49] This example hence demonstrates the impact of stigmatizing incendiary weapons, and white phosphorus in particular, on state positions.

- *General Dynamics (United States)*
  The Ordnance and Tactical Systems division of General Dynamics produces WP ammunition at factories in Canada, Spain and the US. Examples include the 60mm C157 WP mortar bomb, 70mm Hydra 70 M156 WP artillery rockets and the 155mm M110 and M825A1 WP smoke projectiles.[50] The M825 is designed to produce a smoke screen on the ground for a duration of 5 to 15 minutes. The payload consists of 116 WP saturated felt wedges. The case study on Palestine shows the impact of the M825, although that specific case deals with a variant previously produced by another company.

- *Hirtenberger Defence Systems (Austria)*
  Austrian Mortar company Hirtenberger produces three different mortar rounds containing WP: the 60mm SMK-WP Mk2, the 81mm SMK-WP Mk4, and the 120mm SMK-WP Mk2.[51]

- *MAXAM (Spain)*
  Spanish company Explosivos Alaveses or EXPAL, part of MAXAM, produces the legacy 105mm ME60A1 smoke/WP and 155mm ME110A2 smoke WP artillery munitions[52], based on US technology. Furthermore, EXPAL's 60mm, 81mm and 120mm AE mortar bombs are available in a WP smoke version and, according to Jane's, are "available for purchase".[53]

- *MKEK (Turkey)*
  Turkish company MKEK produces a range of mortar bombs for use in 120mm rifled mortars. One of seven versions of this type is the MOD 226 Smoke WP. According to Jane's, this range of bombs is in production and available, and in service with the Turkish armed forces.[54]

49 Human Rights Watch and IHRC, 'From Condemnation to Concrete Action: A Five-Year Review of Incendiary Weapons', November 2015, p. 16, available at: https://www.hrw.org/news/2015/11/05/condemnationconcrete-action-five-year-review-incendiary-weapons.

50 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 630-1, 648-50, 865-6, 905-8.

51 Hirtenberger, '60mm System', available at: https://hds.hirtenberger.com/60mm-system/; Hirtenberger, '81mm System', available at: https://hds.hirtenberger.com/81mm-system/; Hirtenberger, '120mm System', available at: https://hds.hirtenberger.com/120mm-system/; Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 632, 658-9, 699-700.

52 Expal, 'Field Artillery Munition', available at: https://www.expalsystems.com/en/global-solutions/munitions/field-artillery; Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 751-3, 848-50.

53 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 629-30, 656, 696.

54 Ibid., p. 707-8.

- *Nexter (France)*

  France-headquartered land forces equipment and ammunition producer Nexter makes a wide range of mortar and artillery rounds with WP produced by its three ammunition companies. One of them is Mecar, based in Belgium. Their range of smoke/WP munitions include: M711 WP 60mm mortar (in development); M513A1 WP 81mm mortar; 90mm anti-tank M693A2 SMK (WP)-T; 90mm SMK-WP OFUM-F2 anti tank (F3/F4 (WP)-T (M667) is the current designated production model); 105mm M416A1 SMK (WP)-T; 105mm Smoke/WP OFUM PH 105 F1 anti-tank; and the 120mm M532A1/A2 (SMK-WP) mortar rounds.[55] Another Nexter company producing WP munitions is Simmel Difesa in Italy, which produces the legacy M60 105mm smoke artillery cartridge, under US license.[56] Its 122mm Firos 25 and 30 artillery rockets are available in smoke WP versions. Firos rockets can be fired from BM-21 Grad multiple rocket launchers, but are primarily intended for the Firos rocket system.[57] For 155mm field artillery systems, Simmel produces the IM150 smoke WP – based on the original US M110 WP smoke.[58] In its range of mortar bombs, Simmel has produced the 81mm S2A1 WP version, which, according to Jane's, is "in service with a number of armed forces".[59] Finally, Nexter Munitions in France produces the 105mm LG1 field artillery guns for which it has produced the WP-containing G1 and G2 (first and second generation) smoke versions.[60] These WP munitions are for export, as France does not use 105mm artillery.

55 Ibid., p. 481-5, 503-5, 533-4, 636, 661-2, 706.

56 Ibid., p. 751-3.

57 Ibid., p. 918-9.

58 Ibid., p. 848-50.

59 Ibid., p. 667-670.

60 Ibid., p. 762-3.

Attacks with Grad 9M22S rockets in Ilovaisk and Luhansk, Ukraine (2014)

In July and August 2014, civilians in the cities Ilovaisk and Luhansk in the East of Ukraine saw something similar to fireworks falling down from the sky. Residents of Ilovaisk reported how the attack went on for three nights and burned three homes. In Luhansk, residents described the same event taking place for one night, leaving burning remnants that set multiple houses on fire.[61]

During field missions to the cities in August and October 2014, researchers from Human Rights Watch found pieces of hexagonal incendiary capsules at both sites. In a field 18 kilometers from Ilovaisk an abandoned firing position was discovered with several misfired 122mm Grad 9M22S rockets. These rockets were developed by the Russian Splav State Research and Production Association in 1971.[62]

This producer is mentioned further below under "Rostec (Russia)". Grad rockets are ground-launched and can be fired in a salvo of up to 40 rockets.[63] This type of rocket carries a warhead that contains 180 incendiary elements, each of them having a burning time of at least two minutes.[64]

9M22S Grad incendiary rocket, found 18km from Ilovaisk. © Mark Hiznay/Human Rights Watch, October 2014.

Part of the impact area inside of Ilovaisk. © Mark Hiznay/Human Rights Watch, October 2014.

61 In Luhansk it is unclear whether the fires were due to the "fireworks" or Grad rockets launched at the same time. It also remains unclear who launched the attacks on both cities. Human Rights Watch and IHRC, 'Incendiary Weapons: Recent Use and Growing Opposition', November 2014, p. 6, available at: https://www.hrw.org/news/2014/11/10/incendiary-weapons-recent-use-and-growing-opposition.

62 Ibid.; Yuri Lyamin and Michael Smallwood, '9M22S Incendiary Rocket Components Documented in Eastern Ukraine', post to "The Hoplite" (blog), Armament Research Services, October 2014, available at: http://armamentresearch.com/9m22s-incendiary-rocket-components-documented-in-eastern-ukraine/.

63 AOAV, 'What is a grad', June 2021, available at: https://aoav.org.uk/2021/what-is-a-grad/.

64 Yuri Lyamin and Michael Smallwood, '9M22S Incendiary Rocket Components Documented in Eastern Ukraine', post to "The Hoplite" (blog), Armament Research Services, October 2014, available at: http://armamentresearch.com/9m22s-incendiary-rocket-components-documented-in-eastern-ukraine/.

- *NORINCO (China)*
  NORINCO, or China North Industries Corporation, is probably China's largest ammunition producing company and has a long history of producing a wide range of white phosphorus smoke projectiles. Its 40mm round for Type 69-1 (or RPG-7) rocket-propelled grenade launchers is "in service with the Chinese armed forces and widely exported", according to Jane's. The high-explosive incendiary round was reportedly developed for jungle and mountain operations and contains 2,000-3,000 chemical incendiary pellets.[65] The 50mm QLT89 "silent mortar" can fire DNF/R99 smoke/incendiary rounds, which produce 50 incendiary fragments that burn at 1,000 degrees Celsius for 15 seconds.[66] Produced by Poly Technologies Inc. and marketed by NORINCO, the 81mm Type W87 mortar bomb is produced in many different variants, including three incendiary versions.[67] According to Jane's, it is in production, available for export and in service with the Chinese People's Liberation Army (PLA). NORINCO's 122mm ammunition range contains two incendiary versions: the D-30 WP/smoke and the PL96 Incendiary projectile, which contain 23 incendiary pellets of unspecified composition; both are "in production and in service", according to Jane's.[68] In the 155mm range there is the BES5 ERFB smoke WP round (previously known as M92).[69]

- *Ordnance Factory Board (OFB) (India)*
  India's state-owned OFB's incendiary munitions include a range of mortar bombs, such as the 51mm/2-inch smoke and incendiary version DNF/R99; the 81mm mortar smoke bomb with plasticized white phosphorus and the 120mm Smoke WP.[70]

- *Pakistan Ordnance Factories (POF) (Pakistan)*
  State-owned POF produces a number of incendiary munitions, including the 60mm WP/smoke P2A2, 81mm M57-D A1 and 120mm M44A1 WP smoke mortar bombs.[71]

- *Rheinmetall (Germany)*
  Rheinmetall is one of the largest German arms producing companies. Together with its South African joint-venture Rheinmetall Denel Munition (RDM, formerly Somchem), it produces several WP warheads. These include: the 51mm FLY-K WP smoke M105 mortar bomb, produced together with Swiss Cathyor Engineering, and in service with the French and UAE armed forces; the 60mm Patrol Smoke (WP) mortar bomb, in production and in service with an undisclosed number of countries; and the 155mm ERFB-BB M1 WP/smoke, "production as required".[72]

65 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 310-1.

66 Ibid., p. 621.

67 Ibid., p. 661-4.

68 Ibid., p. 751.

69 Ibid., p. 833.

70 Ibid., p. 621-2, 664-5, 712-3.

71 Ibid., p. 640-1, 665-6, 713.

72 Ibid., p. 623-4, 644-5, 833-4.

- *Roketsan (Turkey)*
  Roketsan originally developed its CiRiT 70mm laser-guided missiles for air-launched applications, primarily on helicopters, as it is employed on Turkey's T-129 and AH-1 series attack helicopters. Roketsan is now developing land-based and maritime applications for the CiRiT. Its Multi-Purpose Warhead is described as "Anti-Armour, Anti-Personnel and Incendiary", and can be used against static and moving targets at ranges up to 8 km.[73]

- *Rostec (Russia)*
  Rostec is a massive Russian state-owned conglomerate, which covers large parts of the Russian arms industry. GNPP Pribor is a Tekhmash company, which in turn is part of Rostec. Pribor produces the 40mm caseless VZG-25 incendiary grenade that creates three "fire islands", or incendiary explosions.[74] It is used with underbarrel grenade launchers.[75] Splav Scientific Production Concern, another Tekhmash company, produces the 220mm TOS-1A MO.1.01.04M.OP incendiary artillery rocket for use with the Uralvagonzavod TOS-1A flamethrower vehicle. While no specifics of the incendiary variant are available, the TOS-1A vehicle is in service with the Russian Federation, Algeria, Armenia, Azerbaijan, Iraq, Kazakhstan and Syria. Splav's 122mm 9M22S incendiary rocket, developed in 1971, is fired by the BM-21 'Grad' multiple launch rocket system and similar systems. This type of rocket has likely been used in Ukraine in mid-2014, which is further detailed in the case study in this chapter. The 9M22S "carries the 9N510 warhead, containing 180 individual incendiary elements. Designed to create large fires in areas of vegetation and other flammable material, these incendiary elements are hexagonal prism shells made of magnesium alloy ML-5, and are filled with a pyrotechnic composition. Each element has a burning time of at least 2 minutes".[76] Another Splav product is the 9M27S 220mm incendiary rocket projectile, a variant of the Uragan rocket.[77] Bazalt is another Rostec company, and produces the ZAB and ZB series air-launched incendiary bombs. These types of bombs have been used in the Syrian case study in this chapter. According to Jane's, ZAB fire bombs "are believed to be in service with Russian and former allied air forces". While having been offered for export in 1996, there are no known exports since then.[78] ZB-500GD and ZB-500ShM napalm type "fire bombs are in service with Russian Federation and allied air forces. In the mid-1990s they were advertised in [...] a Russian Federation air arms catalogue and were offered for export. There are no known exports", according to Jane's.[79]

73 Roketsan, 'Cirit Laser-Guided Missile', available at: https://www.roketsan.com.tr/uploads/docs/kataloglar/ENG/1628389706_cirit-laser-guided-missile.pdf.

74 GRAU index 7P55; Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 297-8.

75 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 939-40.

76 Yuri Lyamin and Michael Smallwood, '9M22S Incendiary Rocket Components Documented in Eastern Ukraine', post to "The Hoplite" (blog), Armament Research Services, October 2014, available at: http://armamentresearch.com/9m22s-incendiary-rocket-components-documented-in-eastern-ukraine/; Also see: N.R. Jenzen-Jones, 'Soviet & Russian 'Flame Weapons': Incendiary, Thermobaric, and FAE Systems in Ukraine', post to "The Hoplite" (blog), Armament Research Services, November 2014, availalbe at: https://armamentresearch.com/soviet-russian-flame-weapons-incendiary-thermobaric-and-fae-systems-in-ukraine/.

77 N.R. Jenzen-Jones, '9M27K series cargo rockets used in Ukraine', post to "The Hoplite" (blog), Armament Research Services, July 2014, available at: https://armamentresearch.com/9m27k-series-cargo-rockets-used-in-ukraine/.

78 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 470-1.

79 Ibid., p. 471.

Attack with ZAB-500 bombs in Urem al-Kubra, Syria (2013)

On August 26, 2013, a school in Urem al-Kubra was hit by an incendiary bomb. Days after the attack, the rubble was still covered in hot smoke and had an acidic, acrid smell.[80] A teacher who witnessed the attack recalled: "I saw bodies, and those bodies were only black. … I came closer to their bodies to know, who are those people? Who are those students? I didn't recognize their faces".[81]

Muhammed Assi, one of the badly injured students, has scars on 85 percent of his body, can no longer use his left hand, and suffers great psychological and social harm. Recollecting the day of the incident, he said: "[W]ords can't describe my feelings, but I saw the fire completely surrounding me from everywhere, and when the breeze blew, it fed oxygen into the incendiary substance and made it burn even stronger". He also described how the medical staff lacked experience with burns from incendiary weapons and started dousing the injured with water and serums, which after less than 60 seconds would multiply the pain. [82]

Eyewitnesses saw an airplane circling in the sky during the attack, identifying it as a MiG fighter jet, possibly a MiG-23. The airplane dropped several incendiary bombs on the school and a building 50 meters away. This while there was no proof of fighters being active in the area.[83]

Based on the remnants and other evidence from the site, and the kind of casualties, Human Rights Watch and the BBC determined the munitions were ZAB-500.[84] In most of the Syrian incendiary weapon attacks documented by Human Rights Watch, one of three types of ZAB-series aircraft bombs manufactured by the Soviet Union was used.[85] After comparing the markings on the bombs and the submunitions/cartridges inside them with Soviet weapons manuals, Human Rights Watch concluded that the ZAB-series were made in the 1970s and early 1980s at state munitions factories.[86]

80 Human Rights Watch and IHRC, 'Incendiary Weapons: Recent Use and Growing Opposition', November 2014, p. 5, available at: https://www.hrw.org/news/2014/11/10/incendiary-weapons-recent-use-and-growingopposition.

81 Pre-recorded video testimony of "Abu Taim" (pseudonym), The Human Cost of Incendiary Weapons event, April 12, 2021, available at: https://humanitariandisarmament.org/2021/05/04/a-burning-issue-the-humancost-of-incendiary-weapons/.

82 Human Rights Watch-IHRC phone interview with Muhammed Assi, October 24, 2020. Also see: Human Rights Watch, 'Incendiary Weapons: Human Cost Demands Stronger Law', November 2020, available at: https://www.hrw.org/news/2020/11/09/incendiary-weapons-human-cost-demands-stronger-law.

83 Human Rights Watch, 'Syria's Use of Incendiary Weapons', November 2013, p. 13-16, available at: https://www.hrw.org/news/2013/11/11/syrias-use-incendiary-weapons.

84 Ibid., p. 14.

85 Human Rights Watch and IHRC, 'From Condemnation to Concrete Action: A Five-Year Review of Incendiary Weapons', November 2015, p. 13, available at: https://www.hrw.org/news/2015/11/05/condemnationconcrete- action-five-year-review-incendiary-weapons,

86 Human Rights Watch, 'Syria's Use of Incendiary Weapons', November 2013, p. 7, available at: https://www.hrw.org/news/2013/11/11/syrias-use-incendiary-weapons.

- *Thales (France)*
  French conglomerate Thales, through its subsidiary TDA, offers two 81mm mortar bombs, the M82 WP and the M96 WP, as well as 120mm WP/smoke mortar bombs.[87]

From the above research it is clear that many producers worldwide are involved in the production of incendiary weapons or parts thereof. Weapons that are not only produced and sold, but are actively used in conflicts and cause great harm to civilians. The link between the defense companies and the use in conflicts is important, because it also brings home the issue of incendiary weapons through the financial institutions that invest in them. There is a growing realization in the financial sector that these links, because of the civilian harm they cause, are not desirable.

In the next chapter we describe a sample of investment policies that indeed exclude financial investments in incendiary weapons.

87 Anthony Williams and Jayesh Dhingra, 'Jane's Weapons: Ammunition 2019-2020', February 2019, IHS Jane's, p. 671-2, 721-2.

3. Financial Institutions Excluding Incendiary Weapons from their Portfolio

In this chapter we look at a sample of policies of relevant actors in the financial sector's responsible investment field. The aim is to provide insights into whether and why financial institutions exclude producers of incendiary weapons, and in particular white phosphorus, from investments.

In recent decades, the financial sector has approached investments in arms producers with more and more caution. There are several reasons for this. First, a number of disarmament treaties has been negotiated and entered into force over the past decades: the Mine Ban Treaty (MBT) (1997), then the Convention on Cluster Munitions (CCM) (2008) and most recently the Treaty on the Prohibition of Nuclear Weapons (TPNW) (2017). It seems that the CCM is the treaty that has had the deepest impact on the financial sector. For the first time, the prohibition on assistance in the production of a weapon, which was included in the convention, was widely interpreted as forbidding any investments in producers of that weapon. This led some countries to adopt legislation prohibiting investments in cluster munitions, and many financial institutions to disinvest.[88] Second, significant civil society campaigning emerged on the issue of investment in producers of controversial weapons, putting pressure on financial institutions to divest from producers of landmines, cluster munitions and nuclear weapons. Lastly, international standards around responsible business conduct have developed that require companies (including financial institutions) to respect human rights. Many financial institutions have included these treaties and standards in their policies.

A scan through the divestment policies of financial institutions known for excluding controversial weapons from their portfolios shows that many financial institutions have excluded producers of incendiary weapons or white phosphorus for years. Financial institutions often base their exclusion on research conducted by a research provider. Because of the influence these research providers have on the actual exclusion lists of financial institutions, it is interesting to look at the way such research providers consider producers of incendiary weapons and white phosphorus.

88 PAX, 'Worldwide Investments in Cluster Munitions; a Shared Responsibility', December 2018, available at: https://paxforpeace.nl/what-we-do/publications/worldwide-investment-in-cluster-munitions-2018.

3.1 Research providers

This section compares the controversial weapons methodologies of four commonly used research providers: Sustainalytics, V.E., ISS-ESG, and MSCI.

Sustainalytics is a research and data provider on Environmental, Social and Governance (ESG) issues. The company helps investors screen companies on a variety of issues, to help investors implement their responsible investment policies. The research provider has a 'Controversial Weapons Radar', on which it says the following:

> *"Under Sustainalytics' methodology, certain weapons are considered controversial due to their disproportionate and indiscriminate impact on civilians, even years after a conflict has ended. The principles of 'distinction' and 'proportionality' are key concepts in international humanitarian law, which regulates the methods, as well as the means, of warfare".* [89]

Sustainalytics considers white phosphorus munitions as controversial weapons and therefore includes them in its controversial weapons research. The company explicitly recognizes that (for instance) white phosphorus is not banned per se, but does consider the substance a controversial weapon because of the disproportionate and indiscriminate impact on civilians in areas where it is used.[90]

V.E. (a merger between former Vigeo and Eiris) is a global provider of ESG solutions. It identifies ten weapon types that are "illegal, regulated, or considered as controversial", and screens companies involved in cluster munitions, anti-personnel landmines, nuclear weapons, biological weapons, chemical weapons, blinding laser weapons, incendiary weapons, non-detectable fragments, depleted uranium weapons and white phosphorus weapons.[91] V.E. lists both incendiary weapons and white phosphorus but does so separately. While white phosphorus weapons may not be viewed as illegal or regulated, their inclusion on the list suggests they are at least considered controversial.

ISS-ESG is the ESG data branch of Institutional Shareholder Services. The company provides voting services as well as ESG research. It does so in the form of 'screening solutions'. Each screening solution provides data to financial institutions on possible risks they run into if they invest in specific companies. Its controversial weapons research product states it is based on IHL and specific arms control instruments. Most of the weapons covered under this research are weapons for which a ban treaty exists, but the list also includes incendiary weapons and white phosphorus, as separate types of controversial weapons. In its explanation of the research methodology, ISS-ESG research indicates they focus on "weapons deemed particularly controversial because of their indiscriminate effects and the disproportionate harm, superfluous injury or unnecessary suffering they cause".[92]

Fund house MSCI provides decision support tools and services to the investment community, including 'ex Controversial Weapons Indexes'. The MSCI Global ex Controversial Weapons Indexes

89 Sustainalytics, 'Controversial Weapons: Regulatory Landscape and Best Practices', June 2019, available at: https://www.sustainalytics.com/esg-research/resource/investors-esg-blog/controversial-weapons-regulatory-landscape-and-best-practices.

90 Ibid.

91 V.E., 'Solutions for Investors, Weapons Screening', 2020, available at: https://vigeo-eiris.com/wp-content/uploads/2021/10/Armes_controversees_1pager_EN.pdf.

92 ISS ESG, 'ISS ESG Controversial Weapons Research', 2021, available at: https://www.issgovernance.com/file/publications/methodology/Controversial-Weapons-Research-Methodology.pdf.

exclude companies involved in: "Cluster Bombs, Landmines, Depleted Uranium Weapons, Chemical and Biological Weapons, Blinding Laser Weapons, Non-Detectable Fragments and Incendiary Weapons (White Phosphorus)".[93] Unlike some other research providers, they treat white phosphorus as a type of incendiary weapon and focus on it: "MSCI ESG Research's incendiary weapons research identifies companies that are involved in the production of weapons using white phosphorus".[94]

While the research providers discussed above approach incendiary weapons and white phosphorus somewhat differently, they all classify these weapons as controversial ones that investment portfolios should be screened for. This common classification differs from the design-oriented definition in Protocol III. It focuses on the impact incendiary weapons have on civilians and the associated reputational risks for financial institutions, rather than on weapons' design features. Importantly, two of the research providers mentioned above explicitly refer to the principles of distinction and proportionality as anchored in IHL.

3.2 Public campaigning

Although public campaigning against investments in incendiary weapon producers has not been as widespread as for example in cluster munitions, there have been some campaigns in response to the civilian harm caused by incendiary weapon use.

Banktrack and Netwerk Vlaanderen, a Dutch and Belgian NGO, published research in 2006 that showed involvement of the Dutch bank ING and the French investor AXA with companies involved in the refurbishment of a US white phosphorus plant. This plant, operated by the US Army and based in Pine Bluff, produced white phosphorus munitions. The NGOs pointed out the responsibilities of these financial institutions towards these companies in light of the use of white phosphorus by the US in Fallujah in 2004, which led to reports of civilian casualties.[95] It should be noted that ING and AXA have since developed policies concerning investments in the arms industry. Both currently consider white phosphorus a controversial weapon and have placed restrictions on investing in its producers.[96]

Another example of external pressure against investments in incendiary weapons involved the New Zealand Superannuation Fund. This sovereign wealth fund, which exists to cover costs of future retirement premiums, invested in Israel Chemicals. A Labor party defense spokesman linked this investment to the use of white phosphorus munitions by Israel in the 2009 Gaza war.[97] A subsidiary

93 MSCI, 'MSCI Global ex Controversial Weapons Indexes Methodology', November 2019, available at: https://www.msci.com/eqb/methodology/meth_docs/MSCI_Global_ex_Controversial_Weapons_Indexes_Methodology_Nov2019.pdf.

94 MSCI, 'MSCI Global ex Controversial Weapons Indexes Methodology', November 2019, p. 9, available at: https://www.msci.com/eqb/methodology/meth_docs/MSCI_Global_ex_Controversial_Weapons_Indexes_Methodology_Nov2019.pdf.

95 Banktrack, 'ING and AXA Invest in the Modernisation of White Phosphorus Weapons', March 2006, available at: https://www.banktrack.org/news/ing_and_axa_invest_in_the_modernisation_of_white_phosphorus_weapons.

96 ING, 'Environmental and Social Risk Framework', available at: https://www.ing.com/MediaEditPage/INGs-Environmental-and-Social-Risk-ESR-policy-framework.htm; AXA Investment Managers, 'Responsible Investing: AXA IM ESG Standards Policy', September 2021, available at: https://www.axa-im.com/sites/corporate/files/2021-09/axa-im-ESG-Standards-Policy-EN-sept-21.pdf.

97 Amnesty International, 'Israel Used White Phosphorus in Gaza Civilian Areas', January 2009, available at: https://www.amnesty.org/en/latest/news/2009/01/israel-used-white-phosphorus-gaza-civilian-areas-20090119/.

of Israel Chemicals, ICL Performance Products, had supplied white phosphorus to the US Army.[98] Responding to the call for divestment from IC, the NZ Superannuation Fund indicated it had not seen proof that Israel had used white phosphorus munitions against civilians.[99]

3.3 A shortlist of divestment policies on incendiary weapons

To provide some examples of the financial sector's divestment policies from incendiary weapons, this paragraph provides a non-exhaustive list of financial institutions that have included incendiary weapons or white phosphorus in their responsible investment policies:

- *PME (the Netherlands)*
  Dutch pension fund PME excludes BAE Systems and Dassault Aviation for involvement in white phosphorus.[100]

- *Canadian T. Rowe Price (Canada)*
  Canadian T. Rowe Price, an investment firm, excludes producers of incendiary weapons, and names CSRA, General Dynamics, General Dynamics Electric Boat, Force Protection and IMI Systems.[101]

- *Blackrock (United States)*
  Blackrock excludes controversial weapons for its European and Middle East customers. This list of excluded weapons includes "incendiary weapons".[102]

- *ABN Amro (the Netherlands)*
  Dutch bank ABN Amro considers "white phosphorus weapons" as controversial, and excludes companies involved in its production from investments.[103]

- *Rabobank (the Netherlands)*
  Dutch bank Rabobank mentions white phosphorus used in incendiary weapons or munitions, as one in a series of controversial weapon types excluded by the bank.[104]

98 Tim Hunter and Steve Kilgallon, 'NZ Super Fund Has Deadly Portfolio', August 2014, available at: https://www.stuff.co.nz/dominion-post/10341818/NZ-Super-Fund-has-deadly-portfolio.

99 NZ Superfund, 'NZ Super Fund Investment in Israel Chemicals', August 2014, available at: https://nzsuperfund.nz/news-and-media/nz-super-fund-investment-israel-chemicals/.

100 PME Pensioenfonds, 'Waarin beleggen we niet?', '(*What do we exclude from Investment?*)', Q4 2021, available at: https://www.pmepensioen.nl/over-pme/beleggen/waarin-niet-beleggen/.

101 T. Rowe Price (Canada), Inc., 'Controversial Weapons Exclusion List', January 2020, available at: https://www.troweprice.com/content/dam/ide/articles/pdfs/2020/q2/t-rowe-price-controversial-weapons-exclusion-list-canada.pdf.

102 BlackRock, 'BlackRock's Baseline Screens in Europe, Middle East and Africa', available at: https://www.blackrock.com/corporate/literature/publication/blackrock-baseline-screens-in-europe-middleeast-and-africa.pdf.

103 ABN AMRO, 'Publically-listed Companies ABN AMRO Excludes Because Of Involvement in Controversial Weapons', June 2021, available at: https://assets.ctfassets.net/1u811bvgvthc/6PMpdRTHmwxBAcMxJck3YX/5dd91711bcc602301dc15f1ab8b63b6f/ABN_AMRO_Controversial_Weapons_List.pdf.

104 Rabobank, 'Global standard on sustainable development', available at: https://www.rabobank.com/en/images/sustainability-policy-framework.pdf.

- *State Street Global Advisors (United States)*
  One of the largest institutional asset managers State Street Global Advisors has white phosphorus on its exclusion list for European markets: "White Phosphorus (WP) is an allotrope of the chemical element phosphorus, which burns fiercely when exposed to oxygen. A WP munition is any projectile (e.g. flares, grenades, or mortars) that is equipped with WP, in order to act as a smoke-producing agent, or as tracer, illumination, or incendiary munition".[105]

- *Commerzbank (Germany)*
  German based Commerzbank indicates in its policy that it does not involve itself in transactions related to controversial weapons, which include incendiary weapons.[106]

- *BBVA (Spain)*
  Spanish bank BBVA indicates it will not provide financial services to companies involved in the production of white phosphorus.[107]

- *ACTIAM (the Netherlands)*
  Dutch asset manager ACTIAM considers "conventional weapons equipped with white phosphorus" controversial.[108]

3.4 Financial institutions and norms

It is striking that numerous financial institutions and their service providers consider incendiary weapons, white phosphorus in particular, as 'controversial'. Quite a few of them do so while pointing to the general provisions in IHL on the nature and use of weapons. These financial institutions and their services providers have concluded that incendiary weapons and white phosphorus should be considered 'controversial', and hence their producers barred from investments.

The norm applied by these financial institutions is IHL in its general provisions rather than the specific provisions in Protocol III. When looking at incendiary weapons in this way, many financial institutions conclude that they do not want to be involved with producers of the weapons or their components. In their analysis, the effects rather than the design and launch mode of incendiary weapons are of concern. This affirms the need to change the design-oriented definition in Protocol III in order to better protect civilians. It also calls for prohibiting the use of all incendiary weapons, regardless of their delivery mechanisms, in at least populated areas.

105 State Street Global Advisors, 'State Street Global Advisors ESG Stock Exclusion List and Methodology in Relation to MSCI Produced Indices', October 2021, available at: https://www.ssga.com/library-content/products/fund-docs/mf/emea/benchmark-information/ssga-esg-stock-exclusionary-screening-methology-emea-en_gb.pdf.

106 Commerzbank, 'Commerzbank policy framework for handling environmental and social risks in its core business', August 2021, available at: https://www.commerzbank.de/media/nachhaltigkeit/ii__positionen___richtlinien_/Commerzbank_ES_Framework_EN_Final.pdf.

107 BBVA, 'Environmental and Social Framework', March 2021, available at: https://shareholdersandinvestors.bbva.com/wp-content/uploads/2021/03/Environmental-and-Social-Framework-_-March-2021.pdf.

108 Actiam, 'Fundamental Investment Principles Companies', March 2019, available at: https://www.actiam.com/siteassets/4_verantwoord/documenten/en/ri_fundamental_investment_principles_companies.pdf.

It is beyond the scope of this paper to examine which events pushed financial institutions to assert such policies. However, it is fairly safe to assume that the spirit of humanitarian disarmament treaties like the bans on landmines, cluster munitions and nuclear weapons have inspired many financial institutions to investigate their exposure to arms producers in general. In doing so, they followed the logic of these treaties, and concluded that the underpinnings of these treaties should lead to policy to exclude producers of incendiary weapons including white phosphorus as well. It is also likely that these developments have been strengthened by the codification of responsible business conduct in norms like the UN Guiding Principles on Business and Human Rights, as well as the OECD Guidelines. These standards expect businesses, including financial institutions, to respect human rights and prevent, mitigate and remediate human rights violations. Combined with the disarmament treaties, they provide a powerful basis for financial institutions to avoid investments in companies involved in the production of weapons that are at high risk of causing indiscriminate and disproportionate harm, including incendiary weapons.

4. Conclusions and Recommendations

This research demonstrates that despite grave humanitarian consequences, incendiary weapons, including white phosphorus, continue to be produced and used.

Incendiary weapons are regulated internationally by Protocol III to the Convention on Certain Conventional Weapons. This protocol has two major loopholes that limit its power, and allow for continuation of some types of incendiary weapons that inflict immense harm to civilians. These loopholes can be closed by adopting an effects-based definition that covers multipurpose munitions such as white phosphorus and a prohibition on the use of both air- and ground-launched incendiary weapons in at least populated areas.

Many financial institutions seem to well understand that incendiary weapons, and notably white phosphorus, cause tremendous harm to civilians. These institutions have been excluding producers of incendiary weapons from investment since divestment from controversial weapons grew in the early 2000s and 2010s. For some financial institutions, the exclusion of producers of incendiary weapons including white phosphorus follows naturally from the general provisions of IHL. These provisions, and the shared goal of preventing civilian harm, underpin specific ban treaties like the bans on cluster munitions and landmines. Some financial institutions that identify these general provisions in their policies conclude white phosphorus should be on their list of exclusions as well.

PAX calls upon states, most notably the CCW High Contracting Parties, to review and strengthen international law on incendiary weapons. High Contracting Parties of the CCW should initiate a process to discuss the (in)adequacy of Protocol III, condemn the use of incendiary weapons and recognize the harm they cause, and finally close the protocol's loopholes by 1) adopting an effects-based definition that covers multipurpose munitions and 2) a prohibition on the use of both air- and ground-launched incendiary weapons in at least populated areas. A complete ban on the use of incendiary weapons would benefit civilians most.

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