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POTENTIALLY LETHAL WEAPONS

Militarising the public space and causing bodily trauma

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EXECUTIVE SUMMARY

Several factors are changing and shaping the model of security in cities and making it evolve. This model has been dominated by the doctrine of public order and the use of State security forces to maintain a specific model of order and security. This model of order restricts and stifles defiance, mobilisations and social protests that have, however, been part of the roots, history and evolution of cities around the world. From Barcelona to Bogota, via Santiago de Chile, Paris, Gitega and Jakarta social demands have helped shape the public space, reclaiming it as a popular space of defiance. If there is something that cities all over the world share, it is that their streets are a collective space for social organisation.

Our current context is complex insofar as the so-called security of the public space or law enforcement is concerned. Cities are being unsettled by the changing scenarios of international politics. The clearest proof of this are the increasingly common assaults and attacks on civilians who live in cities around the world, in particular in the Global South. Many of these attacks are due to terrorism or violent extremism in response to global tensions that are translated into the local context. These attacks serve – especially to the Global North where the minority of them occur – to accelerate the implementation of security measures coming from the international sphere in cities: these are applied by introducing more surveillance cameras, biometric control systems, deploying more security forces, acquiring new types of weapons such as drones and deploying the army in cities under states of emergency, as happened in France following the Bataclan attacks in 2015.

At the same time, different political and social actors justify and legitimise the increase of these measures in the name of a particular model of security. The dynamics of securitisation, based on the control, surveil-

lance and interception of persons who allegedly pose a threat to the status quo, are therefore strengthened. This is happening precisely at a time when the Global Peace Index 2022 has pointed out that violent protests around the world have increased by 49% since 2008 (Global Peace Index, 2022: 23). Strengthened securitisation and the increase in social protests around the world serve to allow governments to rearm as they seek to maintain a certain public order, as well as to bolster research and the manufacture of potentially lethal weapons whose use is growing exponentially, reinforcing and militarising police forces in cities around the world. This growth also benefits a market which, of course, is growing as a result of the social tensions that are being played out in cities, and in which an industrial network of its own is being generated.

These weapons have often brought about widespread controversy regarding their use and the harm they can potentially cause. It has also led to question the role of the security forces, and to ask ourselves, as a society, what it means to build security if going to a demonstration can result in serious bodily injuries for which, all too often, there is no subsequent restorative justice.

At a time when the city is also reclaiming itself as a space of proximity to ensure rights, sovereignty and provide basic needs, increased security measures and the introduction of potentially lethal weapons among the security forces appear to produce a contradictory effect.

This report seeks to be an initial introduction, from the perspective of other security models, and analyses these potentially lethal weapons and the debates that revolve around them in order to assess the impact they have on the construction of a relatively safer world for everyone.

From the analysis conducted in this report, we would like to highlight the following considerations and conclusions:

- The laboratory and experimentation for the use of non-lethal weapons were anti-colonial struggles and revolts. The armed forces of empires fostered the use, research and manufacture of these weapons, followed by a search for a way to contain workers' revolts at the beginning of the 20th century.

- The latest non-binding international regulatory document published on this type of weaponry is the United Nations Human Rights Guidance on the Use of Less Lethal Weapons in Law Enforcement. The Guidance uses the term "less lethal" instead of "non-lethal" and explains that "*the use of any weapon can have fatal consequences*".

- Over the decades, the proliferation of this weaponry, intended primarily for law enforcement and classified as "non-lethal" and without adequate regulation, training, monitoring and lack of accountability, has led to a widespread and global misuse of these weapons, resulting in injury, disability and death. The category "non-lethal" is therefore considered to be a trivialisation of the social impact of these weapons.

- In the analysed case of the Yellow Vests and the protests against pension reforms in France, 24,300 people (±4,200) were injured as a result of the tactics, weapons and violence of the security forces according to the report by the Observatoire des Street-Médics, one of the most thorough on this case. Cranioencephalic injuries, caused by weapons such as police batons (43%), kinetic impact projectiles (13.9%), kinetic impact grenades (17.6), explosive grenades (12.5%) and tear-gas canisters (36.4%), accounted for over one in six of the injuries.

- Police action during Chile's "Social Protests" resulted in at least 3,000 cases of human rights violations caused by firearms and potentially lethal weapons, 460 eye injuries and 34 deaths. During that time, 193,000 tear gas canisters and 45,000 chemical grenades were used. Furthermore, the potentially lethal arsenal acquired by the Chilean police force increased up to 23 times compared to what had been spent from 2018 to October 2019.

- Since the 80s, the deployment of potentially lethal weapons among the police forces in many States has continued to increase. This is clear by the fact that in 1978 only 13 companies in 5 countries manufacturing "non-lethal" weaponry were identified, yet today over 200 have been identified in more than 60 countries.

- Specifically, and with regard to kinetic impact projectiles, the growth in demand over the past 30 years has led manufacturers to diversify this type of weapon to such an extent that today there exists a range of over 75 different typologies of bullets and launchers.

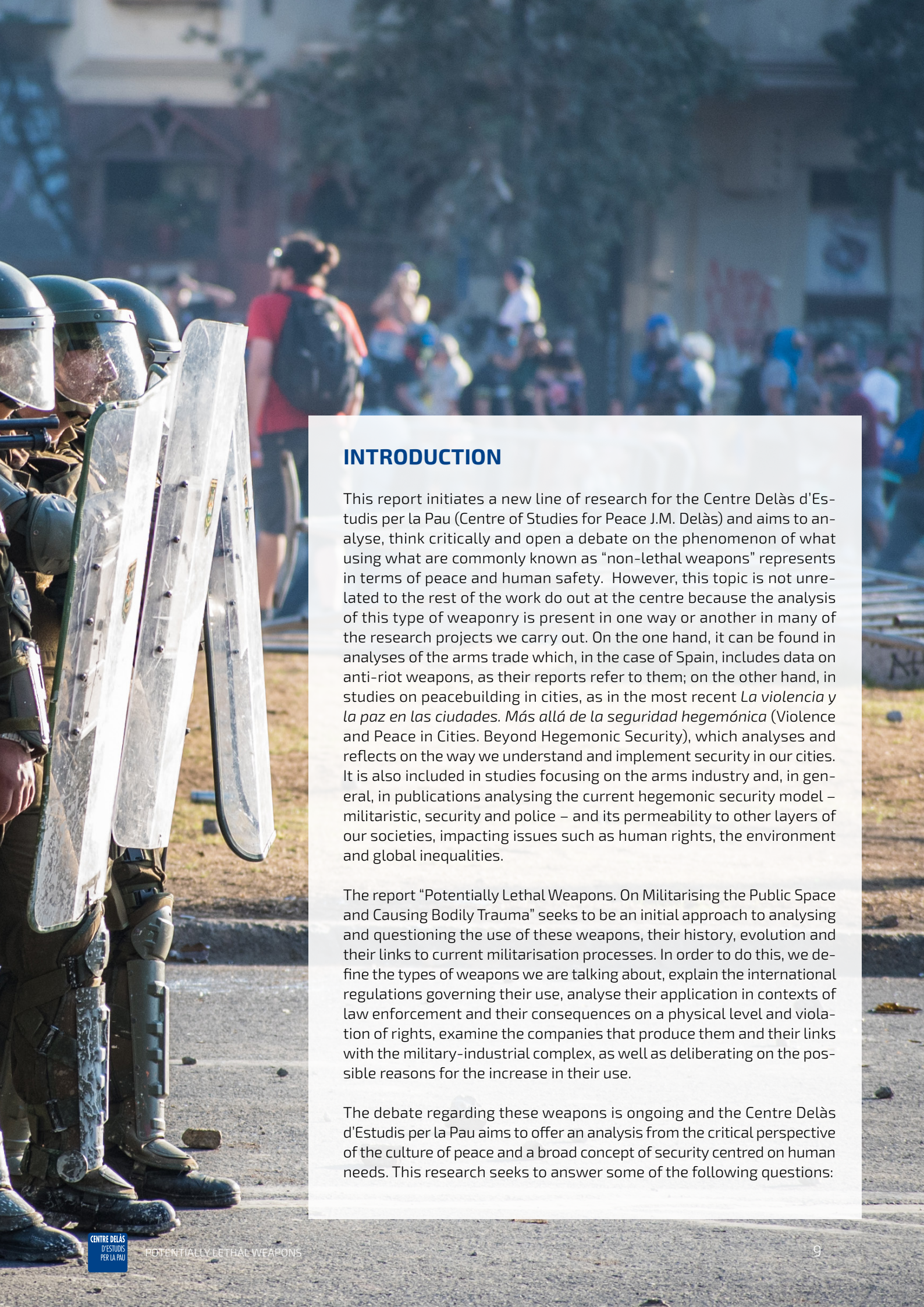
- A progressive militarisation of the public space and the functions of the police have been detected all around the world. This is carried out in three ways: by mobilising the military for internal State security matters; via the specific creation of paramilitary

forces that act on State territory with police functions; or by providing police units with the military's own armaments, strategies and resources.

- The market for potentially lethal weapons is estimated to reach $9.38 billion by 2028, with the market valued at $6.15 billion in 2021, an annual increase of 6.1% and over 52% in 7 years. This market is dominated by the United States and Europe, and mirrors the pattern of conventional weapons.

- Of the main companies that dominate the market for potentially lethal weapons, 10 out of 15 are in the United States (ALS, ASP, Combined Systems, PepperBall technologies, NonLethal Technologies, Axon Enterprise, Byrna Technologies, Raytheon Company, Safariland and Zarc International). The other leading companies in this market are in Israel (ISPRA), Brazil (Condor Non Lethal Technologies), Canada (Lamperd Less Lethal), Germany (Rheinmetall, another major military company), and Belgium (FN Herstal).

- Potentially lethal weapons manufactured by the companies analysed have been found in different contexts of police abuse and mala praxis in, for example, the following cases: ISPRA (Israel) in the Occupied Palestinian Territories, in protests in Burundi in 2015 and in Azerbaijan in 2013; Condor (Brazil) in Sudan in 2021 and in Bahrain in 2011; PepperBall (United States) during the National Strike in Colombia in 2011; Safariland (United States) at the U.S. border against migrants; Rheinmetall (Germany) and NonLethal Technologies (United States) in Bahrain in 2011; Combined Systems (United States) in the Israeli-occupied Territories and in Egypt in 2011.



INTRODUCTION

This report initiates a new line of research for the Centre Delàs d'Estudis per la Pau (Centre of Studies for Peace J.M. Delàs) and aims to analyse, think critically and open a debate on the phenomenon of what using what are commonly known as "non-lethal weapons" represents in terms of peace and human safety. However, this topic is not unrelated to the rest of the work do out at the centre because the analysis of this type of weaponry is present in one way or another in many of the research projects we carry out. On the one hand, it can be found in analyses of the arms trade which, in the case of Spain, includes data on anti-riot weapons, as their reports refer to them; on the other hand, in studies on peacebuilding in cities, as in the most recent *La violencia y la paz en las ciudades. Más allá de la seguridad hegemónica* (Violence and Peace in Cities. Beyond Hegemonic Security), which analyses and reflects on the way we understand and implement security in our cities. It is also included in studies focusing on the arms industry and, in general, in publications analysing the current hegemonic security model – militaristic, security and police – and its permeability to other layers of our societies, impacting issues such as human rights, the environment and global inequalities.

The report "Potentially Lethal Weapons. On Militarising the Public Space and Causing Bodily Trauma" seeks to be an initial approach to analysing and questioning the use of these weapons, their history, evolution and their links to current militarisation processes. In order to do this, we define the types of weapons we are talking about, explain the international regulations governing their use, analyse their application in contexts of law enforcement and their consequences on a physical level and violation of rights, examine the companies that produce them and their links with the military-industrial complex, as well as deliberating on the possible reasons for the increase in their use.

The debate regarding these weapons is ongoing and the Centre Delàs d'Estudis per la Pau aims to offer an analysis from the critical perspective of the culture of peace and a broad concept of security centred on human needs. This research seeks to answer some of the following questions:

- Where do non-lethal weapons come from and in which contexts are they used? What kind of weaponry are we talking about?
- Are they really non-lethal weapons? What are the consequences of their use? For which security models are they used?
- In what contexts are they used? Are they weapons for military or police use?

To answer these questions and other related issues, the report is divided into three main parts. The first part, called "The History, Use and Definition of Potentially Lethal Weapons", addresses the history, creation, definition and typology, as well as related legislation that regulates their use by State security forces. To do this, a diverse range of sources were consulted, from individual researchers or groups in the academic, journalistic and activistic spheres, to official documents and reports written by intergovernmental organisations such as the United Nations, and non-governmental ones such as Amnesty International.

The second part, "Problems Regarding the Use of Potentially Lethal Weapons and the Advance of Militarism in Police Forces", deals with current experiences where these weapons have been use in law enforcement contexts that have had noteworthy media and social impact. We analyse, specifically, their use in protests in Chile and France from 2018 to 2020 and the social impact their use has had. These are just two of the many revealing examples of the excessive and unlawful use of force using these weapons that have taken place in recent years, a period characterised by a new wave of social protests around the world. Colombia, Hong Kong, the United States, Afghanistan and Iran, just to mention a few countries, could also serve as cases for analysis that have stirred up much controversy regarding the use of these weapons and the disproportionate use of force in general. The cases analysed allow us to question the alleged "non-lethality" of these weapons using data and cases of injuries, harm and deaths that occur around the world. In turn, they allow us to observe a growing trend that regards how we understand security and the tools with which it is addressed, as is the case of the policisation of the military and the militarisation of the police. This matter, which we consider important to address, albeit briefly, is of interest here because of the way it influences the proliferation of potentially lethal weapons all over the world.

Lastly, the third part, "A Favourable Context for a Booming Market", offers a short analysis on the companies behind the manufacture of potentially lethal weapons in an attempt to understand the potential business stemming from the production of these weapons, the leading companies and whether they are linked to the military-industrial complex Similarly, relevant cases are described in which products made by these companies have been used by security forces in contexts of police abuse and mala praxis.

With regard to the two latter chapters, the work of organisations that have been studying the impact of potentially lethal weapons for years are especially relevant and the authors would like to thank them for their work: Physicians for Human Rights, Amnesty International, Omega Research Foundation, Irídia, Novact, Ojo con tu ojo, among others that we apologise if we have not named.

Lastly, there is a section of recommendations that – although probably not new to those already provided by the above-mentioned organisations – we believe are relevant to continue reminding people of them.

Finally, it is important to clarify the reasons why the authors have chosen to use the term "potentially lethal weapons" throughout this investigation. It is increasingly common to use alternative terms to refer to what for decades have been known as "non-lethal weapons"; for example, they have been called "riot control weapons", "less lethal weapons" or "potentially lethal weapons". We decided to opt for the latter as "potentially"– according to the official Spanish dictionary, the *Diccionario de la lengua española* – means "in a state of capacity, aptitude or disposition for something", and these weapons and/or the use made of them have proved and continue to prove their capacity, aptitude or disposition to kill. By using the term "potentially lethal weapons" – and not referring to them as supposedly "non-lethal", which is how they were originally classified – we also distinguish them from conventional weapons that are categorised as "lethal" because the former are weapons that today raise different social issues.

We hope that this research will add to that of all the organisations and movements seeking justice and reparation for the people and collectives that have seen their rights and their bodies injured, wounded and abused by these weapons all around the world.

1. THE HISTORY, USE AND DEFINITION OF POTENTIALLY LETHAL WEAPONS

In recent decades we have seen an increase in development and a more frequent use of so-called "non-lethal weapons". These kinds of weapons, linked to so-called conflicts of "public order", have become a tool which is being scrutinised by different organisations and civil society alike due to the effectively lethal or mutilating results that they can have, in many cases linked to allegations of police brutality, to manifestly structural racism and to their use as a mechanism of torture. However, as mentioned in the introduction, we are faced with a debate that not only analyses the link of potentially lethal weapons to contexts of police brutality but it is also necessary to analyse whether these weapons have a relevant role in enhancing and facilitating it.

Although potentially lethal weapons in today's collective imagination are mostly linked to police use, their origin actually comes from their production, research and military use in colonies during the 19th century. In fact, the testing laboratory for and experimentation of potentially lethal weapons were anti-colonial struggles and revolts, in the face of which the armed forces of the various empires increased the use of these weapons (Henkin, 2019: 27). This context was also a starting point for the militarisation of the police and the politicisation of the military, in other words, the use of military tools and strategies for the former and the use of the military for the internal maintenance of State order for the latter – a dynamic that has become increasingly common in recent decades but which had already begun to evolve in the permanent state of exception of colonial governments. Winston Churchill, when he was Secretary of State for War, was a great advocate for using gas in wartime conflicts in territories colonised by the United Kingdom such as Palestine, or against the Bolsheviks in Russia. Regarding the use of gas against Indian resistance to colonisation, Churchill's stance was: "*I am strongly in favour of using poisoned gas against uncivilised tribes*" (Milton, 2013). This statement, aside from its overtly racist and colonial connotations, also formed the foundations of what would be the justification for using potentially lethal weapons by State forces because Churchill was referring to the fact that these weapons were less cruel than conventional weapons as they resulted in fewer fatalities. It is important to understand this narrative – unarguably upheld to this day – where the debate is polarised between controlling social protest either through the use of conventional weapons or non-lethal weapons, based on their alleged "non-lethality". This makes it seem that a "humanising" aspect has been introduced in the management of social protest. Rocher points out that, initially, the develop-

ment of potentially lethal weapons was not linked to real ethical concerns on how to maintain the established order without resulting in harm but, rather, how to be more effective in curbing social protests (Rocher, 2016: 31). This narrative still prevails to this day as justification for their use in controlling so-called "social order". Despite the widespread harm and the debate that potentially lethal weapons have raised over recent years, the narrative by State security forces continues to be that it is preferable to use these kinds of weapons over the only other possible option; to use conventional firearms.

As we will see in greater depth in the next point, the evolution in the uses of potentially lethal weapons goes beyond the repression of decolonial movements. At the start of the 20th century, these weapons were already being used for reasons of internal State security, mainly to quash workers' revolts (Rocher, 2021: 29). However, it was principally from the nineties onwards when their use increased and spread, linked to a new concept of urban security and controlling public order.
Regarding this point, a general warning is necessary because we are dealing with the growing policisation of a number of social problems that some authors link to the progressive reduction and the privatisation of basic resources, as well as growing job precariousness (Ávila et al., 2021: 87). For example, when discontent is expressed on the streets, the usual response is to use police tools to curb the protest. In fact, we have witnessed a notable increase in the use of these weapons over the past 10 years, in other words, since 2011 (Henkin, 2019: 5; Lethal in Disguise, 2016: 6; Rocher, 2021: 85). On this matter, Rocher points out that (2016: 172), if growing needs that are linked to structural violence, such as poverty, precariousness and the reduction in access to basic services, among others, are not addressed the problem will only grow. Meanwhile, the current trend with regard to State response points to a hegemonic consolidation in the use of physical violence and repression on the streets. This too will grow as social unrest, linked to the huge challenges we face today in cities, increases.

1.1 A LOOK AT THE HISTORY AND INTERNATIONAL REGULATION OF POTENTIALLY LETHAL WEAPONS

The police truncheon is the oldest potentially lethal weapon. The forerunner that led to the *tonfa*, a key weapon for keeping order, appears to be a wooden agricultural tool created in the 13th century in the Japanese province of Okinawa during feudal times.[1] However, its use by security forces did not take place until the 19th century in the United Kingdom under Prime Minister Sir Robert Peel. Over time, other materials including metal, rubber, plastic and other synthetics have been used as the baton has evolved. In 1958, a former US marine developed the PR-24 baton that became a standard weapon and is still in use today. A more modern baton design, the expandable ASP[2], was created in 1976.

The history of modern potentially lethal weapons is closely linked to militarism and warfare, as well as to the increase in social protests – both national and colonial – everywhere, a fact that has triggered in States the need to develop and diversify weapons that are more effective in social containment and repression. As already mentioned, some authors argue that the shift from firearms to potentially lethal weapons in contexts of protest are more in response to the need of increasing the effectiveness of policing than to ethical considerations towards civilian victims (Rocher, 2021: 34).

The invention of tear gas was very useful in terms of policing from a standpoint of political communication and social acceptance as its effects on the body were not as visible as those of firearms or batons. It was an effective weapon and moreover was invisible as it left no marks (Rocher, 2021: 30). Since the second half of the 19th century different typologies of chemical weapons have been developed and this increased throughout the 20th century. Some sources date the initial forerunners of this military technology to 1850, when the British Government pondered the usefulness of using cyanide gas against the Russian Empire during the Crimean War. In 1912, France developed chemical weapons that it began testing as a means of riot control in the face of the workers' movement. However, it was during the First World War that the French army used tear gas on a huge scale, marking the start of a chemical arms race that would lead to the proliferation and diversification of this weaponry by other state actors involved in the war. Their success and effectiveness sparked optimism in the most powerful States, seeing in these weapons great possibilities for dealing with growing tensions both in their colonies and at home (Lyon, 2009). However, the ban on tear gas in armed conflicts, included in the Geneva Protocol of 1925, did not legally prevent its continued use in the colonies. That same year the

1. 50cm long and weighing 1kg, this tool was used to turn millstones. Towards 1600, when owning weapons was banned, the island's inhabitants turned this agricultural tool into a weapon to defend themselves against attacks by outsiders. For more information visit: https://www.seguridadprivadafamo.com/blog/pr24-baston-policial/ or https://www.duhoctrungquoc.vn/wiki/ca/Tonfa
2. Initials of the manufacturer: Armament Systems and Producers, Inc.

United Kingdom used tear gas against Afghan insurgents and Russian revolutionaries (Jones, 1978: 152). In the 1930s, colonial administrators in Nigeria and Palestine were authorised to use it, just to cite two examples. In the late 1920s, tear gas was also used against workers' mobilisations in various European countries such as France, Germany, Italy and Austria. In the United States, although sources point to 1919 as when the police in the US began including this weapon regularly in its arsenals, its massive deployment took place when social tensions intensified following the Great Depression of 1929. The chemical agents CS, CN and OC first appeared in the United States and, during the second half of the 20th century, in addition to being used in Vietnam, they were also frequently used as a weapon for controlling riots.

Beyond tear gas and water cannon – the latter first being used for crowd control in the 1930s in Germany, becoming a commonly-used weapon in the 1960s in countries such as the United States – riot control weaponry in the late 1960s had not changed significantly from those of a century earlier (Rocher, 2021). However, the increase in social, racial and anti-war protests that took place in the 1960s and 1970s served as a pretext for States to research, develop and test new and potentially lethal weaponry. So much so that authors such as Rocher point out that the majority of today's potentially lethal weapons were conceived and manufactured during that period. In the case of the United States, the riots during the Civil Rights Movement which, between 1964 and 1972, resulted in 250 deaths and 10,000 seriously wounded in 300 cities across the country, also explain the country's pioneering role in the field of potentially lethal weapons: in addition to being a technological leader, the difficulties in law enforcement on a national level meant that the country was very interested in developing new, less lethal weapons. Some of the research projects at the end of the 1970s on these weapons included substituting CN gas for CS gas, electroshock weapons and rubber bullets.

The British Ministry of Defence has been accredited with designing rubber bullets at the time of the colonial conflict in Northern Ireland and started using them in the 1970s. In just five years, the British army had fired at least 55,000 rounds against pro-independence dissidents in Northern Ireland, resulting in various deaths and hundreds of wounded and seriously maimed. However, some sources assert that the first kinds of kinetic impact projectiles date back to the 19th century. In the 1880s in Singapore, lengths of cut wood were fired at demonstrators (Physicians for Human Rights, 2016). Later, in the 1960s, improved wooden bullets were developed by British colonialists and used against protesters in Hong Kong, Malaysia, and Singapore. So, and as previously pointed out, this is a type of weapon that is closely linked to the repression of decolonial movements.

Rubber bullets were first used in the United States to quell demonstrators protesting against the Vietnam war. However, they stopped using them as way of controlling riots following a fatality in 1971 but were reintroduced in the 1980s. The United States admitted that these weapons "had been introduced without having carried out any precise studies on their impact on the human body" (Physicians for Human Rights, 2016). Over the past 30 years, the range of kinetic impact projectiles has grown and manufacturers currently produce more than 75 typologies of bullets and launchers (STOA Panel, 2000).

Other riot control weapons, whose used has increased over the past decades, are disorientation devices. First developed in the 1960s by the British Special Air Service for military combat training, their use in crowd control happened gradually. Today, these weapons are manufactured by dozens of companies around the world for use by the police to enforce the law, yet there is almost no quality control and little regulation.

Since the 80s, the deployment of potentially lethal weapons among the police forces in many States has continued to increase. This is clear by the fact that in 1978 only 13 companies in 5 countries manufacturing "non-lethal" weaponry were identified (G. Williams, 2014); yet today, over 200 have been detected in more than 60 countries (Omega Research Foundation, 2019).

This brief historical overview shows how potentially lethal weapons have always been developed and used on what is the fine line between the military and police structures, between the foreign and domestic policies of States, between the battlefield and city streets, and between lethality and non-lethality. This blurred and ambiguous narrative appears to have allowed a political instrumentalisation of their use according to the demands of the historical, political and social context: In general terms, it has managed to generate a narrative of necessity associated with security and law enforcement that has ended up endorsing its – also illicit – use on multiple occasions without having passed the necessary testing, as well as a need for proliferation that has culminated in giving rise to an increasingly extensive industry.

1.1.1 INTERNATIONAL REGULATION ON POTENTIALLY LETHAL WEAPONS

In order to pinpoint the use of potentially lethal weapons, it is necessary to know how to develop codes of

conduct and regulations that can embrace specific practices on an international level. So, the first international regulation to regulate the use of force for law enforcement is the "Code of Conduct for Law Enforcement Officials", adopted by the United Nations Assembly in 1979 General Assembly resolution 34/169 (Office of the High Commissioner for Human Rights, 1979). This document states that: "*Law enforcement officials may use force only when strictly necessary and to the extent required for the performance of their duty*"[3]. Furthermore, it states that: "*In the performance of their duty, law enforcement officials shall respect and protect human dignity and maintain and uphold the human rights of all persons.*"[4]

In 1990, the United Nations published the "Basic Principles on the Use of Force and Firearms by Law Enforcement Officials", which has become an international instrument benchmark on the regulation of the use of force for law enforcement. However, with regard to specific references to the use of potentially lethal weapons, the document only refers to these in two provisions: in Basic Principle 2, in which States and security forces are urged to develop "*non-lethal incapacitating weapons for use in appropriate situations, with a view to increasingly restraining the application of means capable of causing death or injury to persons*"[5]; and in Basic Principle 3, which states that the development and deployment of non-lethal incapacitating weapons "*should be carefully evaluated in order to minimize the risk of endangering uninvolved persons*", setting out that such weapons "*should be carefully controlled*[6]."

Due to a lack of more precise and detailed guidance on the use of this type of weaponry, in 2014 the Special Rapporteur on extra-judicial, summary or arbitrary executions recommended to the UN Human Rights Council the creation of an expert body to develop guidelines on the use of less lethal weapons (Human Rights Council, 2014) and, in 2016, this Rapporteur, together with the Special Rapporteur on freedom of peaceful assembly and of association, requested the United Nations High Commissioner for Human Rights to convene a group of experts to examine the implementation of international human rights regulations on this typology of weapons, with a particular focus on the context of assemblies (Human Rights Council, 2016).

From this framework emerged the "United Nations Human Rights Guidance on the Use of Less Lethal Weapons in Law Enforcement", the latest international document regulating this type of weaponry. The regulations require compliance with the principles of legality, precaution, necessity, proportionality, non-discrimination and accountability, and specifically indicate in which situations and in what way it is lawful to apply the use of force with potentially lethal weaponry and when it is unlawful.

Based on the principles it sets out: "*They may use force only if other means appear ineffective or without any promise of achieving the intended result*" (Office of the United Nations High Commissioner for Human Rights, 2020). The use of force shall be regulated "*by domestic law and administrative regulations in accordance with international law*" and, to avoid unnecessary or excessive harm, "*it is essential that law enforcement officers receive training.*" In addition, it states that "*unnecessary or excessive use of force may even amount to torture or ill-treatment.*"

Despite the regulations on the legal use of potentially lethal weaponry issued by the United Nations, there is great concern on the part of organisations and groups of experts from the international community and civil society with regard to the illicit and, therefore, unlawful use of these weapons in contexts of law enforcement. Despite the fact that recommendations, warnings and denunciations have been issued to countries that have abused the use of this weaponry, the occurrence of police brutality in recent years in various nations calls for a more in-depth reflection on the part of States, law enforcement agencies and armies. In the same vein, they also call for more attention to be paid to the implementation and monitoring of measures at State level to ensure compliance with international regulations.

1.2 DEFINITIONS AND CATEGORIES OF POTENTIALLY LETHAL WEAPONS

In the absence of an official definition on an international level, we found different definitions of potentially lethal weapons depending on who defines them. This type of weaponry is referred to by different names such as "riot control weapons", "non-lethal", "less lethal", "less than lethal" or "potentially lethal". They are defined in the police handbook for use in United Nations peacekeeping operations as:

3. Article 3 of the Code of Conduct for Law Enforcement Officials, available at https://www.ohchr.org/es/instruments-mechanisms/instruments/code-conduct-law-enforcement-officialschr.org/es/instruments-mechanisms/instruments/code-conduct-law-enforcement-officials
4. Article 2 of the Code of Conduct for Law Enforcement Officials, available at https://www.ohchr.org/es/instruments-mechanisms/instruments/code-conduct-law-enforcement-officials
5. Basic Principle 2 of the Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, available at https://www.ohchr.org/es/instruments-mechanisms/instruments/basic-principles-use-force-and-firearms-law-enforcement
6. Basic Principle 3 of the Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, available at https://www.ohchr.org/es/instruments-mechanisms/instruments/basic-principles-use-force-and-firearms-law-enforcement

> A weapon that is explicitly designed and primarily employed to incapacitate or repel persons or to disable equipment, while minimising fatalities, permanent injury and damage to property and the environment (United Nations, 2015: 7).[7]

We found that almost all definitions of potentially lethal weaponry, whose main function is to incapacitate people, were in line with this definition. A more critical line of analysis examining what lies behind the use of these weapons – as shown by the history of their production – is a critical definition of them offered by Henkin, who points out:

> Non-lethal weapons are bound not only to the dynamics of policing contested spaces and bodies, but also to how security logics are employed to preserve the legitimacy of State interventionary power and violence (Henkin, 2019: 18).[8]

Rocher, on the other hand, argues that potentially lethal weapons should stop being defined according to their technical properties, i.e., their potential lethality, but by how they are used; an interesting point, to say the least, making the debate even more diverse. He therefore suggests defining them as "first intervention" weapons; defining them more by how they are used by the police than by their potential lethality (2021: 79). In fact, he points out that weapons in general are not only a mechanism of action but that they shape the way their users act (Rocher, 2021: 23); in other words, at the end of the day, the tools available to the police also condition their behaviour.

Table 1 shows the categories of potentially lethal weapons in use today and the effects they have on the human body.

In the historical overview above, we have seen how research related to the development and manufacture of potentially lethal weapons already began at the start of the 20th century, linked to a search for devices allowing the temporary control and incapacitation of a person or to cause physical discomfort when dispersing groups of persons. However, it was from the 1970s, in particular, when there was not only an increase in the purchase and use of these weapons, but more was also invested in their development. From then, there has been an evolution since the first weapons were designed – batons and tear gas – to the adaptation of all kinds of technologies for the use of supposedly non-lethal weaponry.

As mentioned above, the first potentially lethal weapons designed were batons and tear gas, which have turned out to be some of the most controversial weapons created for military use. Following the signing of the Geneva Conventions of 1925, their use was banned: it is therefore curious that they have been adapted into a "non-lethal" version for law enforcement. In fact, what happens when almost all so-called "non-lethal" weapons are used is that the level of damage and injury they can produce depends, to a large extent, on the use made of them and on the physical state, health and possible medication used by the person attacked. Several studies have been carried out on injuries caused by gas: one of these, conducted during military training, concluded that exposure to tear gas could produce long-term damage to the respiratory system (McKeever, 2020). Rubber bullet launchers have also become notorious over recent years due to the serious injuries they have caused, and mistrust has been aimed at police forces regarding how they use them. Rubber bullets are used in various countries and contexts of protest, such as during the 2018 and 2019 demonstrations by the Yellow Vests in France (Van Berchem, 2019), a case which we will elaborate on the following section.

In Catalonia, rubber bullets sparked great controversy after being used by Catalonian riot police as they caused permanent injuries and the loss of eyes in various situations. From 2005 to 2013, at least 8 people have lost an eye (Cros, 2013), leading to foam bullets being used from 2014 instead of rubber ones. In Euskadi [the Basque Country], their use by the Ertzaintza [the police force of the Basque Country] was approved a year later and, in 2017, by the Policía Foral [police force] of Navarre. Despite this, the change to foam bullets has not prevented injuries and over 40 people have been injured in the past 20 years (Calderó, Franquesa, García et al. 2021). The cases in which potentially lethal weapons were used to bring about exactly that – lethality – were more serious, such as the case of Iñigo Cabacas in Euskadi, and the case of their use by the Guardia Civil in Tarajal on the border of Ceuta in 2014, where 14 migrants were killed with rubber balls. The use of rubber balls was introduced as a military tool in the 1970s by the British Army as a means of riot control in Northern Ireland and, since then, is one of the most widely used potentially lethal weapons, together with tear gas and the baton.

The research and development of potentially lethal weapons has become increasingly innovative. In 2001, for example, so-called "directed-energy" weapons were introduced: these were jointly developed by the U.S. Air Force Laboratory and the Joint Non-Lethal Weapons Directorate (JNLWD) of the Department of Defense[9] (Lewer, 2013: 3). The manufacture of and experimentation with potentially lethal weapons has always been linked to military research laboratories, although they are best known for their use by the police.

7. The original is in English
8. The original is in English
9. For more information visit: https://jnlwp.defense.gov/

Table 1. Types and categories of potentially lethal weapons

Category	Type	Effect on the body	Serious or lethal effects on the body
Kinetic	Physical impact weapons; batons, projectiles, slugs, water cannon, scatter grenades, stun grenades, tactical pens, BolaWrap electronic lasso, etc.	Physical impact	Contusions, broken bones, permanent injuries, mutilations, permanent hearing damage in the case of stun grenades, death by cranial impact or damage to vital organs, injuries caused by falls. Use of water cannon can cause hypothermia.
Electric	Electroshock weapons; Taser	Electro-muscular disruption	Skin and musculo-skeletal injuries, risk of injury from falling following the shock, adverse cardiac effects in persons with certain physical or cardiac conditions or if taking certain medications may trigger convulsions or epileptic seizures. To avoid damage, the discharge should be limited to 5 seconds, but not all weapons of this type have a feature to do so.
Acoustic	Infrasonic or ultrasonic delivery; sound grenades, sound cannon, dispersion grenade	Acoustic stress, impact from dispersion grenade	Prolonged exposure or close proximity can cause irreversible hearing damage (above 140db); some weapons have been designed with a greater decibel range so as not to cause harm. Physical injuries from scatter grenades and injuries linked to falls.
Dazzle	Delivery of irritating light; dazzling laser	Eye irritation	May cause permanent damage to the retina or permanent blindness, can cause epileptic seizures, vomiting and injuries caused by falls or fainting.
Directed energy	High power microwaves; lasers	Sensation of abrasion	Weapons without much testing, but initial tests show that they can cause blistering, burns and other eye and facial injuries depending on how close they are fired, and can also cause more serious injuries.
Chemical	Irritants, liquids, adhesive or malodorous substances; tear gas (some may be launched as projectiles, adding possible injury from the impact of the projectile)	Irritation in various parts of the body; eyes, lungs and nostrils, longer lasting effects, physical impact if launched as projectiles	Exposure to high concentrations can be fatal as chemical irritants can cause temporary breathing difficulties, nausea, vomiting or irritation in the respiratory tract and eye tract. Can cause spasms, severe physical chest pain or dermatitis. High concentrations can cause necrosis of the tissue of the respiratory tract and digestive system, pulmonary oedema and internal bleeding.
Chemical and biochemical	Calmatives, incapacitants	Immobilisation	Possible respiratory arrest, linked to a concentration higher than the person can tolerate, can cause death in allergic persons, or those with respiratory or heart problems.
Combined	Dispersion devices; dispersion grenades; chemical water cannon	Acoustic stress and physical impact	Permanent hearing damage, permanent injuries, damage caused by chemical products, skin damage, hypothermia.

Source: own work based on McKeever (2020); Naciones Unidas (2021); Physicians for Human Rights (2016); Rocher (2021); Sánchez Becerra y Martín Vera (2021); Sautenet (2000).

The use of some weapons for use as "non-lethal" weapons, such as chemical, irritant and adhesive weapons, for example, or biochemical weapons such as tranquillisers that are used on animals, is still being researched; others have been so controversial that their use has been curbed, as is the case of sound cannons, which were used in the Iraq war in 2004 by the U.S. military to disperse rioters, against Somali pirates and during protests, such as Occupy Wall Street, which led to lawsuits for permanent hearing loss (ACLU, 2016; El Universo, 2012). These weapons, therefore, are clearly interlinked with the militarisation of public space and are used both by the police and by members of the military, and are used in contexts of domestic internal control and conflicts between State and factions. Other weapons, however, were directly banned, such as blinding laser weapons that cause permanent blindness, which were vetoed in 1995 by the Protocol on Blinding Laser Weapons (Protocol IV to the 1980 Convention on Certain Conventional Weapons) (Weapons Law, 2022).

Without going into depth, it is necessary to mention that potentially lethal weapons have also been and are commonly employed as an instrument of torture, as denounced by human rights organisations (Amnesty International, 2015: 3).

It should be noted that the term "non-lethal weapons" was coined in the 1960s to describe a whole range of weapons that paradoxically had not been proven to be non-lethal (Rocher, 2021: 36, 46). The proliferation over decades of these weapons intended primarily for law enforcement and labelled as "non-lethal", and without adequate regulation, training, monitoring and responsible use, has led to the widespread misuse of these weapons globally, as will be discussed below, resulting in injury, disability and death (Physicians For Human Rights, 2016). Rocher indicates

that, as the term itself suggests that the weapon is not lethal, the belief is that no danger is implied and this perception results in law enforcement officers shooting more. With this in mind, organisations point out that there is a significant lacuna in knowing the effects that so-called non-lethal weapons have on human health.

In short, potentially lethal weapons are developed on the basis of the vulnerability of the human body, and it is the parts of the body which are susceptible to being harmed or exposed to pain, discomfort or incapacitation that are the target of research in this field, which in practice has led to an endless number of possible weapon designs. The great problem with this supposedly controlled violence is that it is easy to injure, either because of the ignorance of the user or by improper use. Injuries caused by potentially lethal weapons are difficult to prove, and justice and reparation for those harmed has shown to be wanting, to say the least.

So, the risk derived from using potentially lethal weapons does not only stem from their possible indiscriminate or wrongful use, but also from the fact that the bodies of persons or groups hit by said weapons have differing physical states and levels of health. Testing potentially lethal weapons in controlled environments and with controlled subjects cannot, therefore, measure the potential harm to individuals.

2. PROBLEMS SURROUNDING THE USE OF POTENTIALLY LETHAL WEAPONS AND THE ADVANCE OF MILITARISM IN POLICE FORCES

Today, the most lethal and harmful face of these "non-lethal" weapons, not to mention the lack of enforcement of police regulations and control, is being seen in a considerable way in the United States with over 1,000 deaths a year at the hands of the police; 1,042 in 2021 as noted by the Washington Post database (Fatal Force, 2022), or 1,100 according to the Police Violence Report (2021). Both databases estimate that some 7,518 people were killed as a result of police brutality between 2015 and 2021 in the United States alone. However, and ironically, this lethality – 97% of which corresponds to police firearms (Police Violence Report, 2021) – has driven the defence of using potentially lethal weapons as a technology that can stop killings, replacing firearms with tools that subdue and physically incapacitate the person. This analysis ignores the fact that the remaining 3% of deaths occur through the use of other tools in the hands of the police such as those referred to as "non-lethal". Defending potentially lethal weapons as a tool to reduce police lethality is, to say the least, questionable. On the one hand, it ignores a fundamental problem, which is the increase in police brutality in various contexts and countries that is not linked to the use of one type of weapon or another, but to a police model and praxis, as well as to a lack of transparency by police forces. On the other hand, even if the use of firearms were reduced, the harm caused by potentially lethal weapons would rise as they would be increasingly used. By being understood and categorised as "non-lethal", potentially lethal weapons are, in fact, used more readily by the police (Rocher, 2021:79). The term itself, therefore, is linked in the mind to a supposedly lesser level of harm, making it seem that their use is more admissible, tolerable or less harmful, despite their potential lethality.

So, the underlying problem remains unaddressed and cases of harm and repression, linked to these supposedly non-lethal but highly harmful weapons, are either increasingly appearing or are worsening as can be seen, and are being denounced more and more following the protests of recent years. This was highlighted in 2016 by Physicians for Human Rights in its report "Lethal in Disguise", which analyses the use and abuse of non-lethal weapons in contexts such as Israel, Egypt, South Korea, Thailand, Turkey, Bahrain, Hungary, Canada and the United States.

Yet, for governments, potentially lethal weapons are manufactured and used in order to be sellable and accepted as a technology for more "humane" crowd control and policing. This, despite the fact that, as David

Dufresne depicts in his documentary "The Monopoly of Violence"[10], police violence and brutality are characteristic traits in contexts of high social rebelliousness, as are the injuries produced, as we will see below.

Some authors argue that the current strengthening and development of policing functions are closely linked to an erosion of State protection structures. In other words, there is an attempt to use policing tools to address social conflict and the discontent linked to it to growing inequalities and a regression of rights (Ávila et al., 2021: 92). This is an aspect which, at the very least, should be taken into account when assessing the use and deployment of police and riot police and, in particular, their weapons. As these same authors argue, said deployment does not address the root of the problem that brings about inequality and social unrest, but simply attempts to curb and conceal protest while continuing to implement unpopular policies that in general brought about the unrest in the first place. This is the so-called "policisation of conflicts" (Ávila et al., 2021: 100). In short, this theory expresses the idea that the police are becoming a tool for controlling social problems in two ways: on the one hand, there is an emphasis on proximity policing, which we have not gone into during this research, but which explains the current trend in many municipalities of "palliating" particular social and coexistence problems that may well be more related to social unrest; and, on the other hand, in the face of demonstrations and mobilisations created to protest against certain measures, the police become the organ of control and law enforcement to force the social acceptance of certain political measures, for which potentially lethal weapons are used as tools to rein in protests. In addition, fear of the injuries these weapons can inflict can have a paralysing effect on a social level, hindering protest due to the fear of being harmed.

Below, we will take an in-depth look at two cases that are related to the aspects we have just mentioned: the protests in France against pension reforms, and the Social Protests in Chile.

2.1 CASES OF UNLAWFUL USE OF POTENTIALLY LETHAL WEAPONS

In this section we offer two examples of the questionable use of potentially lethal weapons in the context of so-called law enforcement. Both cases were chosen from a wide range of revealing examples that have taken place in the many protests that have occurred over recent years in different parts of the world. Although we limited ourselves in this report to analysing two places where gatherings developed, the unlawful use of potentially lethal weapons has also played – and continues to play – a considerable role in contexts of international conflict or to manage migratory flows along borders, which we hope to be able to analyse in future research.

According to international guidelines, during gatherings or protests: "*Law enforcement officials should respect and protect the right of peaceful assembly, without discrimination and in accordance with international law*" (Office of the High Commissioner for Human Rights, 1976). The fundamental human rights of all participating persons must be protected "*even if an assembly is considered unlawful by the authorities*" (Human Rights Council, 2016)[11]. In this regard, the UN Special Rapporteur on the rights to freedom of peaceful assembly and of association and the Special Rapporteur on extrajudicial, summary or arbitrary executions stated that, within the broad range of rights included in the proper management of assemblies and to be protected, "*physical integrity, which includes the rights to security, to be free from cruel, inhuman or degrading treatment or punishment, and to life, dignity and privacy.*" It also recalls that:

> "Even if the participants of an assembly lose their right to assemble peacefully by using violence, they still have other rights that are subject to established limitations" (Human Rights Council, 2016)[12]

To minimise the risk of violence: "*Appropriate de-escalation techniques should be used,*" and it warns that: "*heavy displays of less-lethal equipment may escalate tensions during assemblies.*" If it is ultimately decided that these weapons should be used in accordance with principles of using force to achieve a legitimate law enforcement objective then "*all possible precautionary steps shall be taken to avoid, or at least minimise, the risk of injury or death*" Human Rights Council 2016 and 2014a).

2.1.1 YELLOW VESTS AND PROTESTS AGAINST PENSION REFORMS – FRANCE 2018-2020

The incorporation of contemporary potentially lethal weapons within the context of social protest in France dates back to the beginning of the 20th century. However, it was not until the 1990s that both their popularity and their use increased exponentially. Policing became harsher from 2000 onwards (Le Média, 2019), and in 2010 the use of these weapons became widespread. Until then, the most dangerous weapons in the "less lethal" category had only been made available to certain police units but, from then on, they be-

10. Watch the trailer here: https://www.filmsforaction.org/watch/the-monopoly-on-violence/?trailer=true

11. Paragraphs 13 to 17 and 25
12. Paragraph 9

came part of every unit (Gardía, 2022). Protests such as the rejection of the Labour Law reform of 2016, or against the Sivens dam in 2014, which led to the death of Rémi Fraisse by an OF-F1 grenade[13], led to an ever more upward – and more visible – trend in the excessive and unlawful use of these weapons, culminating in the Yellow Vest movement[14].

The autumn of 2018 marked the beginning of the Yellow Vest movement, which emerged as a response to rising fuel prices. However, the protest gradually began to include other demands, bringing together a wide range of groups that shared a general social malaise rooted in the growing social inequalities in the country. The protests mainly involved blocking roads and roundabouts, as well as a long series of demonstrations in the main cities in France that took place every Saturday. Later, from September 2019 until February 2020, the protest movement against pension reforms started.

After the first two months of demonstrations by the Yellow Vests, the newspaper Libération recorded 109 serious casualties as of 21 January, and the collective Désarmons-les recorded 124 injured people, most of whom were also seriously injured (Jublin, 2019). As for the journalist David Dufresne, he recorded over 300 injured people who had been hit in or on the head by potentially lethal weapons, 25 of whom lost the sight of an eye, five lost a hand and two died (Le Média, 2019). This goes against international regulations, according to which: "*kinetic impact projectiles should not be aimed at the head, face or body*" (Office of the High Commissioner for Human Rights, 2020). Organisations, such as Amnesty International, denounced that the "*police used rubber bullets, sting-ball grenades and tear gas against largely peaceful protesters who did not threaten public order*" and were able to document numerous cases of excessive use of force by law enforcement (Amnesty International, 2018).

The international community has also echoed the disproportionate use of these weapons. In February 2019, United Nations experts denounced serious restrictions on the rights of the Yellow Vest protesters, stating that: "*the (French) authorities need to rethink their policing policies to guarantee the exercise of freedom.*" They also pointed out that:

> Since the start of the protest movement in November 2018, we have received serious allegations of the excessive use of force. Over 1,700 people were reported to have been injured as a result of the protests across the country (Office of the High Commissioner for Human Rights, 2019).

Likewise, in March 2019, the UN High Commissioner for Human Rights, Michelle Bachelet, called on the French authorities to investigate police violence committed during the Yellow Vest protests starting from mid-November 2018. However, the government spokesperson's response to the request from the UN High Commissioner for Human Rights downplayed the issue of excessive use of force by law enforcement agents (Le Monde, 2019).

According to official data provided by the French Ministry of the Interior in May 2019, 2,448 demonstrators were injured, a figure that is nowhere near the number of victims recorded by social movements. This can be seen from one of the most comprehensive reports on the impact of police violence in the context of the Yellow Vest protests and against pension reforms, published by Street-Médics (Vicent, 2022). According to this study, the estimated number of victims resulting from the tactics, weapons and violence of the security forces totalled 24,300 people (±4,200) (2022: 63), almost 10 times more than the official figure. Of these, 3,090 (±100) needed to be transported to a hospital or helped in the street by the organisation's first responders. The report compares this figure with kinetic impact munitions used between 17 November 2018 and 31 December 2019: 18,805 defensive ball launcher projectiles (LBD) and 6,735 *désencerclement* grenades. As for tear gas, this affected 311,000 (±47,200) people who required assistance or decontamination by a rescue service. They indicate that this calculation appears to be consistent with the number of tear gas grenades used per demonstration (on 1 December 2018 alone, up to 10,000 tear gas grenades were used) (Vicent, 2022: 64-65) or with State orders for these weapons for use by the National Police and the Gendarmerie (about 150,000 per year).

The same study mentions that two thirds (66.7%) of the injuries treated by Street-Médics first responders were traumatic, mainly to limbs and faces, and caused by kinetic projectile impacts and blows inflicted, and one third (32.5%) were non-traumatic, resulting from respiratory disorders or the effects of being exposed to irritants. Of the traumatic injuries, most injuries recorded were to the lower limbs (24.6%), followed by the face, head and neck (18.1%) and upper limbs (15%). The organisation stressed that the high number of craniocerebral injuries, accounting for more than one in six, is significantly worrying. According to the organisation, the weapons responsible for head injuries were police batons (43%), kinetic impact projectiles (13.9%), kinetic impact grenades (17.6), explosive grenades (12.5%) and tear gas canisters (36.4%).

LThe weapons that created the most public controversy during the protests because of their danger-

13. An OF-F1 grenade contains 70 grams of TNT. Following the death of Rémi Fraisse, these were banned and replaced by GLI-F4 grenades.
14. *Gilets Jaunes* in French.

ousness were the LBD 40 shotgun and the GLI-F4 grenade (Jublin, 2019). The LBD 40 shotgun is the replacement for the "Flash Ball", which was introduced in 2007 and definitively replaced its predecessor in 2016. Although aiming at the head is prohibited, many head injuries were recorded during the demonstrations, attributable to both the inaccuracy of the weapon and its misuse. Already in December 2017, and before the emergence of the Yellow Vests, a report by the Ombudsman called for "*the withdrawal of LBD40s from the equipment used by the law enforcement agents.*" According to the Ombudsman: "*defensive launchers do not allow for firing distance to be assessed, nor do they avoid collateral damage*." He also added that even "*if the launcher complies with the prohibitions and mandates of the technology doctrine, the use of a weapon of this kind during a demonstration is likely to cause serious injury, such as the loss of an eye, making this weapon disproportionately dangerous for law enforcement objectives*." However, although once the Yellow Vest mobilisations had begun and 200 personalities recalled the Ombudsman's recommendation, the government was not prepared to give up this weapon. This was evident by the fact that, at the end of 2018, the Ministry of the Interior ordered 1,280 single-shot LBD pistols from the French company Alsetex, as well as 270 4-shot launchers and 180 6-shot launchers, capable of firing four and six rounds (whether rubber bullets, tear gas or explosive grenades) in a matter of seconds. In total, an estimated order valued at €1,638,400 (Malone, 2019).

The GLI-F4 is the most powerful grenade used by the French police during riots. Its composition, in addition to containing 10 grams of CS gas, also contains 26 grams of TNT and 4 grams of hexogen (RDX): RDX is 1.6 times more powerful than TNT. Its explosion produces a triple effect on a body: sound (165 decibels at 5 metres, equal to that of an aeroplane on take-off); the effect produced by the tear gas; and the blast effect consisting of a shock wave and the propelling of small fragments tens of metres away. This weapon replaced the OF-F1 offensive grenade, which contained 70 grams of TNT and was banned in 2014 after the death of Rémi Fraisse. As for the GLI-F4, the same General Inspectorate of the National Gendarmerie and the General Inspectorate of the French National Police recognise that the weapon can cause fatal injuries, and in 2018 the government announced that it would replace it with the GM2L, which does not contain TNT. Nevertheless, during the Yellow Vest mobilisations and the movement against pension reforms, GLI-F4s continued to be used. Perhaps their dangerousness explains why France is the only country in the European Union to have this weapon in its anti-riot arsenal.

2.1.2. SOCIAL PROTESTS – CHILE, 2019-2020

Chile has one of the highest per capita incomes in Latin America, but it is shared very unequally: 66.5% of the country's net wealth is shared among the richest 10%, and 26.5% among the richest 1% (ECLAC, 2019). These socio-economic inequalities impact directly on other rights such as access to education, political participation and equality before the law (United Nations Development Programme, 2017). In 2015, the Committee on ESC rights expressed concern about the lack of progress in the country in terms of rights such as equal pay, universal social protection, the right to decent housing and the fight against social segregation, among many others.

This context of latent social unrest led to a great wave of protest demonstrations on 18 October 2019, sparked by a public transport fare hike. The protests, initiated by students but which gradually incorporated other groups, were contained by the use of unprecedented police and military force, the likes of which had not been seen since the establishment of democracy in Chile. The government of former president Sebastián Piñera decreed a State of Emergency and called in the Armed Forces to act jointly with the national police – the Carabineros – to handle the protests. It also invoked the State Security Law against dozens of detainees and, for the first time since the end of the Pinochet dictatorship, imposed a curfew in the greater Santiago area on 19 October.

By early November, more than 200 people had suffered severe eye injuries, leaving them visually impaired for life. A mission of International Human Rights Observers that visited the country from 6-11 November showed great concern about the way in which potentially lethal weapons had been used by the Carabineros, who did not comply with the minimum standards of proportionality (Observatorio Ciudadano, 2019). According to this group of experts, the Carabineros used riot guns without complying with international standards on the use of force and the use of this type of weapon. They did not aim towards people's legs but horizontally, at the heads and torsos of the demonstrators. With regard to this, between 18 October and 30 November, the INDH filed 557 complaints, including cases of 238 people injured by the Carabineros with pellet shotguns, among which were at least 140 cases of people reportedly shot above the waist, and at least another 92 shot at from an inappropriate distance, among others[15]. On 30 November, the Attorney General's Office raised the number of victims reporting human rights violations to 5,558, of whom 1,938 had been injured by firearms: 674 in-

15. List of legal claims brought by the INDH, updated on 6 April 2020, provided by Amnesty International, 2020:58.

cluded serious injuries, of which 285 were eye injuries. Also, 834 of the total number of victims were children or adolescents (Chile's Attorney General's Office, 2020).

Similarly, an Amnesty International report that monitored the protests from 18 October to 30 November concluded that:

> "The Carabineros widely violated the human rights of the protesters in Chile," and denounced that: "During their operations they inflicted severe pain and suffering on those protesting, with the intention of punishing them, dispersing the protests and dismantling the demonstrations. In order to restore public order, commanders and officers considered damage to people's integrity as a necessary harm" (Amnesty International, 2020).

The report revealed that, during the period under review, over 12,500 people required emergency care in a public hospital for incidents that occurred during the protests, of whom at least 347 suffered eye injuries, mostly from the impact of pellets, according to the INDH. By the end of the protests, this figure had risen to 460. According to the Chilean Red Cross, more people lost an eye in the first three weeks of demonstrations than in the last 20 years (Pol, 2019). Riot guns, the use of which was widespread, were one of the targets denounced by national and international human rights organisations as they did not comply with any international standards on the use of force or these weapons. Firstly, instead of firing rubber bullets, these weapons were loaded with pellets that consisted of a rubber and metal alloy that penetrated the body on impact. And secondly, being multi-shot kinetic impact weapons, the 12 pellets per cartridge scatter and are notoriously inaccurate (Amnesty International, 2020). The UN Guidance states that: "*Multiple projectiles fired at the same time are inaccurate and, in general, their use cannot comply with the principles of necessity and proportionality*." It goes on to say that: "*Metal pellets, such as those fired from shotguns, should never be used*" (Office of the High Commissioner for Human Rights, 2020). Furthermore, according to an analysis carried out by the Faculty of Engineering of the University of Chile, the pellets fired by the Carabineros were found to be made of 80% lead and other hard substances, a percentage that did not coincide with the information listed by the manufacturers (Pol, 2019).

Statistics from the Carabineros show that between October and November 2019, they fired 147,360 cartridges (containing 12 pellets each) loaded with this particular ammunition; a very high and worrying figure considering that the use of this type of weapon is only lawful in situations in which the life or physical integrity of a person is at risk. In fact, Amnesty pointed out that: "*These weapons were used on many occasions against protesters who did not present a risk to the life of the agents or third parties*," and identified officers "*firing indiscriminately or at random in order to disperse people, without a specific aim*." Furthermore, the organisation suspects the Carabineros acted on many occasions "*firing at parts of the body where there was a high-risk impact, such as the head and chest*." By the start of December, Open Democracy had recorded 1,180 pellet victims (Pol, 2019). National protocols for these weapons remained unchanged and were not regulated until a month and a half after the start of the demonstrations and in the face of pressure brought about by criticism over the use and composition of the ammunition, as well as the increasing number of victims hit by these projectiles (Amnesty International, 2020: 6).

Following the restriction on the use of riot guns, there was a significant increase in the use of 37-calibre grenade launchers fitted with tear gas canisters, many of which were fired directly at the bodies of demonstrators (Amnesty International, 2020: 35). However, these had been used from the start, as demonstrated by the fact that, during the first five days of protests, the Chilean Medical College estimated that at least 4% of eye injuries requiring emergency treatment were caused by the impact of tear-gas canisters[16], while the Eye Trauma Unit at the El Salvador Hospital put this figure at 13%[17]. The INDH filed complaints on behalf of 106 people who had suffered injuries from shots fired with a grenade launcher from the start and until 30 November 2019. According to international regulations, projectiles containing irritants should not be fired at an individual and should never be aimed at the head or face due to the risk of death or serious injury from trauma. Grenade launchers can have a range of up to 125 metres and, if fired from a shorter distance, can be lethal or cause serious bodily harm (Amnesty International, 2020). During the first weeks, at least 79 situations were recorded in which the Carabineros used tear gas grenades and chemical agents in a way that was incompatible with international law, as well as a disproportionate use of water cannon against demonstrators in enclosed spaces or close to hospitals, among others.

The total figures related to police action during the Social Protests point to 3,000 cases of human rights

16. Analysis of cases reported and verified by experts from the human rights department of the Chilean Medical College from 18 to 31 October 2019.
17. Public consolidated health report from 18 October to 18 December 2019, provided to Amnesty International by the Ministry of Health in response to a transparency request. The Eye Trauma Unit treated 239 patients with eye trauma during the period 18 October 2019 to 30 November 2019, of which 13% had tear gas as a "possible causal agent" of the injuries.

violations, 460 eye injuries and 34 fatalities (National Institute for Human Rights, 2020). During that time, 193,000 tear gas canisters and 45,000 chemical grenades were used (Ortiz, 2022). It has also been documented that the outlay for the potentially lethal arsenal acquired by the Chilean police increased by up to 23 times compared to that for the period between 2018 and October 2019.

2.2 THE IMPACT OF POTENTIALLY LETHAL WEAPONS

The companies that manufacture these weapons have traditionally maintained that their products are non-lethal. However, studies have shown that many of the technical specifications of these weapons are completely wrong[18], such as the research on tear gas sprays in France, which showed that the concentration of irritant chemicals far exceeded the 5% CS stipulated by the manufacturer (STOA Panel, 2000). Another study on the effects of kinetic weapons concluded that very few of them work as claimed (Rappert, 2004). In fact, a report published in 2001 found that commercially available impact munitions hit with varying force and were inaccurate to the point of missing their intended target. Many of the impact munitions described are still widely manufactured and used by law enforcement today (STOA Panel, 2000). Another example is the one mentioned in the Chilean protests; it was found that the percentage of lead and hard substances in the pellets detailed by the manufacturing companies did not match the actual percentage (Pol, 2019).

When it comes to States, many now have some procedures for testing equipment in order for it to be accepted, but these may involve little more than a basic verification test against the manufacturer's specifications. For many years, the specification of "non-lethality" on the label of the products purchased was often proof enough. The United States, for example, introduced OC tear gas without it passing any real assessment of its effects on health (Rocher, 2021). Following the deaths of several prisoners from exposure to OC, the government ordered a series of investigative reports from the Department of Justice that suspiciously concluded that the cause of death was not attributable to OC. However, it should be noted that the head of the main study – conducted by the US police – on the non-lethality of OC was convicted of accepting bribes from CAP-STUN, the name of the supplier of said non-lethal weapons (Rocher, 2021). Similar cases following the introduction of OC also occurred in countries such as France and England.

With regard to chemical irritants in particular, the general perception is that they cause short-term and minor effects, such as tearing, coughing and vomiting. However, they can also cause shortness of breath and chest tightness, chemical burns, blisters on the skin, severe allergic reactions and, in the most extreme cases, death by asphyxiation or chemical poisoning (Amnesty International, 2020; STOA Panel, 2000). There is no lack of scientific literature attesting to the fact that: "*deaths from tear gas do occur.*" To cite one example, during the Arab Spring in Bahrain, Physicians for Human Rights attributed 39 deaths to exposure to tear gas (Physicians for Human Rights, 2012). In addition, there are also dangerous risks associated with tear gas dispersion mechanisms, as demonstrated by the example of a man who died in Iraq after being shot in the head at close range with CS grenade with a 40mm projectile (STOA Panel, 2000). As Amnesty International and Omega Research Foundation, among others, warn, if projectiles containing chemical irritants hit a person directly, "*they can cause penetrating wounds, concussion and other head injuries and, in severe cases, death*" (Amnesty International, 2020). A wide-ranging study by Physicists for Human Rights in conjunction with other organisations (Physicians for Human Rights, 2016), based on the compilation and analysis of medical literature over the past 25 years on the impact of potentially lethal weapons, lists 5,131 cases of chemical irritant casualties globally, of which 2 died and 70 (1.7%) suffered permanent disabilities, including ruptured eyeballs and blindness, traumatic brain injury resulting in vegetative state, limb amputations and functional loss of limbs. Of the 9,261 injuries documented[19], 17% were moderate and 8.7% were severe. The latter included injuries to multiple body systems, with most of the injuries being to the skin, eyes, and cardiopulmonary system[20]. Although the psychological impact has hardly been studied or documented, exposure to chemical irritants may result in significant psychological symptoms and long-term disability. For example, in the assessment of victims following the Gezi Park protests in Turkey, 43% of them were found to suffer acute stress disorder, 23% had diagnostic criteria for post-traumatic stress disorder, and 7.7% had diagnostic criteria for major depressive disorder (Unuvar, 2014).

When it comes to kinetic impact projectiles, the level of dangerousness varies depending on various factors such as, for example, the type of weapon, the projectile, firing distance, the part of the body hit and the state of health of the person hit. In theory, these projectiles are intended to cause trauma rather than to penetrate, although this does not prevent them from being a dangerous risk and causing injuries such as

18. For example, the study by physicist Jürgen Altmann. "Non-lethal weapons technologies. The case for independent scientific analysis", *Medicine, Conflict and Survival*, 17, nº3 (1 July 2001): 234-47

19. Many persons presented with multiple injuries.
20. Lungs, heart, and chest.

lacerations, broken bones, concussion and other head injuries and damage to internal organs. In practice, however, these weapons have shown that they can also penetrate the skin. One study found that: "*at distances of less than 20 metres penetration is almost certain to occur*" (Dhar et al., 2015). When this happens, it increases the risk of serious infection and vascular injury that can result in amputation or death. In this regard, both the medical literature and civil society warn that the use of these projectiles often occurs at much closer distances than is considered safe (Physicians for Human Rights, 2016). Of the 1,958 profiles documented by the impact of these projectiles in the Physicists for Human Rights report, 53 victims died (3%), 294 suffered permanent disability (15%) and up to 70% suffered injuries considered to be severe. Both fatalities and permanent disabilities were often caused by impact to the head and neck, accounting for 49% of the fatalities and 84% of the permanent disabilities. The torso is also as a region of risk: one in five people with abdominal injuries suffered permanent disability. As for projectiles, while it has been unambiguously affirmed that bullets such as rubber bullets can have mutilating and even lethal consequences (Rocher, 2021: 49), the risks may be exacerbated when bullets containing metal, such as pellets, are used.

Although the United Nations clearly states that these weapons should never be used (Office of the High Commissioner for Human Rights, 2020), the case of Chile, for example, shows that their use is still the order of the day. To take an example from other geographies, in 2017 Amnesty International reported that, since July 2016, Indian security forces in Kashmir had caused hundreds of blindings and at least 14 protesters died due to pellet impact (Scroll Staff, 2017). In the same region of Kashmir, the State Human Rights Commission has recorded 3,800 cases of injuries and blindness also due to pellets since 2016. Even so, the number could be very high if we take into account that: "*hundreds who, because of the fear of [security] forces, don't register themselves at all*," stated the spokesperson of the Pellet Victims Welfare Trust, an informal group of pellet victims in Kashmir. This organisation has recorded 1,233 victims, most of whom were blinded (BBC, 2018). Electroshock weapons also tend to be underestimated in terms of their effects on human health. Disproving false assumptions, international bodies such as the UN Committee against Torture have stated that these weapons can lead to death (Rocher, 2021: 51). Some States have accepted the risks. For example, France's Council of State went so far as to state that the use of these weapons poses serious health risks that can directly or indirectly cause the death of the persons targeted (2021:51). Civil society organisations also echo these warnings. In 2012, an Amnesty International report on the use of electroshock weapons in the United States concluded that over 550 people had died as a result of exposure to electric shocks from these weapons (Amnesty International, 2013). However, the US has gone so far as to increase the power of this weapon to 26 watts, which is much higher than the 5-7 watts delivered in evaluation tests and which ensured the safety of these weapons (Rocher, 2021: 50). In this regard, the British Medical Journal notes that most studies on the effects of Tasers are funded by the manufacturers (ACAT, 2016).

As for the effects on health of water cannon, acoustic weapons, directed energy weapons and disorientation devices, there is still a great lack of significant medical literature available (Physicians for Human Rights, 2016). However, a review of specific cases involving these weapons demonstrates their ability to cause significant harm to protesters. An example of this are studies that report the mutilating effects of water cannon, particularly on the eyes when the pressure of the jet of water is 10 bar (Rocher, 2021: 50). Despite this, in countries such as France, the water pressure of jets against protesters has been as high as 20 bars (Rocher, 2021: 50). The UN has therefore warned that water cannons fired at groups of people at close range can cause permanent blindness or secondary injuries.

The serious health complications, including death, posed by all of these weapons, are set out in the United Nations' "Guidance" (Office of the High Commissioner for Human Rights, 2020). While the 1979 "Code of Conduct for Law Enforcement Officials" and the 1990 "Basic Principles on the Use of Force and Firearms by Law Enforcement Officials" classify these weapons as non-lethal, the 2021 "United Nations Human Rights Guidance on the Use of Less Lethal Weapons in Law Enforcement" changed the term to "less lethal". This document, which is the latest United Nation update on these weapons, specifies that: "*This 'Guidance' does not use the term 'non-lethal' given that the use of any weapon can have fatal consequences*" (Office of the High Commissioner for Human Rights, 2020. Via statements such as this, the United Nations has begun to point to the idea that the lethality of a weapon is not determined by a weapon per se (all weapons can kill) but by the way it is used. In this regard, it sets out that:

> "Less-lethal weapons and related equipment may also kill or inflict serious injury, especially when they are not used by trained personnel in accordance with the specifications, with general principles on the use of force, or with international human rights law" (Office of the High Commissioner for Human Rights, 2020).

Given that the manner in which these weapons are used by law enforcement has often been at the heart of grievances by human rights organisations, this last point is significant. As part of this logic, in 2018 the UN Human Rights Council further encouraged the establishment of protocols "*for training in and use of non-lethal weapons, bearing in mind that even less-lethal weapons can result in risk to life*" (Human Rights Council, 2014.[a]). Even so, we believe it is important to insist on the idea that the lethality of these weapons and their impact on health – which has been more than proven and highlighted by several studies by civil society, academia and intergovernmental organisations – is strongly conditioned by the way these weapons are used. If any weapon (whether classified as lethal, less lethal, non-lethal or any other label) has the potential to kill, the way in which it is used will largely determine its dangerousness and lethality.

2.3 THE MILITARISATION OF THE POLICE AND THE POLICISATION OF THE MILITARY

Potentially lethal weapons are also part of the problem and debate brought about by the militarisation of police forces and the policisation of the military. A blurring of the boundary between the police and the military is now taking place, and potentially lethal weapons are playing a relevant role as they do not have a defined use in either of the two fields. While in the case of their use by the police they may represent a step further towards militarisation, in the case of the military they represent a transformation with respect to its functions, which are becoming more police-related. Albeit briefly, it is necessary to mention here at least some of the aspects that make up this blurring of functions between the military and the police, as they influence the use, expansion and manufacture of potentially lethal weapons.

It was at the start of the 20th century when this dynamic – this blurring of the boundary between the police and the military – was observed. As a result, it is increasingly common to find that military or paramilitary forces are deployed or created in contexts of internal State security, and linked to traditional police work. This can occur in three ways: either the police are provided with tools, tactics and training that resemble those of the military; or the military is given domestic State security policing functions; or intermediate bodies are created which are neither military nor police but which combine their functions and tools, forming paramilitary groups.

An example of this militarisation by creating a specific group in a place where poverty has become a threat – and has been securitised and militarised – can be found in the favelas of Río de Janeiro, Brazil, via the creation of the Special Police Operations Battalion (BOPE). This military police force was created in 1978 during the military dictatorship. Where the State has forsaken areas with high levels of poverty and criminality, the presence of paramilitary groups is reinforced in order to "pacify" them, which is what has happened, especially since May 2008 (Mayr, 2015: 534). This, in turn, considerably conditions the way in which problems linked to poverty are addressed. By so doing, urban environments are understood as spaces of conflict or urban warfare. Firstly, because there is an ever-growing tendency to tackle the challenges of urban growth and inequality in a militarised way. Secondly, because even conflicts and wars between States are increasingly being disputed in urban environments, often arising from asymmetrical wars with diverse military powers, and where the conquest or occupation of the city is a strategy of domination. Lastly, because a globalised world has also internationalised conflict, as in the case of international terrorism, which is carried out over huge distances, with cities and metropolises being targeted in these attacks.

Potentially lethal weapons are essential for military forces deployed to tackle this complex and growing conflict in cities (Fidler, 2013: 49). The ACLU (American Civil Liberties Union) published a report in 2014 with the aim of denouncing precisely this growing militarisation of urban spaces in the United States. The report concludes that the so-called War on Drugs has led to the growing militarisation of the police and the creation of Special Weapons and Tactics (SWAT) teams (American Civil Liberties Union, 2014). After analysing the tactics, tools and courses of action of this unit, the report notes that:

> "The militarization of American policing is evident in the training that police officers receive, which encourages them to adopt a 'warrior' mentality and think of the people they are supposed to serve as enemies, as well as in the equipment they use, such as battering rams, flashbang grenades, and APCs [armoured personnel carrier]" (ACLU, 2014: 3).[21]

The city of Vancouver is another example of the militarisation of the police. During the 2010 Winter Olympics, the city invested the highest amount ever in security: a total of one billion Euros. In other words, 50% of the total expenditure for that year's Olympics was spent on security forces (Molnar, 2015: 237). A unit called the Military Liaison Unit (MLU) was thus created, which combined military and civilian strategies and personnel. A number of Canadian cities seem to be increasingly acquiring military equipment for the police, sometimes handed over from the country's own armed forces (Lorinc, 2020).

21. The original is in English

In Mexico, on the other hand, the war on drugs, waged since 2006 by the Calderón government, has led to the deployment of both the army and the National Guard. Instead of creating a paramilitary group or militarising the police, the Mexican government has been deploying the army inside the country for years. In this case, the tasks performed by the army are those of a police force, but with no civilian control due to its military status. Some investigations have pointed to a link between the deployment of the army and the violation of fundamental rights, which has possibly aggravated the situation of the civilian population (Amnesty International, 2018; Human Rights Watch, 2011; Trevino-Rangel et al.)

The case of New York City is an example of where we can see the model of a city in which urban militarisation is growing and where its consequences are leading. New York City neighbourhoods were securitised within the framework of Operation Impact developed by Michael Bloomberg's mayor's office in 2003, which established risk profiles for the city's neighbourhoods. Some neighbourhoods were classified as "high-risk" because of their levels of crime and called Impact Zones. Neighbourhoods with this profile were conceived as war zones or militarised (Kaufman, 2016: 72). Thus, under this model of security, police control and surveillance over residents was strengthened, meaning that all people were treated as potential criminals, even if they were also victims of crime.

New century cities are then subject to what Stephen Graham has called "new urban militarism". According to Graham (2012: 137), urban militarism is consolidated by the expansion of the idea of "permanent war". An idea which, when put into practice, intensifies the militarisation of different aspects of daily life. This, together with the fact that the military, above all in the United States, analyses cities as a new scenario of conflict, for so-called "fourth generation" wars (Graham, 2012: 139). 139). Thus, the conception of a public space in which obsessions with all kinds of security exist increases (Di Masso, Berroeta, Vidal, 2017: 59). Furthermore, this model of militarised security leads to the diverting of resources from one programme to another. For example, in 2020, in Chicago, what was spent in one year on mental health services was spent each day on policing (Àvila et al., 2021: 141).

Urban public space has special dynamics that turn it into a disputed territory where conflicts that have to do with social privileges and power are reproduced 2013: 418). With the justification of addressing global conflicts, terrorism and social dispute, public space is progressively being militarised in cities around the world. In this context, potentially lethal weapons, presented as more acceptable and less harmful weapons, find an urban arena in which to proliferate.

3. A FAVOURABLE CONTEXT FOR A BOOMING MARKET

Manufacturers are always a relevant actor to analyse when studying the arms market. According to a report published in April 2022 (The Insight, 2022), it is estimated that the market for potentially lethal weapons will reach $9.38 billion by 2028, compared to 2021 when the market was valued at $6.15 billion. In other words, an annual increase of 6.1% and an increase of more than 52% in 7 years. Given these growth figures, it is interesting to consider the reasons behind these figures. According to the Global Peace Index 2022, and for a total of 126 countries out of 163 assessed, violent protests have increased by 49% since 2008 (Global Peace Index, 2022: 23). It is true that the concept of "violent demonstration" may have changed, given that the term violence does not have a single definition, and that it depends considerably on who is defining it and the factors that are taken into account. In the case of the Global Peace Index, a demonstration is considered to be violent according to an indicator that defines the type of actions at a protest and the incidents, injuries and fatalities[22]. Bearing this in mind, the worst indicators in 2021 were the scores presented by India, Colombia, Bangladesh and Brazil.

This indicator, which points to a considerable increase in violent protests all around the world over the last 14 years, could explain why the business of potentially lethal weapons is on the rise. However, the data raises several questions: on the one hand, whether the increased acquisition of such weapons may have been a factor in the rise of violent protests; and, on the other hand, whether for some reason greater levels of social unrest could lead to more protests and thus to governments deciding to acquire more weapons, both of which could lead to more clashes and confrontations. In order to go into more depth, more research and data consultation than this research can cover would be needed.

22. The indicator was created by the Institute for Economics & Peace, which in turn is based on the database of the Armed Conflict Location and Event Data Project, and is used in the Global Peace Index report. According to the authors of the report, the indicator captures the frequency and severity of violence during protests, demonstrations and riots, perpetrated either by the demonstrators themselves or by the security forces. The indicator is constructed on the basis of four scenarios; Protest with intervention; Excessive force against protesters; Violent demonstrations; and Mob violence. For more information, see the full report.

The same report, which forecasts the market value of potentially lethal weapons, analyses the main end-users of these weapons. Unsurprisingly, security forces are the main purchasers of these weapons, accounting for 83.9% of the total in 2020 (The Insight, 2022). In terms of the regions dominating this market, the United States and Europe are at the top of the list, as they are with conventional weapons.

3.1 THE MAIN MANUFACTURERS OF POTENTIALLY LETHAL WEAPONS

Of the two reports consulted, which calculate the market value of potentially lethal weapons (Allied-Market, 2022; The Insight, 2022), the companies that stand out the most in the sector are highlighted. Table 2 shows the main ones..

Table 2. Major global producers of potentially lethal weapons

Company	Country	Est. in	Products
ALS Less lethal weapons (a subsidiary of Pacem Defense)	USA	-	Less lethal bullet and grenade launchers, grenade and bullet barricade penetrators, blast strip, tear gas dispersal balls and grenades.
ASP INC (Armament Systems and Procedures)	USA	1976	Expandable steel batons, tear gas spray, training.
Lamperd Less Lethal	Canada	1969	Launchers, pepper spray, rubber ball launchers, rubber bullets and other ammunition.
Combined Systems, Inc.	USA	1981	Aerosols, irritants, flash bangs, sting-ball grenades and various projectiles.
PepperBall Technologies, Inc.	USA	1996	Manufacturer of the PepperBall Launcher, a multiple ammunition launcher available in various sizes.
Rheinmetall AG	Germany	1889	Irritant devices that expel small charges of irritant sub-munitions, irritant grenades, irritant launchers, irritant cartridges and 4-bang "warning shot" cartridges. Bullets less than 40mm considered to be "non lethal", sound and stun grenades, vehicles for special police and military operations.
NonLethal Technologies, Inc.	USA	-	"Rubber pellet cartridges, gas cartridges and grenades, barricade penetrators, stun and smoke grenades, hand and vehicle launch systems."
Condor Non-Lethal Technologies	Brazil	1985	Indoor and outdoor explosive grenades, pepper and tear gas grenades, launchers, pepper and tear gas sprays, pyrotechnics and electric pistols.
Axon Enterprise, Inc (former name TASER international)	USA	1993	Mainly electric pistols, manufacturer of the TASER brand: TASER 7, TASER 7 CQ, TASER X26P.
ISPRA (Less Lethal)	Israel	1969	Incapacitation tear gas ejector weapon; combined tear gas and blast, and gas and smoke grenades; blast grenades; different types of tear gas; hand thrown and launchable screening/signalling ammunition; tear gas and stun rounds and incapacitation bullets, launchers; drones firing less lethal ammunition.
Byrna Technologies Inc. (in 2021 it acquired "Mission Less Lethal Technologies)	USA	2005	Manufactures and sells all types of weapons considered to be less lethal such as launchers, rubber balls and pepper sprays.
FN Herstal	Belgium	1889	Projectiles and launchers.
Raytheon Company	USA	1922	Microwave and heat ray.
Safariland, LLC (a subsidiary of BAE Systems)	USA	1964	Protective equipment and communication tools for law enforcement, holsters, armour, headsets and equipment bags.
Zarc International	USA	1982	Manufacturer of the well-known VEXOR and CAP-STUN pepper sprays and grenades, projectiles and pistols.

Source: own work based on the following sources: ALS Less Lethal, 2022; AlliedMarket, 2022; ASP Inc, 2022; Axon, 2022; Combined Systems, 2022; Condor, 2022; Dees, 2012; FN Herstal, 2022; ISPRA, 2022; Lamperd Less Lethal, 2022; NonLethal Technologies, 2022; PepperBall, 2022; Rheinmetall, 2022; Safariland, 2022; The Insight, 2022; Zarc International, 2022.

The table shows what kind of companies make up the potentially lethal weapons ecosystem. These companies are, according to the Stockholm International Peace Research Institute (SIPRI), among the top 100 military arms manufacturers. Among them are Raytheon Company, which in 2020 ranked second in the top 100 behind Lockheed Martin and Germany's Rheinmetall, which ranked 32 in 2019 and rose to 27 in 2020. Also on the list is Safariland, a BAE Systems subsidiary specialising within the group in potentially lethal weapons. BAE Systems is also one of the most powerful military companies, and ranked sixth in both 2019 and 2020 (SIPRI, 2022).

Although in Table 2 there are no other companies from the conventional military complex among the most relevant companies on the market for this type of weaponry, this does not mean that they are not producing potentially lethal weapons. As these weapons are also manufactured for use by armies, they are probably more difficult to detect in their catalogues, or they are not labelled as potentially lethal weapons, given that we are talking about types of weapons that are also used by armies.

Of the main companies listed in the table that dominate the market for potentially lethal weapons, 10 out of 15 are in the United States (ALS, ASP, Combined Systems, PepperBall technologies, NonLethal Technologies, Axon Enterprise, Byrna Technologies, Raytheon Company, Safariland and Zarc International). This follows the same trend as with military companies, as the five largest manufacturers are American (Lockheed Martin, Raytheon Technologies, Boeing, Northrop Grumman and General Dynamics). Therefore, at least two of the most powerful conventional arms producers stand out on the market for potentially lethal weapons: Raytheon Company and Bae Systems, the latter via its subsidiary Safariland.

In the case of potentially lethal weapons, there are five other companies in five different countries that stand out on the market: Israel, Brazil, Canada, Germany and Belgium. Of these countries, Israel, Germany and Canada have companies that are noteworthy in the field of military production and are among the 100 most powerful, according to SIPRI data. In the case of Israel, these companies are Elbit Systems, Israel Aerospace Industries and Rafael. In the case of Germany, we find Rheinmetall again, which is also in Table 2, as well as ThyssenKrupp, Krauss-Maffei Wegmann and Hensoldt. CAE is the one Canadian company that stands out among the 100 most powerful companies in the military sphere. Brazil and Belgium, on the other hand, appear to have companies that stand out globally in the field of potentially lethal weapons production, but less so when it comes to conventional military production.

Of the companies analysed, we found five that sell their products via their websites, which makes access to these types of weapons easier. Some of them, such as Byrna, allow their products to be ordered and purchased like any other online item, but will only ship within the United States. This accessibility is because the end user of these weapons is different from that of conventional military weapons, which are governed by national and international regulations and are normally purchased by States for their military forces. Potentially lethal weapons thus have broader end users: security forces, private military security companies, local and national police, border management forces, State paramilitary forces, armies and, depending on each country's regulations, private citizens.

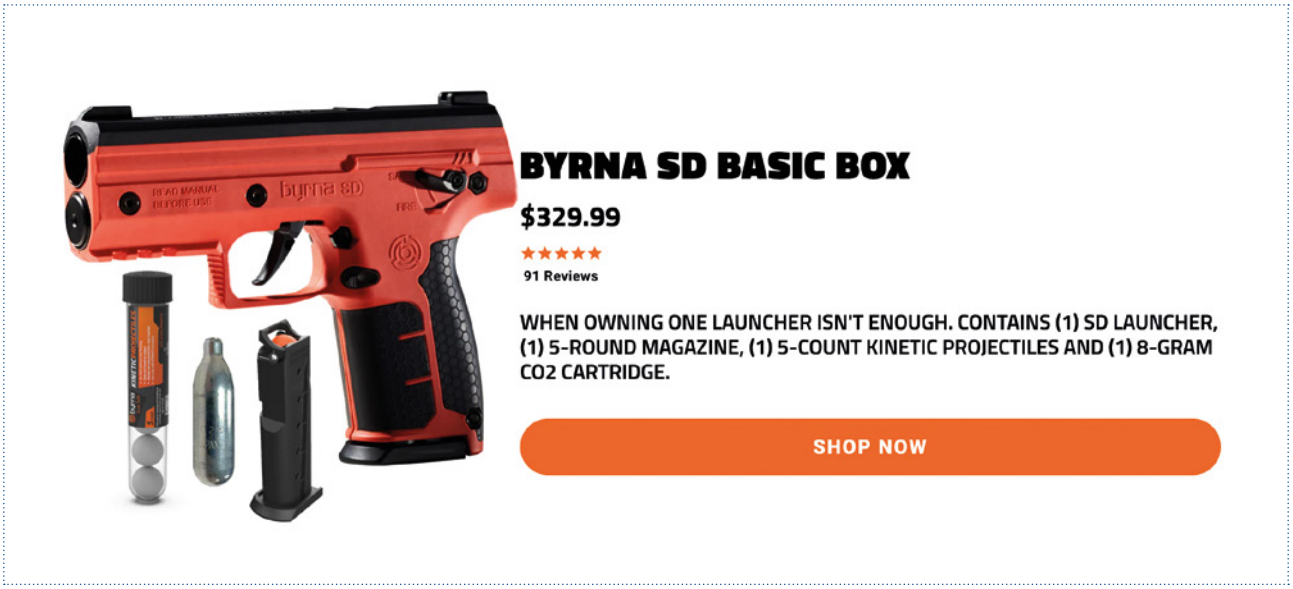
Byrna's business model serves to explain the militarisation of urban space and, at the same time, illustrates the inequality of access to a particular model of security. It is a company formed within a culture where the individual has the right to defend themself, even if this occurs in the absence of strong protective structures. When these do not exist or are very weak, the protection they provide, such as access to basic resources like health, education, housing and the right to a decent life, among others, is reduced to such an extent that social conflict and discontent increase as a result of inequality and a lack of protection. Thus, when people's insecurity (objective or perceived) is greater, a potentially lethal weapon can be perceived as the way to defend oneself when protection is lacking.

This model leaves security in the hands of the individual so that, in societies such as the United States, access to firearms and potentially lethal weapons is granted, but not without the social cost and risks they bring. Furthermore, the company offers discounts to those it considers to be on the front line and who it considers "its heroes", including a sector such as teachers, for whom it is controversial as to whether they should have this role. As its website says:

> Byrna supports our heroes. Military, first-responders and teachers receive 15% off. (*some restrictions apply. Your 15% discount will be automatically applied to your order) Byrna, 2022)[23]

Despite the numbers of mass shootings in the country, the company offers discounts to teachers, encouraging them to be armed and enabling them to act if faced by a shooter. Just in the months of January to September 2022, the Gun Violence Archive reported that there have been 496 shootings, with a total of 495 people killed and over 2,000 injured (Gun Violence

23. The original is in English. See: https://byrna.com/products/byrna-sd-basic-box



Source: Screenshot of Byrna's website (2022).

Archive, 2022). In this context, which is directly linked to the easy access to firearms, teachers are asked to defend and protect in a way that far exceeds what their role and work in society should be, putting the role of security provider in their hands. So, once again, the debate on the lack of regulation of firearms in the country, which, as the data shows, brings added insecurity, has been ignored. In August 2022, Byrna entered into an agreement with Bersa S.A., one of South America's leading arms manufacturers in Argentina, in order to sell its products in the region.

In the case of Raytheon, the company manufactures potentially lethal weapons for use by the military. Via Ktech, a company that Raytheon acquired in 2011, and with researchers from Boeing and the Air Force Research Laboratory, it has manufactured microwave energy weapons to knock out electronic devices (Axe, 2012). The project, called CHAMP, Counter-Electronics High Power Microwave Advanced Missile Project, had been worked on for almost a decade until the US military first deployed it in 2019 fitted into cruise missiles (Wright-Patterson, 2019). These microwave technology missiles have been manufactured by the research arm of Boeing Phantom Works, whose aim is to research and create new weapon technologies. Boeing is therefore also involved in the manufacture of potentially lethal weapons, albeit for military use.

Raytheon has also developed the heat ray (Active Denial System) that produces a hot feeling in the body when fired from the device from a certain distance, but which then becomes unbearable. Developed in the 1990s, this weapon was on the brink of being deployed in Iraq in the years following the invasion at the request of soldiers deployed there. However, the shipment was cancelled due to a number of concerns about its possible deployment. On the one hand, it generated controversy among the scientific community and NGOs because of its potential to be used as an instrument of torture and, on the other, the US government was concerned that it could contribute to increasing the image of the US as an invader and aggressor (Lardner, 2007). It was, however, deployed in Afghanistan in 2010, although only for a month. A smaller version of the weapon has been sold to police forces (Physicians for Human Rights, 2016: 79).

The military and other social sectors claimed that using this weapon could have prevented deaths in Iraq, of both soldiers and civilians (Lardner, 2007). It is important to note that this will be one of the major debates surrounding potentially lethal weapons in contexts of either armed conflict or demonstrations, and which we will address in the following section.

Several conclusions can be drawn from this analysis. Firstly, that the conventional military industrial complex is interested in the manufacture of potentially lethal weapons, not only because of their possible military use, but also because it is a new market linked to securitisation and the growing militarisation of police forces. Secondly, as we have seen, some of the most important arms manufacturers have been researching and producing these potentially lethal weapons for different contexts for a number of decades. Thirdly, that the market for these weapons is not only a growing market, but there is also a much greater end-user market than for conventional weapons, although the type of end-user, in the case of civilians, depends on each country's regulations on owning these weapons.

3.2 A BOOMING CONTROVERSIAL MARKET

As any market related to the manufacture and sale of weapons, the market for potentially lethal weapons is not only controversial but there are also different views on how and what their use should be, what the reasons are for their deployment, and even whether they should be used at all. Given that these weapons are for both military and police use, the boundaries are less well defined than those of conventional weapons. Similarly, as weapons that are claimed to be less lethal – although this depends considerably on how they are used – the debate and controversy are open, especially among social movements and human rights organisations.

Below is an account of how some of the potentially lethal weapons manufactured by the companies analysed in the previous section have been used. As tracing the use of these weapons is complicated, we would like to recognise the work of a number of human rights organisations that have made a huge effort to document them via people who are active in the field. However, the cases put forward here are just one example of the controversy behind the global trade in potentially lethal weapons. The fact that some companies do not appear below does not mean that their products may not end up as tools of police abuse.

Source: screenshot of the CYCLONE drone taken from ISPRA's website, available at https://www.ispraltd.com/image/users/423329/ftp/my_files/Riot%20Control%20Drone%20-%20Cyclone-1.pdf?id=30746915

ISPRA (ISRAEL):

ISPRA is one of many companies that tests its products on the Palestinian population. The company has developed drones designed to disperse tear gas and grenades that hit demonstrators when dropped and release tear gas when they hit the ground. It is called the "Cyclone Riot Control Drone System". The use of these drones was first reported in 2018 when used against demonstrators in the Gaza Strip protesting against the opening of the US embassy in Jerusalem (Hilton, 2018). During two days of protests, at least 60 Palestinians were reported killed by tear gas inhalation and over 900 injured. What is more, ISPRA promotes its riot control products as "field tested", in other words tested on the ground with the Palestinian population (ISPRA, 2022a). In fact, Israel's Homeland Security company directory, published by the Ministry of Defence, promotes ISPRA and many other companies in this way:

> "Israel's operationally and combat proven systems excel in reliability and usability which best meets customer requirements" (Israel Ministry of Defense, 2018: 3)[24].

In Burundi, Amnesty International reported on the abuse of police force and the use of potentially lethal weapons during the 2015 protests. Water cannon, tear gas and firearms were used during the demonstrations, and dozens of people, including children, were killed (Amnesty International, 2015: 4-22). According to the Omega Research Foundation, which works with individuals, organisations and journalists on the ground, the potentially lethal weapons used were supplied by Israeli companies ISPRA and Beit Alfa, and French company SAE Alsetex (Omega Research Foundation, 2022a).

Similarly, in 2013, human rights organisations denounced the abuse of the use of force by security forces during protests in Azerbaijan in March of that year. The aim of the protests was to denounce the secrecy of the military in the country as unexplainably high numbers of conscripts had been killed without being deployed in combat (Amnesty International, 2013; Human Rights Watch, 2013; Sultanova, 2013). A report by the Omega Research Foundation and SIPRI notes that during the protests the security forces used rubber balls, water cannon and also tear gas canisters, the latter manufactured by ISPRA (Farha and Wraith, 2015): 38).

24. The original is in English

CONDOR TECNOLOGIAS NAO LETAIS (BRAZIL)

The Omega Research Foundation, which researches the use of potentially lethal weapons in specific contexts, found indiscriminate use and misuse of firearms and potentially lethal weapons during the protests in Sudan following the military coup d'état in late 2021. During the protests, which lasted for months, there were hundreds of deaths and several cases of police abuse, linked in particular to the use of tear gas (Eltahir, 2022). The type of potentially lethal weapons used included GL-202 tear gas grenades, GL-300 tear gas and ammunition-releasing grenades, as well as GL-700 sound grenades, GL-307 sound and flash stun grenades (Omega Research Foundation, 2022b). Other types of potentially lethal weapons manufactured by companies such as Military Industry Corporation (MIC) (Saudi Arabia) and Factory No. 9604 (China) were also identified. Some of these products included weapons that were past their expiry date and should not have been used (Omega Research Foundation, 2022b).

Tear gas was also detected during the tough Arab Spring-related protests in Bahrain during 2011 and 2012 as discussed below (Physicians for Human Rights, 2012a: 7).

PEPPERBALL (UNITED STATES)

During the 2019 National Strike in Colombia, abuse and the indiscriminate use of potentially lethal weapons against protesters by the ESMAD (Mobile Anti-Riot Squad) were reported (Amnesty International, 2019). Among others, there was an abuse of tear gas, in this case the PepperBall brand (Amnesty International, 2022). During the demonstrations, Dilan Cruz, who was killed by the ESMAD, became a focal point (BBC, 2019). Despite the ESMAD's record of rights violations against protesters (Angelo, 2021; Human Rights Watch, 2021), another Israeli brand, Trinity Group, offered the country its Riot Control Vehicle to reinforce tools used by the police force (Saumeth, 2021).

SAFARILAND - SUBSIDIARY OF BAE SYSTEMS (UNITED STATES):

The US border with Mexico has been militarised for decades; the justification being an increase in attempted crossings by migrants, although many of them may possibly be asylum seekers. Far from complying with international law that requires verification of asylum claims and makes "hot return" illegal, US Customs and Border Protection (CBP) uses potentially lethal weapons against forcibly displaced persons, including tear gas manufactured by the company Safariland (Amnesty International, 2022; Çam, 2018). Safariland is a subsidiary of Bae Systems, one of the world's most profitable military companies (SIPRI, 2022).

NONLETHAL TECHNOLOGIES (UNITED STATES), CONDOR TECNOLOGIAS NAO LETAIS (BRAZIL), RHEINMETALL (GERMANY) AND OTHERS:

The Bahraini government has been accused by organisations and journalists of abusing tear gas, going so far as to dub it the "Tear Gas Regime" (Physicians for Human Rights, 2012a; Fake, 2012). The report by Physicians for Human Rights concludes that during the protests that took place during the so-called Arab Spring in Bahrain, there were reports of ongoing cases of police abuse, beatings, arbitrary arrests, misuse and abuse of tear gas, and a generally high degree of repression against the civilian population. Among the tear gas manufacturers were SAE Alsetex/Etienne Lacroix Group (France), Condor (Brazil), NonLethal Technologies (United States) (Physicians for Human Rights, 2012a: 8). According to this same report, the indiscriminate use of gas resulted in injuries from the impact of gas projectiles, maimed eyes as well as some deaths from these impacts and from the effects of inhaling too much gas. The Bahrain Center for Human Rights (BCHR) also reported finding tear gas canisters and containers very similar to those produced by Denel, a South African subsidiary of Rheinmetall (Bahrain Center for Human Rights, 2014).

COMBINED SYSTEMS (UNITED STATES):

Some products, and tear gas in particular manufactured by Combined Systems, have turned up in countries such as Israel and Egypt. In the case of Israel, it signed a contract worth NIS 4 million ($1 million) with the company in 2021 for the supply of tear gas bullets (WhoProfits, 2022). As explained in the case of ISPRA, and as previous Centre Delàs[25] reports have shown, any weapons technology produced in Israel ends up being used against the Palestinian population, so it would be feasible to assume that technology imported by Israel would ultimately be used for the same purposes.

Tear gas canisters from this company were also found during protests linked to the Arab Spring in Egypt in 2011 (Shenker and Harding, 2011). Several cases of police abuse and even the use of live ammunition were reported during the protests (Human Rights Watch, 2011a).

25. For more information read the report "Combat Proven Business" available at http://centredelas.org/publicacions/negociosprovadosencombate/?lang=es

In conclusion, while it is difficult to document cases that link individual companies to the misuse of their products in specific countries – which would require considerable work on the ground – some organisations have provided sufficient information for an understanding of the risks that exist when States allow the export of this type of weaponry. As we have seen, these are potentially lethal weapons that can be easily used to repress the civilian population's right to protest, or be used in complex contexts such as armed conflicts in which their functions are unclear. There is also evidence that companies in the military industrial complex are keen to manufacture potentially lethal weapons, whether for military or police use.

In turn, these weapons can help whitewash military interventions and repress dissident demonstrations with the apparent consideration that they "do less harm" than conventional weapons. In situations such as these, tear gas appears to play an important role in causing harm and deterring people from demonstrating. Exports of potentially lethal weapons raise similar controversies to those that conventional arms exports raise and relate to their end use, in this case linked in particular to potential human rights violations. Therefore, given the transformations that are taking place in terms of the internal security of States and the potential military use of these weapons, it is important to pay much greater attention to this type of weaponry and its analysis.

CONCLUSIONS AND RECOMMENDATIONS

Potentially lethal weapons are used in a range of contexts of repression, abuse and human rights violations. As shown by the analysis of their origins and history, the creation, evolution and development of these weapons has been intimately linked to a quest to silence social discontent and dissent. It can be asserted that the use of these weapons has been trivialised, not only because of the ease with which police and security forces appear to approve of their use, but also because of the consequences and damage they bring about, both on traumatised bodies and on new, more militarised, repressive and socially controlling narratives that are emerging about security. We are dealing with weapons which, like any other weapon, are potentially lethal; it is therefore advisable to avoid narratives that seek to compare the supposed "humanisation" of their use as a system for resolving social conflicts.

So, the real underlying problem lies in the way in which security is interpreted in our societies. This interpretation is in response to a hegemonic narrative that security can only be approached from a police and military perspective. The concepts of "security", "peace" and "conflict" are socially contested terms, as understanding and defining them in one way or another has a considerable impact on the way different social challenges and the various forms of violence that occur in our cities are addressed.

It is important to point out that there is an asymmetry in terms of security when a person who demonstrates or participates in a mass action sees their insecurity increased due to the type of weaponry employed by the police. The use of this type of weaponry prompts social fear and limits social mobilisation. So, even if severe physical harm is not always caused, the use of these weapons erodes freedom of expression on the streets.

Of course, the current situation with regard to the use of these weapons is complex and controversial and, at the very least, requires debate and the recommendation of minimum requirements for governments to commit to ensuring the rights and transparency that the use of any type of weapon should require.

On this, the United Nations specifically recommend:

> "Wherever it is possible to do so, States should consider consulting the public prior to the procurement of new types of less lethal weapons, and law enforcement agencies should be transparent about the types of weapons at their disposal" (United Nations 2021).

Based on this principle and the analysis presented via this research, a series of recommendations are set out below. Some of them raise an in-depth social debate; others are minimum requirements that are necessary in the current state in which potentially lethal weapons are used.

- Use appropriate terminology to refer to the use of these weapons because "non-lethal weapons" does not make reference to their potential lethality. The terminology used may trivialise their use and their consequences.

- With regard to their use, our first recommendation would be to remove these weapons from the hands of the security forces in the context of managing law enforcement until there has been an in-depth and broad debate with the aim of bringing about consensus on whether or not to implement them, which weapons would be acceptable and which would not, under what circumstances and in what way.

- The previous point should include an in-depth social and political debate on the role of riot control forces, who are the main users of these weapons, in controlling so-called public order. This is a model whose effectiveness has not been independently questioned or tested, despite the fact that it has been demonstrated that the deployment of riot control forces can lead to an aggravation of both social tension and damage.

- Awareness of the resistance that may be generated by the above points, the minimum suggestion would be to ensure that the regulations and protocols of States regarding the use of these weapons are in line with the international standards established by the United Nations.

- States should set up transparency mechanisms on the type of potentially lethal weapons they have, their cost, their acquisition and their use by public administrations. These mechanisms should include:

  - Mandatory territorial, local or national monitoring commissions following interventions in which these weapons have been used. These commissions should include the participation of independent organisations in order to be able to assess and identify whether there has been irregular and/or abusive use of these weapons, being aware of the fact that, however, that it is necessary to enhance the power and binding nature of the monitoring commissions to prevent their conclusions from being dismissed and from impunity prevailing when the use of these weapons involves serious human rights violations.

  - The creation of independent committees that include civil society organisations to control the export of these weapons by exporting States so that the human rights violation situation of the recipient country can be assessed, taking into account the current situation of that country, its history of human rights violations as well as its police model.

- Given the numerous cases of misuse of tear gas documented by various human rights organisations, binding international regulations are needed. Currently, regulations are State-specific and their export is not regulated. Furthermore, the information that is available is scarce and inaccessible given the implications of this kind of weaponry.

- Ensure, on an international level, optimal monitoring and assessment of the implementation of international regulations on the use of these weapons on a national level.

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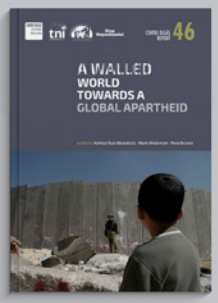

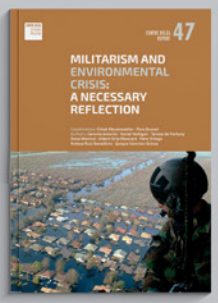

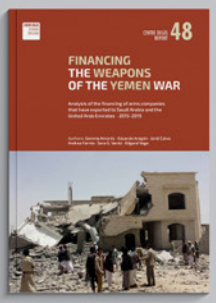

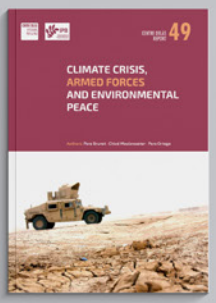

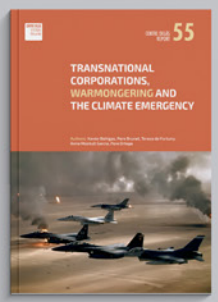

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