

The Public's Perception of the Seriousness of Environmental Crimes Related to Environmental Pollution and Illegal Waste Trade. A Case Study of the Province of Brescia, Italy



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COLLECTION:
EXPLORING THE NEXUS
BETWEEN HUMAN
VULNERABILITIES
AND ENVIRONMENTAL
CRIME

RESEARCH

LUISA OLIVI 

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ABSTRACT

This original research delves into the public's awareness of environmental crimes related to pollution and illegal waste operations in Brescia, Italy. It investigates residents' perceptions of the seriousness of environmental crimes occurring in their proximity. Brescia is an ideal location for this type of study as it features the largest density of dumpsites in Northern Italy and nationwide concerning polychlorinated biphenyl (PCB) contamination rates.

This article combines the theoretical approaches of green criminology and sociology to qualitatively explain public perception regarding victimless crimes and slow violence. The data derives from content analysis performed on open-ended responses to an online survey. The findings support a framework to explore the perception of environmental crimes' seriousness, suggesting five essential aspects of analysis: the concepts of environment, crime, violence, harm, and victimization. It also assesses both how these perceptions change whenever organized crime groups are involved in illegal waste trade activities, and the human vulnerabilities that arise.

The findings suggest the need for several interventions at the legislative level. It highlights how weaknesses within institutions make them inadequate to prevent corruption and illegal waste trade. There is also a lack of civil society engagement to counter these effects and an unsatisfactory way in which media channels circulate information concerning these crimes, showing that the phenomenon of the perceptions of environmental crimes is understudied. Indeed, studies about perceptions are an essential starting point to creating the solution and more specific legislation that can properly protect the interests of both the environment and people.

CORRESPONDING AUTHOR:

Luisa Olivi

Freelance, NO

luisaolivi92@gmail.com

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1. INTRODUCTION

The study of environmental crimes requires a broader conceptual approach that both includes the specific definition of the elements that characterize the illicit activities, and does not rely exclusively on a legislative framework but encompasses a wider range of fields and disciplines. This conceptualization presents several challenges: the difficulties to address the parties responsible for the crimes, the type of harm inflicted on the victims, and the identity of the victims—in terms of both human and non-human entities. The goal of this paper is to analyse the five main aspects involved in environmental crimes, namely the understanding of the environment, crimes, violence, harm, and victims. The research further investigates the role of human vulnerabilities related to the exposure to environmental pollution caused by the illegal waste trade, the role that organized crime groups have in the perception of environmental crimes of the illegal waste trade, and the relation between human vulnerabilities and crimes committed by *ecomafie*.

Environmental crimes are never isolated incidents with the purpose of exclusively damaging nature but are often combined with financial crimes and corruption. Some studies include environmental crimes under the heterogeneous umbrella of white-collar crimes, in other words, the financial crimes committed by business people, companies, or governmental bodies that do not entail physical violence (Cullen et al. 2020; Rosenmerkel 2001). The most relevant feature that white-collar crimes and environmental crimes have in common is being intertwined with economic activities. Yet, it is important not to simplify the environmental crimes as merely corporate crimes, but to keep the focus on the harm they cause. Another element is how the environment is perceived and therefore whether nature is viewed as a victim of environmental crimes as much as humans or if these crimes can be considered victimless.

Prosecuting environmental crimes requires collaboration between enforcement entities, which inevitably presents the challenge of aligning multiple environmental regulations across different institutions. For example, local and regional institutions could use different methodologies to address the gravity of toxic pollution and exposure to contaminants, and the diverse outcomes could have consequences in the identification of victims. Divergences in methodologies could influence the definition of a crime and eventually of its victims. Exposure to contaminants is undoubtedly the most challenging element to detect and is the requirement for both the identification of victims and the extent of pollution. Indeed, it is extremely complicated to link the increasing mortality and cancer rate of a specific area to exposure to pollutants (D'Alisa et al. 2017; Openpolis 2021). Knowledge of the geographical extent of pollution and its characteristics is also crucial for those in charge of deciding which are the best options for rehabilitation and restoration of the area.

The complexity of the theoretical conceptualization of the elements involved in the environmental crimes of pollution makes it even more relevant to address how they are perceived by those who are affected and their consequences. The next section provides the methodology used for the research. Knowing the intricacy of the subject, section three provides an overview of the elements that characterize the environmental crimes of illegal waste trade applied to the Italian context and the operations of organized crime groups, and the context of the research. Section four is composed of the framework of the research and analyses its elements, including a focus part on harm and human vulnerabilities and one on *ecomafie*'s violence.

2. METHODOLOGY

The original research is based on primary data collection.¹ The sample population is the inhabitants of the province of Brescia, Italy. The data were collected through an online survey with open-ended questions. The sample was composed of eight of the author's acquaintances,

1 The data collection was made for the master thesis project 'Environmental crimes and illegal waste trade: A study of the perception of the seriousness of crimes related to slow violence and *ecomafie* in the province of Brescia, Italy', Master of Science in International Environmental Studies at the Norwegian University of Life Science, discussed by the author June 16, 2021. The data collected were anonymized and stored according to the regulations of both the Norwegian University of Life Science and the Norwegian Centre for Research Data. Both the thesis and the data sample are available at: <https://nmbu.brage.unit.no/nmbu-xmliui/handle/11250/2763366?locale-attribute=en>. The sample included 86 responses from Lombardia, whilst for this article 60 were considered, after a process of analysis and geographical localization of the respondent.

and the remaining responses were gathered using a snowball method, which was considered the most efficient way to reach the respondents. The little personal information asked and the anonymization of the data as soon as it was received allowed the researcher to avoid personal bias. The data was filtered and divided according to the geographical location of the respondents, identifying four geographical areas: Brescia (25 respondents, coded as group A); Franciacorta (12 respondents, coded as group B); Val Sabbia (9 respondents, coded as group C), and the small municipalities in the southern area of the town, named here as Brescia Sud (14 respondents, coded as group D), with a total of 60 participants. The age range of the respondent was between 18 and 70 years old (Figure 1); 39 are female, 20 male, and 1 other (Figure 2); the level of education spanned through middle school diploma (4 respondents), professional diploma (7 respondents), high school diploma (23 respondents), bachelor's degree (7 respondents), master's degree (17 respondents), and PhD (2 respondents) (Figure 3). Despite the good spatial diffusion of the respondents, it was not possible to cover the entire province.

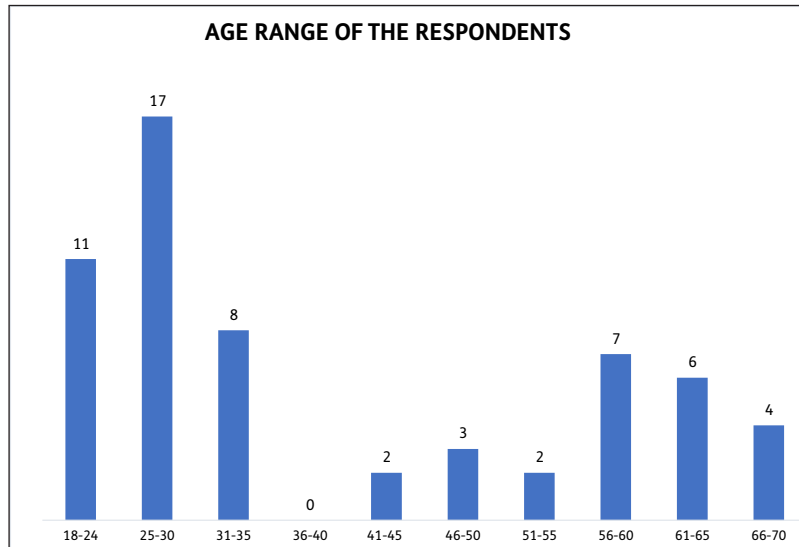


Figure 1 Age range of the respondents of the data collection.

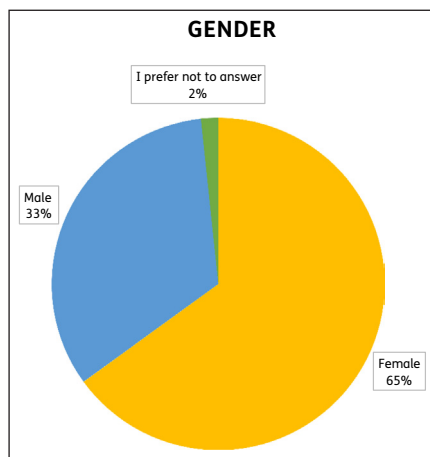


Figure 2 Gender distribution of the respondent of the data collection.

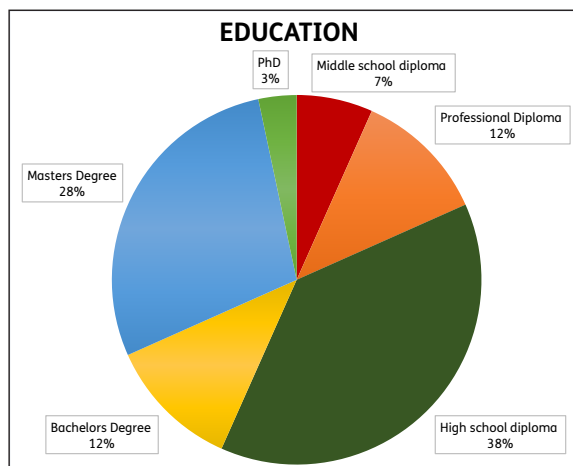


Figure 3 Education level of the respondent of the data collection.

Conducting a written online survey was deemed to be the most feasible method for qualitative data collection owing to Covid 19-related travel restrictions. Online face-to-face interviews would have been an option, but it was not possible due to time constraints. The limitation of this method of data collection was the risk of short answers or little and superficial elaboration of the responses. Further research could conduct a similar study using face-to-face semi-structured interviews and participant observations or focus groups in selected areas, and it could also include gender studies, which were not the focus of this research. Regarding the desk research, the limitation was due to the lack of updated institutional sources related to the investigation of the illegal waste trade.

3. ENVIRONMENTAL POLLUTION AND THE ILLEGAL WASTE TRADE

3.1 THE WASTE CYCLE AND THE ROLE OF *ECOMAFIE*

The paradox of waste relies on its characteristic of being inevitably produced by human activities. These residuals are kept hidden, as suggested by ‘not in my backyard’ practices: the waste of a community is disposed of in remote areas, sometimes less populated and out of society’s spotlight, with little knowledge among the residents regarding any sort of pollution-related problem that might arise. If ‘not in my backyard’ practices are not followed and, owing to poor management, urban waste piles up in the street, the situation is described by the media as a waste emergency. The Italian case shows disparities related to waste treatments facilities among the different regions, exposing how the introduction of new regulations of waste management and its disposal had some positive effects (Agovino et al. 2016b; Agovino et al. 2018). It is evident mainly in those areas with high levels of attention about the topic, whilst there have been little improvements in those that already had a bad waste management system and the presence of *ecomafie* in the waste trade (Agovino et al. 2016a; Agovino et al. 2016b; Agovino et al. 2018).

Commodification of waste is another feature of the economic development of our societies. Waste is converted into a commodity with a value that can be traded in the market, creating profitable opportunities for both legal and illegal economies. New technological developments for recycling waste and for decreasing environmental impact are jeopardized by the growing expertise of organized groups, which are creating extensive networks for the illegal waste trade, requiring professional skills (Bonzanni 2019; Germani & Reganati 2018).

Recent investigations into the illegal waste trade in Italy demonstrate the waste cycle is the prevalent environmental crime committed by organized crime groups, the *ecomafie*, with 7,984 crimes registered in 2018² (Legambiente 2019: 19). The term *ecomafie* was created by the environmental association Legambiente to define the environmental crimes committed by mafia-types organizations. The presence of *ecomafie* had been considered for years an issue exclusive to the territories of origin of the groups (southern regions as Sicily, Calabria, Campania, and Puglia), as they have a deep connection with the native territories and the local social network. However, several investigations proved the presence of *ecomafie*’s activities in the rest of the country (Bonzanni 2019; Camera dei Deputati & Senato della Repubblica 2012; Eurispes 2013; Legambiente 2019). Often the illegal waste cycle is merged with the so-called cement cycle, which involves the chain of illegal activities in construction sectors, such as excavation, transport of material, demolition. The equipment used in the cement cycle is the same needed in waste transport and disposal: the owners of the building companies are likely to be interested in the waste cycle too. In those cases where environmental crimes are committed by *ecomafie*, there are additional risks and vulnerabilities for societies, because these trades are part of bigger illicit networks (Camera dei Deputati & Senato della Repubblica 2012).

² The term refers to all the types of mafia groups (Cosa Nostra, Camorra, ‘Ndrangheta, Sacra Corona Unita), and the investigations proved that the ‘Ndrangheta and Camorra are committing the majority of environmental crime of the illegal waste trade. (Legambiente 2019).

One of the peculiarities of the *ecomafie*'s illegal waste trade is the falsification of documents about type of waste,³ an activity done by private laboratories, aimed to declassify the type of waste to either pay fewer taxes on its disposal or to dispose of it in the wrong type of dumpsites (ARPA 2019; Camera dei Deputati & Senato della Repubblica 2012; SNPA 2020). Nonetheless, it is worth noting that this practice has been documented even when there is no evidence of organized criminal participation. It implies that actors in the illicit waste trade evolved, and now it comprises not just organized crime but also individuals. However, it demonstrates there are factors in the waste cycle, such as corruption, that explain why environmental crimes are frequently classified as white-collar crimes.

Italian authorities have been working for years both to understand the illegal waste trade and to determine how to tackle these activities, achieving several improvements from a legislative perspective. For instance, environmental crimes are now part of the Penal Code. At the same time, the last decade witnessed an interesting number of investigations related to the illegal waste trade where the perpetrators were businessmen, without the involvement of mafia-type groups (Camera dei Deputati & Senato della Repubblica 2012; DIA 2019).

3.2 THE CONTEXT OF THE RESEARCH: THE PROVINCE OF BRESCIA

The province of Brescia is located in Northern Italy, in Lombardy, the richest region of the country alongside the industrial areas of Milan and Verona (Figure 4). Brescia's features combine different types of pollution, making the area an interesting setting for the study of environmental crimes. In fact, it comprises both historic and new types of pollution related to either legal or illegal businesses. The geography and geology of the landscape mark the province as a strategic trade spot for the steel industry, making it one of the first producers in Italy and an important pillar of the European market (Camera dei Deputati & Senato della Repubblica 2012). The consequences of the fast industrialization of the area are shown by the intense production of waste, which required the city to build one of the biggest incinerators of the region, with a capacity of 700,000 tons per year,⁴ aimed at converting the types of waste that cannot be recycled or disposed of in dumpsites into energy (A2A n.d.-b). Therefore, the rest of the waste that cannot be incinerated continues to be disposed of in dumpsites.

Excavation of sand, gravel, and marble are other common commercial activities of the area, and once the pits are depleted, they can be turned into dumpsites (Camera dei Deputati & Senato della Repubblica 2012: 185). The province counts a high number of dumpsites (either legal or illegal), estimated at 13 times higher than the average of the country (CROSS 2019). The census conducted in 2017 identified 665 dumpsites, of which 35 were classified by the Italian legislation as special waste (Forti 2017). These data included legal dumpsites still in use and abandoned illegal dumpsites in public places or in abandoned factories (Camera dei Deputati & Senato della Repubblica 2012; CROSS 2019).

Associated with old types of pollution, Brescia has been the setting of dreadful environmental crimes caused by the disposal of chemicals that contaminated the soil and water sources. The Caffaro factory⁵ has been producing chlorine and its derivatives since 1936. Its waste included

³ The waste must be classified before its disposal according to European regulations, as some kinds of waste need to be treated before disposal. The falsification of these documents is called "girobolla". It is a common technique used to declassify the type of waste that needs to be disposed of, claiming that it already undertook some treatments and so it can be disposed of in a dumpsite for non-hazardous waste, despite being composed of hazardous materials. (Legambiente 2019).

⁴ To improve the circular economy, the energy produced by the incinerator is distributed within the city for heating and street illumination. The incinerator is composed of three different units for the disposal of solid urban waste, special waste, and non-hazardous special waste A2A. n.d.-a. *I rifiuti trattati dal termoutilizzatore di Brescia* [Online]. Available: <https://www.a2aambiente.eu/recupero-energia/tu-brescia/rifiuti-trattati-tu-brescia> [Accessed 12.05.2021], A2A. n.d.-b. *Impianti di termovalorizzazione* [Online]. Available: <https://www.a2a.eu/it/gruppo/i-nostri-impianti/termoutilizzatori/brescia> [Accessed 20.10.2021].

⁵ The Caffaro company was established in Brescia in 1906 and produced caustic soda. After receiving a license from the American company Monsanto, in 1936 Caffaro started to produce chlorine and its derivatives, producing polychlorinated biphenyl (PCB) waste. The production of PCB waste stopped in 1984, and only in 1997 did the company stop the production of chlorine using mercury. Pollution by the Caffaro factory has been known since the 2000s after a journalistic investigation (ASL Brescia 2015).

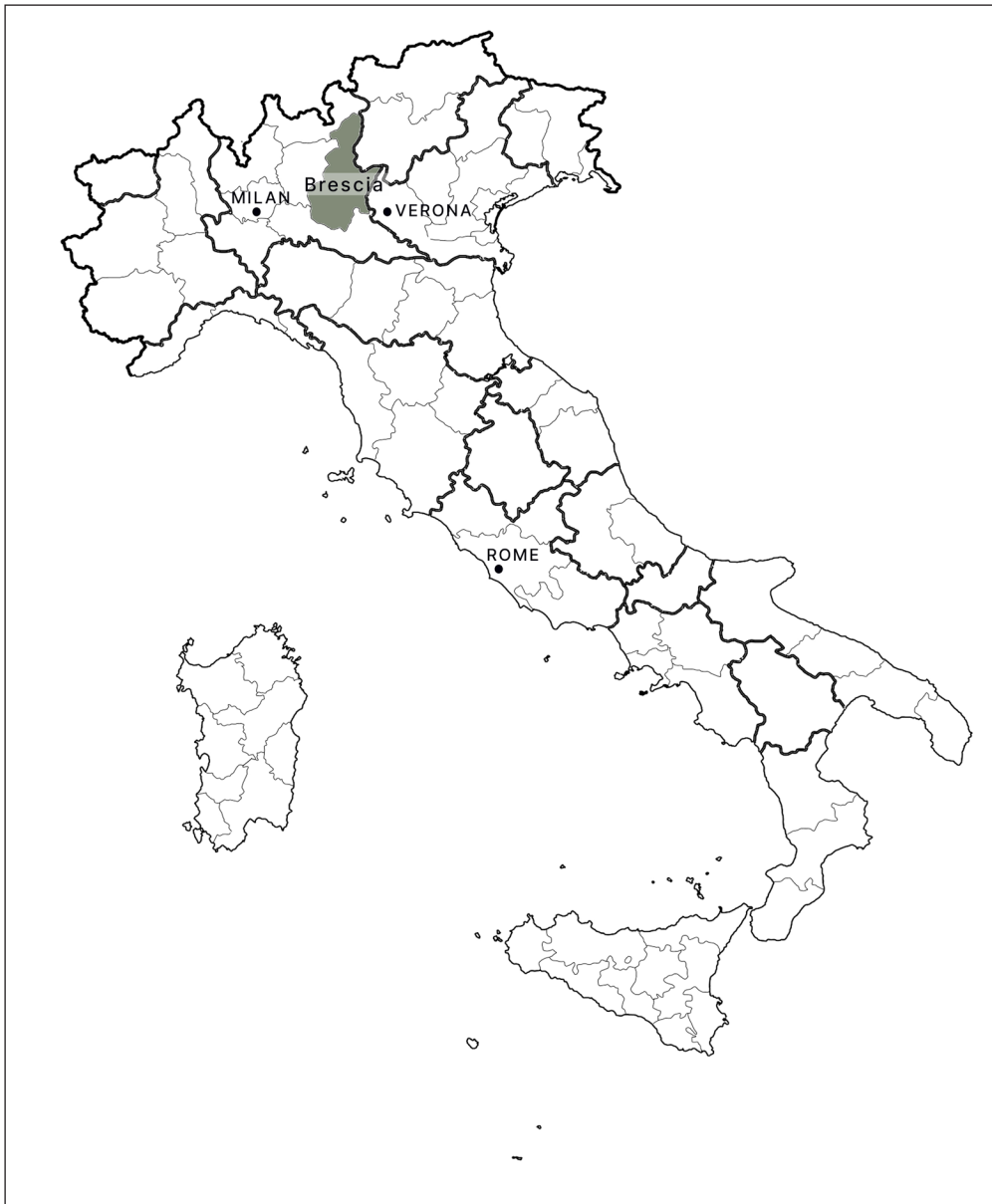


Figure 4 Location of the Province of Brescia. Source: Wikimedia Commons (open source) edited for the purposes of this paper.

polychlorinated biphenyl (PCB), a chemical component for chlorine, classified as persistent organic pollutants (POP) by the Stockholm Convention (U.N. 2001). As it has been wrongly disposed of for decades, PCB waste contaminated an area of approximately 260 hectares (reaching municipalities 20 km south of the factory). PCB waste causes respiratory disease, cancer, and skin disease to those exposed to it or that consumed contaminated food⁶ (ASL Brescia 2015). The areas contaminated by PCB waste are characterized by crop fields that can no longer be used, unless they undergo long and extremely costly restoration (ASL Brescia 2015; ISPRA 2019).

Brescia, especially its metropolitan area, is strongly affected by air pollution caused by the combination of intense industrial activities, automobile traffic, and geological features (Osservatorio Aria Bene Comune 2021). The disposal of hazardous waste⁷ and other toxins from the production processes of companies has affected the health of the people living in

⁶ Exposure to PCB pollution can cause chloracne, a skin disease caused by exposure to chlorinated dioxins. PCB is carcinogenic for humans; it can develop different types of tumours as melanoma, non-Hodgkin lymphoma, and breast cancer, as explained by the International Agency for Research on Cancer (ASL Brescia 2015: 15).

⁷ Since the 1990s, a small municipality in the southern part of the province hosts a deposit of radioactive waste, with almost 85,000 tons of Caesium-137 buried in storage that do not follow the regulation for safe storage (Legambiente 2019; Legambiente 2021). I am referring to the deposit of radioactive waste by Metalli Capra, located in Capriano del Colle. The waste contaminated by Caesium-137 must be stored in a specific container for at least 30 years before the element loses its radioactivity (Camera dei Deputati & Senato della Repubblica 2012: 183).

the surroundings of the city⁸ (Camera dei Deputati & Senato della Repubblica 2012; Openpolis 2021). Incidents of intoxication due to the exhalation of pollutants have been recorded in the south-eastern part of the province,⁹ where in 2014 and 2016 children playing in schoolyards got sick with respiratory issues caused by unknown exhalations from nearby dumpsites: there are approximately 21 dumpsites in an area with 23,000 inhabitants (BresciaToday 2016; Forti 2017). Cases involving *ecomafie* in illegal waste trade were also recorded by the investigation: the province is used as a transit area for trades towards other Italian regions or foreign countries or as a storage site for illegal waste¹⁰ (Camera dei Deputati 2018; Camera dei Deputati & Senato della Repubblica 2012; CROSS 2019; DIA 2019).

This overview exposes two main elements related to environmental crimes: (1) widespread environmental pollution coming from different sources affecting everyday life, such as air pollution, and (2) specific types of contamination related to waste activities, from PCB waste and dumpsites. The history of the area makes it possible to draw a preliminary assumption that the citizens are no stranger to the topic of environmental crimes, declined in various forms and dynamics. Therefore, it seemed relevant to bring attention to one of the most productive regions of Italy that has been understudied for years, especially regarding the diffusion of the activities of organized crime groups (CROSS 2019).

4. THE STUDY

Studying public perception of the seriousness of crime provides insight into the opinions of the population, and it contributes to the discussion about environmental policies of restoration and protection of ecosystems and of the prosecution of crimes. The aim of this research is to disentangle all the elements that influence the perception of the seriousness of environmental crimes by studying the responses given by inhabitants of a specific area known to be affected by different types of pollution, including those related to the illegal waste trade. The parts analysed were the opinions, definitions, and perceptions of the environment, crime, violence, harm, and victim of the inhabitants of the defined area, with the goal of providing a framework to assess the perceived seriousness of environmental crimes (Table 1). The framework has been created to be a guideline for the study of the different perceptions, but it is important to always consider the peculiarities of each setting, as they are the basis of these types of research and could influence the outcomes. Other important topics addressed are human vulnerabilities related to exposure to pollutants caused by illegal waste management and trade, the perceived role of *ecomafie* in the illegal waste trade, and the relationship between crimes committed by *ecomafie* and human vulnerabilities.

The most relevant studies about the perceptions of environmental crimes in Italy are settled in areas with proven presences of mafia organizations and several cases of illegal waste disposal and trade, particularly in the so-called ‘Land of Fire’ in Campania. The study of D’Alisa et al. (2017) is based on the approach of the political ecology of health in the ‘Land of Fire’, where high rates of cancer have been proven to be caused by exposure to contaminants from nearby landfills. It discusses the victimization of waste-related environmental crimes and how this discourse played a crucial role in the definition of new regulations about waste management and the criminalization of waste-related environmental crimes. Related to the province of Brescia, the only studies about exposure to pollutants focus on PCB waste and air pollution (ASL Brescia 2015; Openpolis 2021; Raffetti et al. 2018). The minimal attention on Brescia’s

⁸ Another example of pollution was caused in 2011 by Alfa Acciai, which incinerated 70,000 tons of waste contaminated with Caesium-137 (Camera dei Deputati & Senato della Repubblica 2012: 183).

⁹ Municipality of Montichiari and Vighizzolo.

¹⁰ The 2015 Pesci investigation confirmed the presence of ‘Ndrangheta in the Province (CROSS 2019: 20). ‘Ndrangheta’s role in the waste trade was also confirmed during the construction of highway A35, where the *ecomafia* started the business with other contractors for construction of the road and buried hazardous waste in the road pavement (Camera dei Deputati & Senato della Repubblica 2012: 180). Another investigation from 2014 discovered an illegal waste trade network including ‘Ndrangheta groups and local factories for the transport and illegal storage of waste in Brescia (DIA 2019: 631).

DIMENSIONS	PERSPECTIVES	CHARACTERISTICS
Environment	Anthropological perspective	The environment exists in function of human lives.
	Co-dependent perspective	Humans and the environment are co-dependent on each other.
	Nature-centric	Nature is the focus; humans are just part of the environment.
Crime	Legal perspective (legal/illegal)	An action against the law (i.e., radioactive pollution).
	Environmental perspective	Actions that damage the environment but are not always sanctioned by the law (i.e., littering).
<i>Elements that affect the perception of the seriousness of the crime</i>	<i>Identity of the perpetrator</i>	<i>Individuals or ecomafie. Ecomafie's crimes are always considered more serious than any other type of crime.</i>
Violence	Role of physical violence	Environmental crimes are less violent than other crimes due to the lack of physical violence.
	Role of slow violence	Environmental crimes are more violent than other crimes because they are constituted by slow violence (invisible, continuous, undetected).
	It is not possible to make a comparison about violence	-
<i>Elements that affect the perception of the seriousness of the crime</i>	<i>Ecomafie's violence</i>	<i>From the typical mafia violence towards slow violence</i>
Harm and vulnerabilities	Immediacy (related to slow violence)	From an anthropological perspective, pollution creates indirect harm.
		From a co-dependent and nature-centric perspective, the harm of pollution is directed towards the environment.
<i>Elements that affect the perception of the seriousness of the crime</i>	<i>Social harm</i>	<i>The spatial and temporal extension of the pollution affects the gravity of the harm.</i>
	<i>Vulnerabilities: health and future generation's wellbeing</i>	<i>Slow violence's harm affects the health and wellbeing of future generations and nature.</i>
Victims	Victims of slow violence, individuals (anthropological perspective)	Society as a victim of slow violence.
<i>Elements that affect the perception of the seriousness of the crime</i>	<i>Victims of ecomafie's slow violence: society</i>	<i>The number of victims and the connection to social harm affects the seriousness of the crime. Ecomafie's crimes are considered even more serious than other mafia-type crimes.</i>

Table 1 Framework for the study of the perceptions of the seriousness of environmental crimes. The parts in italics refer to the elements that affect the perceptions when there is an involvement of *ecomafie*.

environmental degradation motivated this research to understand how the inhabitants are dealing with the pollution.

The research bases its analysis on the theory of slow violence elaborated by Nixon (2011) and Davies (2019). The authors refer to slow violence related to pollution and contamination as a type of violence that occurs out of sight; it is invisible, continuous, and often creates unaware victims. Slow violence is often undetected by the media, rarely reaching the attention of the public. In this research, these concepts are applied to the context of Brescia and to the activities of *ecomafie*.

As Adriaenssen et al. (2020) explain in their research about public perceptions of the seriousness of crimes, the concept of seriousness is often used by public bodies to allocate resources for the investigation of crime, therefore prioritizing some typologies of crimes over others. Unfortunately, environmental pollution often sits at the bottom of the priority

list. This is precisely the reason why a deeper conceptualization of the elements that define the perception of the seriousness of environmental crimes is needed. Additionally, analysing crimes related to environmental pollution, with insights about the waste cycle and trade, has the ultimate goal of raising awareness around this topic and giving specific insight into the subject.

4.1 ENVIRONMENT

The primary element that needs to be analysed is how people understand the environment. The term 'environmental perception' refers to the awareness of, or feelings about, the environment (Zube 1999), meaning that it can have different connotations depending on the cultural background and use of nature of each individual. Different attitudes towards nature can affect the perception of whether an action is considered an environmental crime, defining its gravity and seriousness.

According to the interviewees' responses, it is possible to outline three categories¹¹ that define the environment (White & Heckenberg 2014). The first category of perception understands the environment as a natural space, composed of animals and ecosystems, existing to provide services for human life (anthropocentric perception). The natural resources of the environment are exploited to provide services to human societies, as natural resources and goods for daily activities. This perception is the most common among the respondents, and it is the one that indicates human activities as the main drivers of environmental degradation. Also, the *anthropocentric perception* understands the commodification of nature, especially related to the waste trade and exploitation of natural resources.

The second type of perception considers the ecosystems (biotic and abiotic elements¹²), animals, and human lives as connected elements, sharing a co-dependent bond based on a cause-consequences relationship (co-dependent perception). In this perspective, every action against the environment is also against human lives, to the extent that some respondents considered environmental crimes as serious as mass murders. Interestingly enough, those who have a *co-dependent perception* also have a broader understanding of what are crimes: it goes beyond the legislative discourse of legal-illegal and relates to an extended understanding of the harm that can be caused towards natural entities. Another relevant element of this perception is the use of the word community related to the environment. In fact, it can either be used when referring to society, with an anthropological perspective, or it can include nature, giving more meaning to the co-dependent perspective. In this way, the *co-dependent perception* understanding of the community can be summarized as the place where we live, which includes the natural environment.

The third perspective understands the environment with a holistic viewpoint as the place where humans live, yet only as a small component of a larger system. It stresses nature as the centre of attention (nature-centric perception). The differences between *nature-centric perception* and *co-dependent perceptions* are subtle. They emerge and are further elaborated when addressing the opinions about crimes against the environment, because only when addressing the element of crime and victimization is it possible to define them. Both the *nature-centric perception* and the *co-dependent perception* address concerns for the future wellbeing of both the environment and all the species living in it, and consequently for the co-dependence of human lives. Lastly, it is important to remark that the three environment types are only the starting point for the development of understanding perceptions of environmental crimes, and these are influenced by the other elements (crime, harm, violence, victim).

4.2 CRIME

The concept of crime does not have an ontological reality, because it is not based on indisputable elements; it depends on the ethics of each social setting. Its conceptualization is created according to what is considered right or wrong in a society, determined and regulated

11 The categorization is based on the three main eco-philosophy perspectives, identified by White and Heckenberg (2014) as anthropocentric, biocentrism, ecocentrism, according to the different relationships between humans and nature.

12 The biotic elements are all the living elements that compose an ecosystem, such as animals, plants, bacteria. The abiotic factors are all other non-living components that are vital for ecosystems, such as water, air, and soil.

by legislation and moral norms. By doing so, the gravity of the crime can be judged compared to other activities, through the use of a norm as a threshold (Hillyard & Tombs 2007). It is precisely the definition of what a crime is and the immediate associations with legislation that make the understanding of environmental crimes complicated to define outside of the legal sphere.

The respondents often associate the definition of crime with its legislative connotations by dividing the actions into two main spheres: legal and illegal. They seldom provided a definition of what constitutes legal and illegal; instead, they defined something illegal as an action against the law, trusting the decision given by the juridical bodies about what is considered wrong, rather than relying on personal moral beliefs. As Skinnider (2011) explains, policies and legislations related to pollution, define the limits above which the pollution is considered dangerous and, by doing so, the small amount of contamination that is permitted by the law is actually legal. Similarly, the dichotomy between legal and illegal actions means that some other aspects of the harm of the crime are condoned (White & Heckenberg 2014).

A part of the study's participants had a broader understanding of what constitutes a crime.¹³ They did not limit the concept of crime to acts against the law—that is, actions that cause pollution—they also regarded behaviours below the established pollution threshold to be hazardous and constituting an offence (Skinnider 2011). Additionally, they claimed that the identification of victims is critical, because it is relevant in determining which crime is considered more or less serious.

Another key factor in the definition of crime and of its seriousness is the identity of the perpetrator. In fact, the seriousness of waste crimes varies depending on who commits them: individuals repeatedly disposing of their own urban solid waste are considered less serious than a company that disposes of non-hazardous waste; the same crimes are perceived more serious whenever organized crime groups are involved. Certainly, the common idea is that *ecomafie*'s offences are extremely serious. The respondents have a general understanding of what these crimes imply: they are not merely illegal and isolated acts but a part of a wider system of illicit activities that in the long term will affect the whole society. Moreover, the involvement of *ecomafie* means the manipulation of the information through the conspiracy of silence. The effects of *ecomafie* activities in the waste cycle on societies are plural: other than the pollution caused by the illegal disposal of waste, the corruption and clientelism increases social differences and inequalities (Abrate et al. 2014). Despite the respondents' general understanding of the *ecomafie*'s societal impact, studies and investigations showed the ability of the criminal groups to camouflage and adapt in new contexts. The inhabitants of the territories where the *ecomafie* are expanding their activities often lack the knowledge to identify the criminal groups, precisely because of the absence of previous experience with any type of mafia group. In this way, organized crime groups disguise their businesses and establish dominance in the market. This pattern has been noted in all regions of Northern Italy with recent mafia presence (Dalla Chiesa 2016).

4.3 VIOLENCE

Having established the way in which people understand the environment (anthropological, co-dependent, or nature-centric perspective) and how they understand crime (either in the sphere of legal/illegal actions or in general every action that could damage the environment), it is possible to analyse the understanding of the violence endured. Generally, crimes that involve physical aggression (i.e., murder, assault) are considered more serious compared to petty crimes (i.e., drug-dealing, illegal gambling); whilst white-collar and financial crimes are often considered the least serious because are perceived as less dangerous due to the different harm enacted. One typically finds that pollution crimes are often included in the heterogeneous group of white-collar crimes (Cullen et al. 2020; Hillyard & Tombs 2007; Shelley et al. 2011).

¹³ The respondents that give a broader overview of what they consider an environmental crime using an explanation that does not include normative connotations are the following. It is possible to notice that the terminology used includes words such as 'acts' and 'activities', instead of considering them as a crime: 'Every act the man does that can harm nature' A7; 'All those activities that directly or indirectly compromise or harm the environment' A12; 'Everything that does not respect the nature, gaining illegal profits to the detriment of future generations' B7; 'Environmental damage. Everything that negatively changes the status of an ecosystem' B8; 'Everything that leads to decreasing the level of sustainability of our ecosystem' C1; 'Everything that is not good for the environment' D5; 'Every type of action that ruins the environment' D7; 'Actions that damage the environment' D13.

Some interesting elements arose from respondents' opinions about the violence endured in relation to waste crimes. It is possible to divide the perceptions into three main categories, according to the type of violence, its target, and the outcomes. The first category considers environmental crimes of waste management as less violent than other crimes owing to the lack of physical violence. The second category considers environmental crimes as serious as others in terms of violence. However, it changes the focus of the gravity of the crimes towards the consequences of the actions instead of the action itself. Pollution will affect a large area and all the living forms that live in it for a long time: the indiscriminate violence becomes a concern for the entire community. The third category acknowledges the different concepts of violence but considers the elements that constitute the type of violence too diverse to allow any judgment.

Focus: *Ecomafie's* violence

Besides the different definitions of violence, it is possible to identify some interesting trends in the opinion around violence perpetrated by *ecomafie*. The varying extent to which mafia-type organizations engaged in environmental crimes resort to violence is undoubtedly an important element influencing this perception. Some of the respondents explained the differences in the type of violence of the eco-crimes compared to other mafia crimes, such as intimidation, smuggling, corruption, collusion, exchange of favours. The typical mafia crimes¹⁴ often have a specific target—a businessperson, a politician, a business owner that lives in the area that is under the control or interest of the group—so the use of violence depends on the scope of the relationship and on the criminal group.¹⁵ In fact, some groups resort to violence only in the final stage of intimidation, because they are aware that the other types of intimidation will be effective and because they do not want to be detected by institutions. Mafioso violence can include violent aggression towards individuals through different means of threatening, aimed to gain control of the negotiation and to reach the commanding role in the business deal or a monopolistic position in the market (Dalla Chiesa 2016; Sciarrone 1998; Sciarrone 2002; Sciarrone & Storti 2019).

The use of violence and selection of the victims change completely when addressing environmental crimes committed by the *ecomafie*, where two kinds of violence can be identified, following the different components of the illegal waste trade. In order to establish leadership in the industry, the *ecomafie* rely on intimidation, threats, unfair business rivalry targeted at other actors that are part of the trade—indeed, they have a hegemonic role in the transport market and specific equipment for waste transport¹⁶ (Camera dei Deputati & Senato della Repubblica 2012: 99). This type of violence is still directed towards individuals, and it is aimed to establish the powerful role of the organized crime group.

Related to environmental pollution, it is possible to notice that the violence substantially changes its form, shifting from targeting individuals to targeting a section of society. Pollution damages the population indiscriminately, making eco-crimes a matter of interest for society at large. By the same token, the *ecomafie* are a concern for the whole community, as thoughtfully expressed by the respondents. This innovative way of referring to the *ecomafie's* violence can be associated with the concept of slow violence, which is 'a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all' (Nixon 2011: 2). The *ecomafie's* slow violence happens out of sight, but the investigation proved that their involvement is becoming common knowledge, thus they are perceived as a dangerous actor that requires specific policies

¹⁴ The studies about mafia identify typical mafioso activities as the crimes of usury, forgery, drug-trafficking, intimidation and threats, protection money, corruption (Dalla Chiesa 2016; Sciarrone 2002).

¹⁵ It is important to remind the reader that every criminal group has a different understanding of the use of violence. Some groups use it as the last option of intimidation (i.e., Cosa Nostra and 'Ndrangheta), whilst others use aggression at the first stage of intimidation (Camorra). Variation in the use of violence depends on the context and the target, or if there is any mafia war ongoing between clans. The ones described here are the most general trend that resonates from studies and comparison among groups but are not uncontested versions; therefore, some changes in the *modus operandi* according to the situations are expected (Dalla Chiesa 2016; Sciarrone 2002).

¹⁶ The investigators estimated that in Lombardia, 70% of the companies that own the excavation equipment for buildings, which is the same that can be used for the waste trade, are affiliated with the 'Ndrangheta (Camera dei Deputati & Senato della Repubblica 2012: 99).

and containment measures. There are some other elements of slow violence¹⁷ described by Nixon that are slightly different in the *ecomafie* case. In the *ecomafie*'s crimes, slow violence is not limited to pollution but is present in the other part of the waste trade, as environmental crimes are just one part of the illicit activities that amount to a larger illegal network, including financial crimes and politic favours. The element of environmental discrimination and racism is not generally applicable in the case of *ecomafie*, especially in Brescia, where it is not possible to identify significant differences related to the population living in the areas that are more affected by pollution.

4.4 HARM

The fourth relevant concept that needs to be analysed is the perception of harm. In fact, besides the lack of an established and shared definition of the term seriousness, there are two terms that are useful to determine it: 'harmfulness' and 'wrongfulness' (Rosenmerkel 2001). The perceived harmfulness is 'established through a "factual assessment of the consequences of the offence upon the victim"', and the perceived wrongfulness is 'the result of a normative evaluation of the moral gravity of committing the act' (Warr 1989). Consequently, the perceived seriousness is defined as the (possible) consequences of the acts (Adriaenssen et al. 2020).

The element of harm is comprised of multiple dimensions, and it can differ according to the type of crime, the victims, and the violence endured. Regarding environmental crimes of the illegal waste trade, the harm consists of the pollution resulting from the criminal action and how the exposure to pollutants damage ecosystems and populations. It is possible to say that the harm created by the slow violence is also invisible and continuous, and it affects a large area over a prolonged period of time (Davies 2019; Nixon 2011). Within Brescia, pollution affects the population indiscriminately as these crimes have a geographic focus.

If applied to the three conceptualizations of the environment, it is possible to identify the different ways of understanding harm in terms of its immediacy, meaning whether it is a direct or indirect type of harm. From the *anthropological perspective*, the harm of environmental crimes is generally indirect, because it firstly affects the environment, before the population is afflicted; therefore, the spatial and temporal dispersion of the harm is relevant for its indirectness.¹⁸ The other two dimensions, *co-dependent* and *nature-centric*, considered the environment and human life deeply entangled, so the harm of environmental crimes is direct.

Focus: Human vulnerabilities and harm

The social vulnerability to environmental hazards means the potential for loss, which varies geographically, over time and space and according to the social group. These hazards are often ignored because they are deemed too hard to assess (Cutter et al. 2003). Vulnerability studies (Cutter et al. 2003; Endfield 2014; IPCC 2012) describe the impacted population and consider the vulnerabilities as the outcome of socioeconomic inequities. This is not the case in Brescia, as it would be incorrect to assume that socioeconomic factors affecting minorities are to blame for the population's vulnerability to pollutants: the geographical distribution of pollution does not support this pattern, as it is concentrated in the city's most industrialized areas, despite the presence of a population in the surrounding areas.

The interviewees expressed two main concerns related to the harm caused by pollution. They are afraid of possible health issues caused by the exposure to toxins, given their knowledge of the important number of tumours and cancer in the province (ASL Brescia 2015). The second concern is about the outcomes for future generations and damage that might prevent the development of healthy environments. Indeed, these elements show the vulnerabilities of this area: the respondents are aware of the existence of the pollution but are not sure how the institutions are tackling the issue and how exactly the contamination is affecting their lives, because there are few available studies about the topic.

¹⁷ The characteristics of slow violence make the victims unaware of the harm they are exposed to. Nixon explains the role of communication and information in slow violence, underlying how the lack of engagement by the media and institutions is often fuelling the processes of slow violence. Another relevant element of the slow violence theory is the identity of the victims, as they are generally minorities or marginalized groups.

¹⁸ Some respondents stated that environmental crimes can be considered crimes 'against future generations'.

The given example of PCB pollution is conceptually relevant if applied to the use of nature, environmental harm, and vulnerabilities in the illegal waste trade cases. It prevents individuals from using nature: it is forbidden to step on the grass in the public parks and schools and to use the fields for agriculture because of the presence of PCB in the soil (ASL Brescia 2015). These measures were enforced to preserve the wellbeing and safety of the citizens, but they are only a temporary risk reduction whilst waiting for the complete restoration of the sites. Partial access to the surroundings allows forms of harm towards people's health whenever the limitations of land use are not respected, even if the effects of the harm might only be visible after several years. Those living in the areas affected by pollution due to illegal waste trade activities face the same types of vulnerabilities in terms of restricted land use and exposure to environmental harm.

Criminologists often study the perceptions of crime to understand whenever a crime is considered social harm. In this case, the theoretical question relies on considering environmental crimes as social harm (Greenfield & Paoli 2013; Hillyard & Tombs 2007). Most of the respondents consider environmental crimes as a form of social harm, because the crimes affect society, communities, and ecosystems, and the crime is related to the number of people indiscriminately affected by the pollution. Provided that the *ecomafie* are the perpetrator of the crime, the vulnerabilities of those living in the area would increase with the presence of the criminal group, as it is considered a social problem. One last element related to the *ecomafie*'s harm and the vulnerabilities it creates is related to the actions that individuals and civil society can take to prevent environmental crimes. The respondents spoke in favour of individuals denouncing and raising awareness about the crimes. However, several respondents claim that they cannot do anything as individuals, because the mafia is too dangerous. Instead, they suggest that collective action, organized by civil society and with the support of the institution, could have more resonance in raising awareness. The uncertain outcome of the intervention of individuals and civil society exposes the vulnerabilities of the community. This hesitance is linked to corruption, which all respondents agreed is both the core element that permits the crime and the element that will cause social disparities in the long term.

It is possible to argue that new types of human vulnerabilities arise from the illegal waste trade. The inhabitants exposed to toxins that contaminate air, soil, and water might be unaware of the health risks they might be subject to later in their lives. Society might be bearing the consequences of the pollution that compromises the use of nature and its resources, and the time-consuming bureaucracy for restoration could prevent the benefits of the ecosystem's services for an undefined amount of time. In addition, corruption and lack of transparency could decrease trust towards institutional bodies and procedures, increasing social disparities (Romano et al. 2021).

4.5 VICTIMS

Environmental crimes are often considered by academia, institutions, and the public as victimless crimes because they do not immediately create victims amongst mankind, even though such crimes harm the natural balance of the ecosystems (Hall 2014; Paoli 2004; White & Heckenberg 2014). This viewpoint is driven by an anthropocentric perspective based on the legislation that punishes crimes according to the type of victims—humans. However, one could argue that if natural environments are taken into account, a crime of pollution does have nature as a victim (Hall 2014; White & Heckenberg 2014). Obviously, this statement requires a juridical counterpart that recognizes nature as a victim of a crime, and this discourse is often still theoretical.¹⁹ Yet even from the *anthropocentric perspective*, it is complex to identify the victims of crimes of pollution caused by the illegal waste trade: the victims of these crimes are often those affected by illnesses and disease due to exposure to pollutants. The main challenge is that illnesses and diseases may not appear for a long time, and sometimes it is not possible to establish whether they were caused by the pollution itself or by other factors.

This area of research displays an intricate setting of environmental crimes and slow violence due to pollution, raising the question of how the inhabitants describe themselves as victims.

¹⁹ Some jurisdictions are trying to implement the rights of nature from either national and local law proposals and implementations or court decisions. More information can be found at the UN website Harmony with Nature: <http://www.harmonywithnatureun.org/rightsOfNature/> (accessed October 27, 2021).

When asked if they think they are victims of slow violence, a large portion of the respondents answered in the affirmative. The explanation of slow violence brought attention to their exposure to pollutants and, consequently, to their being a victim of environmental crimes. Others disagreed and do not consider themselves as a victim of environmental crimes. It was possible to register a middle point of view, those who did not consider themselves direct victims, because they do not live close to the known polluted areas, such as in the Caffaro area. Moreover, the respondents often clarified which kind of pollution affects them the most, such as those who are not direct victims of soil and water pollution, because they live far away from the site, yet they are still affected by air pollution. The results of the survey display that, despite having a different understanding of what is the environment, when it comes to the victimization discourse, the respondents have an *anthropocentric perspective*. At the same time, recognizing themselves as a victim plays an important role in determining that, environmental crimes do have victims, identifiable as the local population. Public perception indicates environmental crimes of the waste cycle are crimes that have victims, rejecting the definition of them as victimless crimes.

The participation of *ecomafie* also modifies the impression of victimization. Most of the respondents consider environmental crimes committed by *ecomafie* as serious, precisely because they do not have a targeted victim, but the population is arbitrarily affected by them. Indeed, if the presence of mafia activities would not directly affect the daily life of a common citizen, the eco-crimes of illegal waste trade and their pollution are a concern for the entire society. It means that if interviewees normally viewed the activities of mafia-type groups in Brescia as something that does not actually exist or that does not concern them,²⁰ then by considering the possible presence of *ecomafie*, the perception of the danger increases.²¹

5. CONCLUSION

Studying the perception of the seriousness of environmental crimes requires a specific qualitative analysis of all the elements of which it is comprised, rather than a mere comparison with other typologies of crimes. To contribute to filling the gap in the literature, this study intended to provide a framework of the elements that need to be considered and to display the trends of the perceptions among the population. The framework and its analysis give a comprehensive overview of the factors that influence the perceived seriousness of environmental crime.

Brescia is exemplary as it is characterized by different types of pollution, both from past incidents that left an indelible mark on the territory and from new types of waste-related crimes, heightening public awareness about environmental concerns. Despite different understandings of the environment and the gravity of environmental crimes, there is a common perception shared by the respondents: the need for raising awareness and demanding more action from institutions to tackle environmental crimes of pollution inherent to the illegal waste trade and waste management. Surely, the municipalities within Brescia could improve the public's participation in the decision-making process related to the creation of dumpsites and landfills. Indeed, transparency and clear reporting about waste management are considered crucial by the respondents and should be implemented. More efforts regarding the bureaucracy on the restoration of polluted sites are undoubtedly needed, with the aim of returning areas to their original state and restoring the biodiversity in a shorter amount of time. Regarding the media's communication of environmental crimes, one main critique from the respondents has been the lack of follow-up, leading to incomplete and sometimes misleading documentation of the facts.

20 Studies about the sociology of mafia-type groups (Camera dei Deputati & Senato della Repubblica 2012; Dalla Chiesa 2016; Sciarrone 2020) explain the methodology used by criminal groups to expand into new territories. One of the most important elements is the so-called "identity removal", used to address the fact that the identity of the mafia affiliates and the nature of their business is often unknown in the new territories, permitting them to continue their activity undisturbed and unsuspected. In this way, a businessperson that is approached by the mafia might be unaware of the identity of the source of the income and accept the partnership without any suspicion.

21 Obviously, this assumption does not want to put on the same level the victims of mafia crimes and the population exposed to pollution, but would rather specify how addressing the change in the type of violence endured could become relevant in raising awareness towards both topics of environmental crimes and mafia activities.

The crimes of environmental pollution expose the population to slow violence, harm, and vulnerabilities. Specifically, the illegal waste trade has several negative consequences for civil society. The illicit disposal of waste pollutes soil, water, and air, increasing the risk of disease for those exposed to the pollution—frequently, unconscious victims—and jeopardizing the future health of ecosystems and generations. The vulnerabilities of the victims of these crimes are enhanced by the fraudulent practices that are part of the waste cycle. The economic sphere of trade is founded on corruption and illegal commercial agreements aimed at increasing the profits of entrepreneurs and criminals notwithstanding the harm to ecosystems and civilians. All respondents consider corruption to be the core element of the illegal waste trade: it is the most efficient tool for achieving the collaboration of both institutional authorities (through the collusion of public representatives) and private actors.

Surely, the institutional environmental discourse about sustainability, climate change, and environmental justice needs to consider the problems created by environmental crimes. All our efforts and investments in technology will be in vain if someone is willing to use them to commit environmental crimes. Furthermore, without efficient laws and standards that prioritize the rehabilitation of impacted landscapes, the quantity of land lost due to pollution will not be recovered quickly enough to allow ecosystems to recover and to allow present residents to have access to nature. Growing public awareness of environmental crimes is certainly a positive sign, but it requires institutional efficiency through the prioritization of the issue with the diffusion of accurate information and the enforcement of existing legislation.

One could argue that, based on the findings of this study, growing concerns about *ecomafie* activities of illegal waste trade and the related health risks may be used as a tool to raise public awareness about both environmental crimes and the dangerousness of mafia type groups. Indeed, the change in concern demonstrates that individuals are sensitive to the topic. If properly addressed, this interest could support the development of more effective strategies for tackling both the environmental crimes of illegal waste trade and other mafia activities, motivating citizens to participate more in community life and to denounce illegal activity. Furthermore, by concentrating on diverse categories of victims and a community rather than on an individual viewpoint, it would be possible to raise awareness about the seriousness of these crimes and their broad implications if the victimization discourse is applied appropriately. Undoubtedly, additional qualitative research utilizing a variety of data gathering methodologies and encouraging cross-disciplinary collaboration is required to gain a deeper understanding of the evolution of *ecomafie*'s operations.

ADDITIONAL FILE

The additional file for this article can be found as follows:

- **Survey data collection.** The file includes the responses of the survey. DOI: <https://doi.org/10.31389/jied.147.s1>

COMPETING INTERESTS

The author has no competing interests to declare.

AUTHOR AFFILIATION

Luisa Olivi  orcid.org/0000-0002-3225-8992
Freelance, NO

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