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Sociological and Legal Definition of Waste: Complementary or Contradictory?

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Abstract

This paper critically examines how "waste" is defined in sociological theory versus legal doctrine, exploring whether these perspectives conflict or complement each other. Sociological approaches drawing on theorists like Mary Douglas, Zygmunt Bauman, Michael Thompson, and Joshua Reno emphasize waste as a social construct, imbued with relative value, stigma, and cultural meaning. Legal frameworks focusing on international instruments such as the Basel Convention and the EU Waste Framework Directive provide formal definitions of waste and criteria when materials become or cease to be waste. We review key themes including the social construction of dirt and pollution, the notion of "matter out of place", the fluidity of value (one person's trash as another's treasure), and the marginalization of waste workers. In parallel, we analyze legal definitions (e.g. "discard" in EU law, "intended disposal" in Basel), case law on end-of-waste and by-products, and regulatory implications for environmental justice. Through international and comparative examples (EU, U.S., Nigeria, India, Colombia), we illustrate how legal definitions both reflect social values and sometimes clash with lived realities. The analysis finds that sociological and legal perspectives on waste are in some respects complementary as law often codifies social values about purity, danger, and value but also exhibit tensions, especially when rigid regulations meet the fluid, context-dependent nature of waste in society. The paper concludes by suggesting pathways for bridging these perspectives in policy, emphasizing that a more nuanced, justice-oriented understanding of waste can benefit both effective governance and social inclusion.

Keywords

Sociological Definition of Waste, Basel Convention, Environmental Justice

1. Introduction

Waste is an inevitable by-product of human society, yet the concept of "waste" is far from straightforward. How we define something as waste can depend on cultural values, economic context, and regulatory frameworks. This paper seeks to critically examine two different lenses through which waste is understood: the sociological perspective, which sees waste as a socially constructed and value-laden concept, and the legal perspective, which formalizes definitions of waste in laws and regulations. The central question is whether these perspectives are complementary or contradictory. In other words, do legal definitions of waste align with sociological insights about what society considers waste, or do they conflict with the nuanced ways in which communities and cultures assign value or stigma to discarded materials?

To ground this inquiry, we focus on prominent international legal instruments and doctrines on waste, alongside influential sociological theories. In the legal realm, key references include the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989) on hazardous waste trade and the European Union's Waste Framework Directive (WFD) (Directive 2008/98/EC), both of which seek to define and manage waste on an international and regional scale. We also consider national examples for instance, U.S. waste law under the Resource Conservation and Recovery Act (RCRA), and waste governance challenges in countries like Nigeria, India, and Colombia to illustrate how legal definitions play out in varied contexts. These legal sources provide formal criteria for what counts as waste, when waste ceases to be waste, and who is responsible for it, often with significant environmental and economic implications. They also increasingly grapple with issues of environmental justice, as waste management can unevenly impact disadvantaged communities.

Conversely, from a sociological perspective, we delve into theories by Mary Douglas, Zygmunt Bauman, Michael Thompson, Joshua Reno, and others. These theorists approach waste not as a fixed category of materials, but as a product of social processes: classification systems, cultural taboos, economic valuations, and power relations. Sociologists and anthropologists have long noted that no matter what one society or one person considers "waste", another may see as useful or even precious indicating a relativity of value. Classic concepts like Douglas's idea of dirt as "*matter out of place*" highlight that waste is defined by social context and order. Modern scholars like Bauman extend the notion of "waste" metaphorically to people and populations deemed "redundant" by society. Thompson's "Rubbish Theory" demonstrates that things can move in and out of the waste category as their perceived value changes. Reno and others point to the waste regimes and practices that reveal societal priorities and inequalities for example, how certain labor (waste picking, sanitation work) is stigmatized or how waste dumps often end up in marginalized neighborhoods.

By comparing these perspectives, this paper will analyze points of convergence and divergence. Are legal definitions simply codified expressions of social values

about purity, danger, and utility (thus complementary)? Or do legal regimes sometimes impose definitions and rules that clash with how communities handle and understand waste on the ground (thus contradictory)? For instance, legal criteria might classify a used object as "waste" requiring costly disposal even when informal recyclers see it as a resource. Conversely, sociological insights might inform more effective laws for example, recognizing the role of informal waste workers or the importance of cultural perceptions in recycling programs.

Structurally, the paper is organized into standard academic sections. Following this Introduction, the Literature Review surveys key sociological theories on waste and the main legal instruments and definitions, establishing the knowledge base for our analysis. The Methodology section outlines the approach of this research, which is largely a comparative analysis of texts and cases from both domains. The Analysis section then brings the strands together, examining specific themes (such as the notion of discard and value, the role of stigma, and issues of environmental justice) to evaluate whether sociological and legal perspectives conflict or complement each other. We incorporate case examples from hazardous waste trade incidents to court decisions affecting waste pickers to ground the discussion in real-world implications. Finally, the Conclusion reflects on the findings and suggests ways in which a more integrated understanding of waste could improve both social outcomes and legal frameworks. Through this multifaceted exploration, we aim to contribute to academic discourse in environmental sociology, environmental law, and governance, offering insights that could be relevant for policymakers, scholars, and practitioners in waste management and environmental justice.

2. Literature Review

Sociological Perspectives on Waste

Sociological and anthropological theories have long recognized that "waste" is not merely an objective category of materials, but a product of social definition and cultural context. Pioneering work by Mary Douglas (1966) in *Purity and Danger* laid a foundation for understanding dirt and pollution as symbolic categories. Douglas famously asserted that dirt is "*matter out of place*", meaning that there is nothing inherently unclean about any substance it becomes dirt (or waste) only when it exists where it does not belong according to a given social order. For example, soil on the ground is acceptable, but the same soil tracked into a living room is "dirt" out of its proper place; food is valued on a plate, but when strewn on the floor it is viewed as waste. Douglas wrote, "*Where there is dirt there is system*", underscoring that the recognition of something as dirt or waste presupposes an *ordered system* of classification and boundaries. In her analysis, eliminating dirt is a positive process of reorganizing the environment, reaffirming the desired order. This implies that waste is deeply socially constructed: what counts as defiling or out-of-place reflects cultural norms and values. Notably, Douglas did not focus on modern garbage per se, but her insights have been applied widely in "discard studies" to explain why certain objects or materials become regarded

as disgusting or insignificant it is because they violate cognitive and cultural categories of order (or purity). One consequence of this idea is that stigma often attaches to waste and to those who handle it; dealing with waste (like garbage collection or sewage work) can be seen as "dirty" jobs, not due to the inherent nature of the work but because society has cast these materials and roles outside the sphere of normal value and cleanliness.

Building on the notion of waste as socially defined, Zygmunt Bauman (2004) extended the concept of "waste" to a metaphorical level in his work *Wasted Lives: Modernity and Its Outcasts*. Bauman argues that modern, globalized capitalist society produces "human waste" populations of people who are seen as superfluous, disposable, or out-of-place in the social and economic order. He identifies migrants, refugees, the unemployed, and other marginalized groups as the inevitable "wasted lives" generated by the spread of modernity and market-driven progress. In Bauman's words, "*The production of 'human waste' … is an inevitable outcome of modernization*". This provocative use of the waste metaphor highlights how social systems classify and discard people much as they do objects. It draws a parallel between the way consumer society treats excess material goods and the way it treats individuals who do not fit the economic system both are cast off and marginalized. Bauman's metaphor of 'wasted lives' can be directly connected to legal practices of waste facility siting. Communities already marginalized by poverty or race are frequently chosen as sites for landfills or incinerators, treating them as both human and material waste zones. Legal frameworks that allow such siting without adequate safeguards reinforce Bauman's insight: societies discard people in the same way they discard matter. Integrating this perspective highlights how legal categories of waste not only manage materials but also tacitly authorize the marginalization of certain populations. Bauman's work, therefore, adds a critical dimension: waste is not only about things, but about how societies value (or devalue) human life.

Another significant contribution is Michael Thompson's "Rubbish Theory" (1979), which directly addresses the relativity of value over time. Thompson observed that objects do not have fixed value; something considered worthless junk today might become a treasured antique tomorrow. In his framework, goods fall into three categories: *Transient* (things that lose value over time, e.g. trendy consumer products), *Durable* (things that gain or hold value long-term, e.g. art, heritage items), and *Rubbish* (things with zero value, at least temporarily). Critically, Thompson argues that the *rubbish category serves as a conduit* through which items can move from the transient to the durable state. In other words, something might enter a valueless phase (essentially being "waste") and later be revalued and reclassified as valuable again. A classic example is an old piece of furniture or clothing: initially new (high value), then it becomes shabby and unfashionable (low or no value, effectively rubbish), but decades later it might be rediscovered as a "vintage" item (high value again). According to Thompson, mainstream economic or social theories had difficulty explaining such drastic value reversals, but

by acknowledging "rubbish" as a legitimate transitional category, we can understand how societies reclaim waste. This theory underscores a key sociological insight: waste is often a phase or status that objects (and even ideas) can move in and out of, rather than an intrinsic property. It is complementary to Douglas's view while Douglas focused on why society ejects certain matter as out-of-place; Thompson focuses on how those ejected things can later be brought back into the sphere of usefulness or desire. The idea that "nothing is inherently waste forever" challenges legal or policy approaches that treat waste as an end state. It suggests that social innovation (like recycling cultures or reuse markets) can invert waste back into value. It also implies a critique of consumer society's disposability: what is junk to one may be a resource to another, if given the opportunity (thus foreshadowing today's interest in the circular economy).

Contemporary anthropologists and sociologists continue to explore waste through various lenses. Joshua Reno and colleagues contribute ethnographic and theoretical accounts of waste practices, emphasizing the material and political dimensions of waste. Reno (2015), for instance, argues that waste is "more than just a symptom of an all-too-human demand for meaning or a merely technical problem" instead, how we deal with waste reveals deep aspects of our material culture, labor systems, and even our ontologies (our understandings of reality). He notes that the "afterlife" of waste what happens to things after we throw them away is central to questions of marginal labor and environmental justice. Studies of landfill workers, waste pickers, and garbage infrastructures (Reno's own fieldwork included working at a U.S. landfill) show that *the boundary between* "*waste*" *and* "*non-waste*" *is maintained through labor and governance*, often invisibly. For example, Reno points out that our wastes "become entangled with the lives of nonhuman creatures and the future of the planet we share", highlighting how waste is ecological as well as social. This aligns with growing literature on "waste regimes" (a term used by sociologist Zsuzsa Gille (2007) and others) referring to the political-economic structures that determine how waste is managed in different societies. A "waste regime" includes which wastes are prioritized or ignored, how waste labor is organized, and what social values underpin waste policies. For instance, Gille's study of socialist and post-socialist Hungary showed that under different political regimes, the state may focus on one type of waste (such as scrap metal for industrial recovery) as emblematic, neglecting other types; this reflects broader ideological goals (like post-war rebuilding). Such analyses demonstrate that waste is intimately linked to governance, economy, and social change.

A recurring theme in sociological perspectives is the stigma and marginality associated with waste. Drawing from Douglas's idea of impurity, many scholars have examined how the people who handle waste (municipal garbage collectors, informal recyclers, landfill pickers, sanitation workers) are often socially marginalized. They perform the essential work of keeping society clean and recovering materials, yet they face low status, health risks, and legal harassment. Sociologist Susan Strasser (1999) noted historically how sanitation labor became "invisible"

as cities modernized cleanliness was prized, but those who dealt with refuse were pushed to society's edges. Likewise, more recent research in the field of "dirty work" and stigma (e.g. by sociologists and organizational psychologists) observes that waste workers often internalize or combat a sense of shame attached to their jobs, even though those jobs are vital. In countries like India, for example, waste picking is tied to caste, with lower-caste communities historically assigned to waste handling and consequently facing discrimination. In Egypt, the informal garbage collectors (the *Zabbaleen* in Cairo) belong largely to a minority group and long operated with social disdain despite providing recycling services. Such patterns affirm Douglas's idea: those dealing with "matter out of place" may themselves be seen as out-of-place in the social hierarchy. However, sociological studies also highlight agency and organization among waste workers many have unionized or formed cooperatives (as in Latin America and parts of Asia) to demand recognition and rights.

Sociological perspectives, in summary, frame waste as a mirror of society: it reflects our norms (Douglas), our economic systems and inequalities (Bauman, Thompson), and our hidden infrastructures and labor (Reno). Waste is a *social process* as much as a material state. This has important implications: if waste is socially defined, then changing social attitudes (toward consumption, reuse, or waste work) can change what becomes "waste." It also means that definitions of waste are not neutral but imbued with questions of power (who has the authority to declare something waste or not) and identity (how we distinguish the clean from unclean, the valued from the reject). These insights provide a rich context for examining how legal systems define waste. One might expect, for instance, that legal definitions would draw on the everyday notion that waste is something discarded or out of use. Indeed, as we will see, many laws define waste in terms of "discard." Yet, the sociological lens might critique that simplicity, noting that "discard" is itself a complex decision often influenced by culture and economics. The following section turns to the legal perspective: how do laws and regulations codify the concept of waste, and what challenges have arisen in practice?

Legal Definitions and Frameworks of Waste

Legal systems at different governance levels adopt definitions that manifest tensions with sociology in distinct ways. At the international level (e.g., Basel Convention), definitions are negotiated compromises that reflect power imbalances between states. At the national level (e.g., EU Waste Framework Directive, U.S. RCRA), statutes must balance environmental protection with industrial interests, often resulting in broad definitions refined by courts. At the local level (e.g., municipal ordinances on litter or nuisance), waste is defined in relation to community order and cleanliness, echoing Mary Douglas's 'matter out of place.' Differentiating these levels shows that conflicts with sociological perspectives vary depending on whether law is operating globally, nationally, or locally. In law, defining waste is crucial because it delineates what materials are subject to waste management controls, tracking, and liability. A clear definition helps regulators and

industries know when a substance must be handled as waste (with all attendant safety and environmental requirements) and when something is outside the waste regime (for example, a product or a reusable material). However, as this section will show, legal definitions of waste, while seemingly straightforward, have proven controversial and complex, often needing clarification by courts and legislators. Notably, legal definitions frequently hinge on the concept of *discard or disposal*, echoing in a simplified form the sociological idea of waste as something cast off by its holder.

One of the most influential international legal instruments is the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989). The Basel Convention was a response to global concerns about hazardous waste trade in particular, the dumping of toxic wastes from industrialized countries into developing countries during the 1980s. It provides a framework for regulating and minimizing international shipments of hazardous waste. Basel does include a definition of "waste" in Article 2. Notably, the Convention's definition is quite aligned with the notion of intentional discard. It states: "'*Wastes*' *are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law.*". This wording captures several elements: "disposed of" (i.e. materials which have been thrown away or treated as refuse), "intended to be disposed of" (materials that the holder plans to throw away), or "required to be disposed of by national law" (materials that, by law, must be discarded, perhaps due to their hazardous nature). The Basel definition thus leans on the actions and intentions of the *holder* of the material. It is like saying that if someone considers something a waste (or is legally compelled to treat it as waste), then it is waste. Basel also relies on national definitions to an extent (the phrase "by the provisions of national law"), which has been critiqued for introducing variability what is considered waste in one country might differ in another. Importantly, Basel's scope is restricted to hazardous and certain other wastes, and the Convention includes detailed annexes listing categories of wastes and hazardous characteristics. In practice, Basel's implementation has shown that defining waste internationally is tricky; countries have sometimes disagreed on whether a particular shipment is waste or a product (for instance, used electronics exported for reuse vs. e-waste exported for dumping). The Convention's control procedures (like prior informed consent for shipments) hinge entirely on the question of whether the material is "waste" under Basel.

The European Union's Waste Framework Directive (WFD) provides another cornerstone in legal definitions. The EU WFD (Directive 2008/98/EC, building on earlier directives from 1975 and 2006) sets the basic terminology for waste management in EU member states. Article 3(1) of the WFD defines waste in almost the same terms as Basel: "'*waste*' *means any substance or object which the holder discards or intends or is required to discard.*". This has become a standard legal definition and is often quoted in legal texts and cases. Each part of this definition

discards, *intends to discard*, *or is required to discard* has been subject to interpretation. For example, what does it mean to "discard" something? It is not necessarily just throwing it in the garbage; it could include abandoning it, selling it for scrap, or sending it for recycling depending on context. EU law has grappled with scenarios where a material is transferred for further use: is that a discard (making it waste until it's fully recovered) or is it a product? There have been numerous Court of Justice of the EU (CJEU) cases on this grey area, especially before the WFD was updated to explicitly address by-products and end-of-waste status.

One key issue the EU faced was that the WFD's definition was very broad, encompassing any material the holder wants to be rid of. Legal scholars and practitioners noted that this breadth could classify useful secondary materials as waste, thus imposing regulatory burdens on recycling and recovery industries. The logic of the law, however, was to err on the side of caution: a broad definition ensures that potentially polluting substances don't escape oversight. The CJEU consistently favored a broad interpretation in the interest of environmental protection. Indeed, the Court ruled that attempts to interpret "waste" narrowly (to exclude certain materials) would undermine the Directive's aim and thus were incompatible. In one famous case (European Commission v. Belgium, concerning some stored petroleum coke), the Court held that even materials with economic value could be waste if they were not being directly used and the holder was trying to dispose of them. Over time, however, the EU refined its legal framework to introduce more nuance:

The concept of a "by-product" under Article 5 of the Waste Framework Directive (WFD) was introduced to clarify circumstances in which a production residue should not be legally treated as waste but as a co-product that can be directly used. This provision ensures that materials which are generated as part of a manufacturing process, but which have a clear subsequent use, are not unnecessarily regulated as waste. For instance, if a factory's production process yields a leftover substance that is certain to be reused as an input in another industrial operation, without requiring further treatment beyond normal practice, and provided its use is lawful and environmentally sound, then that residue may be categorized as a by-product. This approach prevents useful materials from being "legally shackled" with the label of waste when they are, in reality, part of an ongoing production chain. It reflects a more nuanced understanding of material life cycles, aligning legal frameworks with practical industrial processes and avoiding unnecessary barriers to reuse.

Closely related is the "end-of-waste" concept in Article 6 of the WFD, which sets out criteria to determine when a material that has already entered the waste stream ceases to be legally regarded as waste. According to EU law, once a substance has undergone a recovery process such as recycling and meets specified conditions, it can shed the legal classification of waste. These conditions require that the material has a definite intended use, a functioning market, compliance with technical standards, and that its use will not cause adverse environmental or

health effects. By satisfying these criteria, recyclers can transform discarded materials into products that may be traded and utilized without waste-related restrictions. In practice, this legal mechanism formalizes the shift from valuelessness to value that Michael Thompson's *Rubbish Theory* describes in sociological terms. For example, scrap metal, glass cullet, and copper can be legally recognized as no longer waste under specific EU rules once they meet the stipulated recovery benchmarks. Member states also retain discretion to establish end-of-waste criteria for other materials on a case-by-case basis. This framework provides a legal pathway for materials to move back into the productive economy, reinforcing the broader circular economy agenda. The introduction of by-product and end-of-waste provisions indicates that legal definitions, initially blunt, have evolved to be *more complementary to practical and social understandings* acknowledging that waste status is not always permanent and that context (how a material will be used) matters. This was partly in response to industry and societal pushes for a "circular economy" where waste is minimized by keeping materials in use.

Aside from definitions in abstract, legal cases and controversies highlight where law and social practice may collide. A striking example is the treatment of household garbage in the context of privacy rights: In the United States, the Supreme Court case *California v. Greenwood* (1988) ruled that once a person puts their trash out on the curb for collection, they have "*abandoned*" it and thus have no reasonable expectation of privacy in its contents (police could search it without a warrant). The logic here is legal: by discarding the waste, you relinquish property and privacy rights. However, in Canada, the Supreme Court came to a slightly different position in *R. v. Patrick* (2009), suggesting that if waste is still on one's property (even bagged for collection), it might still garner privacy protection. These cases turn on what it means to *discard*: the U.S. doctrine treats the curbside placement as the moment of discard (and thus loss of privacy), whereas the Canadian view was more nuanced about location and intent. This illustrates that even within legal systems, definitions of waste (when is something "gone" for good?) can have implications beyond environmental regulation touching on property rights, search and seizure law, etc. It shows law's attempt to draw lines in what is a continuum (the act of throwing away).

Another realm where legal definitions of waste become contentious is in international waste trade and environmental justice. The Basel Convention, as mentioned, was born from real-world injustices: cases like the notorious Koko, (known as Nigeria incident) where toxic waste was illicitly shipped from Italy to a Nigerian village. In that incident, barrels of hazardous chemicals were found stored on a local farmer's property, causing illness and outrage. The Koko case, along with similar "toxic dumping" incidents in developing countries, prompted the international community to craft laws to prevent such practices. It also introduced the term "toxic colonialism" into the lexicon the idea that affluent countries were using poorer regions as dumping grounds. The Basel Convention's enactment in 1989, and later the Basel Ban Amendment (prohibiting exports of hazardous waste

from OECD to non-OECD countries), can be seen as a legal system's response aligning with a sociological and ethical stance: that it is unjust to externalize waste harms to vulnerable communities. Yet, Basel's legalistic definitions also create loopholes and debates. One issue has been the distinction between waste vs. second-hand goods. For example, a used electronic device sent to Africa is it waste (to be discarded) or a usable product? Often such shipments were labeled as donations or reusable goods to evade Basel controls, but in reality, many devices were non-functional and ended up as e-waste in countries with rudimentary recycling capacity. This led Basel parties to clarify criteria (and more recently to include certain e-waste under strict trade rules). Another example is end-of-life ships sent to scrap yards: Basel considers ships as hazardous waste when sent for breaking (due to asbestos, oils, etc. on ships). However, enforcing that has been difficult, as shipowners often flag vessels under countries with lax enforcement and send them to South Asian beaches for cheap scrapping again raising issues of global inequality and what counts as "waste" versus a "floating asset". Thus, legal definitions in the international context are entangled with politics and justice concerns.

National laws provide further insight. The United States, notably, has its own definition of "solid waste" under the Resource Conservation and Recovery Act (RCRA) that is similar in spirit to the EU's definition. The U.S. Code of Federal Regulations defines a solid waste (which includes liquids and gases for regulatory purposes) as "*any discarded material*", with specific exclusions and nuances (40 C.F.R. §261.2). The term "discarded material" covers things that are abandoned (disposed, burned, incinerated) or recycled in certain ways or considered inherently waste-like. Over the years, the U.S. EPA has had to clarify which recycled materials are regulated as waste versus not, leading to a complex set of rules (for instance, materials recycled in a continuous industrial process might not be "discarded"). Like the EU, the U.S. wrestled with not stifling recycling for example, rules for when secondary materials reclaimed from wastes can be deemed products. One can see a general pattern: legal definitions started broad to capture all unwanted materials (for environmental protection), but then needed refinement to accommodate recycling, reuse, and industrial by-products.

One area where legal and sociological perspectives clearly intersect is in the realm of environmental justice and waste facility siting. Environmental justice (EJ) movements, as briefly touched on with "toxic colonialism," also have a strong domestic component, especially in the U.S. The 1982 Warren County protests against a PCB landfill in a predominantly African American community in North Carolina is often cited as the birth of the U.S. EJ movement. Activists highlighted that hazardous waste facilities, landfills, and polluting industries were disproportionately sited in minority and low-income communities. Sociologically, this reflects systemic racism and inequalities certain populations were deemed more "acceptable" to bear the burdens of society's waste. Legally, it led to investigations (like the landmark 1987 report *Toxic Waste and Race* and subsequent government actions) and attempts to use civil rights law to stop unjust siting. While the U.S.

legal system did not establish specific statutes for EJ in the 1980s, it did lead to policy changes (such as President Clinton's 1994 Executive Order on Environmental Justice). In this context, the definition of waste is less contested than the distribution of waste's impacts, but it shows law's limits. A hazardous waste might be clearly legally defined, but if the law allows it to be consistently dumped in poor neighborhoods, the sociological critique is that the law fails to address the full problem. EJ brings an additional lens: *the governance of waste must consider fairness and not just technical management*.

In some countries, legal frameworks have gradually begun to integrate social considerations. For example, Colombia's Constitutional Court issued decisions recognizing the rights of informal waste pickers (recyclers). In a series of rulings (notably Decision T-291/09 and others), the Court struck down city policies that excluded these workers from waste management services, citing the need to protect their livelihood and dignity. The Court mandated that cities like Bogotá include informal recyclers in new waste management contracts. As a result, organized waste picker associations in Bogotá were allowed to operate formally and be paid by the city for their recycling services. This is a powerful example of legal definitions evolving under social pressure: traditionally, waste pickers were seen as illegitimate actors (even sometimes prosecuted for "stealing" garbage, since technically waste collected by a municipality could be seen as city property). But with judicial recognition, their activity salvaging value from waste was reframed as a public service. Here, the sociological insight that one person's waste is another's livelihood forced a change in legal outlook. It also reflects a complementary relationship: the law, in this case, took into account the social reality of waste work and adjusted the legal regime (essentially redefining who is a legitimate waste manager).

The sociological literature reveals waste as a flexible, socially negotiated concept bound up with culture, value, and power. The legal literature (statutes, directives, treaties, cases) treats waste as a specific category that must be delineated for regulation, but over time has introduced flexibility (by-products, end-of-waste) and grappled with value-laden issues (like EJ). As Parizeau and Lepawsky note, legal definitions are "more than codified, static rules" they are "*renewals of collective values*" enacted through governance. In other words, laws about waste reflect what a society at a given time considers worth protecting or rejecting. For instance, when laws define something as hazardous waste and ban its export, they reflect a value that certain harms should not be externalized; when laws exempt a recycled material from being waste, they reflect a value on resource efficiency. However, tensions arise because law tends to create uniform definitions and boundaries, whereas sociology shows those boundaries are often blurry and context-dependent. The next sections (Methodology and Analysis) will delve into specific comparisons and evaluations of these perspectives in action.

3. Methodology

This study is conducted as a qualitative, interdisciplinary analysis of existing lit-

erature, legal texts, and case examples. The aim is not to gather new empirical data on waste generation, but rather to synthesize and critically compare sociological theory and legal doctrine regarding the concept of waste. Given the nature of the research question examining definitions and perspectives the methodology centers on comparative textual analysis and case study illustration.

This study adopts a qualitative, interdisciplinary comparative analysis of sociological theory and legal doctrine regarding waste. Rather than re-surveying the literature, which is covered in the Literature Review, this section highlights the analytical framework: six core themes were used to compare perspectives criteria for defining waste, perceptions of value and end-of-waste, stigma, governance and power, environmental justice, and rigidity versus dynamism. These themes structured the analysis and were tested against illustrative case examples drawn from international instruments, EU law, and selected national contexts. The review established a conceptual base for analyzing how the definition of waste operates within both social and legal contexts.

To guide this inquiry, an analytical framework was developed with six core themes: criteria for defining waste, perceptions of value and the end-of-waste process, stigma and pollution, governance and power, environmental justice, and the tension between dynamism and rigidity. These axes enabled systematic comparison between sociological and legal perspectives. For example, the theme of value allowed for comparison between Thompson's argument that objects can oscillate between valued and valueless states, and the EU's legal recognition of "end-of-waste" criteria. Similarly, the theme of governance examined how decisions about waste are shaped either by social norms or by legal authority, and whose interests such decisions ultimately serve. This thematic framework was essential in structuring the subsequent analysis section and ensuring that findings were not fragmented but instead addressed recurring points of convergence and divergence.

The analysis was further grounded in illustrative case examples drawn from diverse jurisdictions. At the international level, the Koko, Nigeria toxic waste incident highlighted the weaknesses and responses of the Basel Convention. European Union case law on by-products and end-of-waste provided insight into how courts and regulators interpret discard-based definitions. North American jurisprudence, such as the Greenwood case in the United States and Patrick in Canada, was used to highlight contrasting conceptual approaches to waste and privacy. From a justice perspective, the Warren County PCB landfill protests in the United States were examined as an early environmental justice case, while the integration of waste pickers in Colombia illustrated how law can evolve to recognize social realities. Developing country contexts, such as shipbreaking in South Asia or e-waste dumping in West Africa, were used to explore how global definitions of waste interact with local practices. These examples were employed as illustrative evidence rather than as stand-alone case studies, offering practical insight into how definitions of waste operate on the ground.

Finally, a critical comparative analysis was undertaken, applying the thematic

framework across both sociological and legal perspectives. This involved a side-by-side evaluation of how each domain defines, interprets, and manages waste, supported by literature and case examples. Complementarity was noted where legal principles mirrored sociological insights, as in the EU's end-of-waste rules aligning with Thompson's theory of value transformation. Contradictions were highlighted where legal rigidity conflicted with social flexibility, such as in laws that criminalize informal recycling. Throughout the analysis, care was taken to avoid selective citation by integrating voices from both sociology and law. Validity was ensured by cross-checking all legal definitions and case details with official documents and by grounding sociological claims in recognized theoretical works. Limitations of the study included its reliance on secondary sources and its general rather than technical scope, as the aim was to build a conceptual and comparative argument rather than provide statistical proof. Overall, the methodology combined interdisciplinary research, case illustrations, and thematic comparison to construct a robust foundation for analyzing whether sociological and legal definitions of waste are complementary or contradictory.

4. Analysis

In this section, we synthesize the findings from sociological and legal viewpoints, organized by key themes, to determine whether these perspectives on waste complement each other or stand in contradiction. The analysis reveals a complex picture: in some respects, sociological and legal definitions of waste converge and inform one another, while in other respects they diverge, leading to practical tensions. We discuss several thematic areas: concepts of discard and value, the role of social norms and stigma, the fluidity vs. rigidity of waste status, and issues of governance and justice. Through each, we highlight complementarity (if any) and contradictions, supported by examples.

4.1. Discard, Value, and the Definition of "Waste"

At the heart of defining waste is the notion of discard. Both legal and sociological perspectives acknowledge that something becomes waste when its holder no longer wants it or sees it as valuable. This is a strong point of complementarity: legal definitions explicitly use the criterion of discard, which resonates with the everyday understanding that waste is "stuff we throw away". Sociologist Michael Thompson's observation that objects have a life cycle of value and become "rubbish" at the point of zero value dovetails with the legal idea that when an object's owner intends to dispose of it, it enters the legal category of waste. In this sense, law codifies a basic social reality: once you abandon an item, it is (usually) considered waste.

For example, if a household puts an old appliance out on the curb, both a neighbor and the law might concur that it's trash (unless someone rescues it for use). The EU Waste Framework Directive's definition ("any substance or object the holder discards or intends or is required to discard") is almost a direct formaliza-

tion of that scenario. Similarly, the Basel Convention's definition ("disposed of or intended to be disposed of") captures the same essence on a global scale. This indicates complementarity: despite coming from different traditions (one from social theory, one from legal necessity), both views center on the act of relinquishment as the defining moment of waste-hood.

However, delving deeper, tensions emerge about what exactly constitutes "discard" and who decides it. Sociologically, "discard" is not always clear-cut people may consider something waste while still keeping it (hoarders, for instance, struggle with the boundary of discarding), or consider something useful even when general society deems it waste (as with upcyclers or scrap collectors). Legal definitions, while seemingly clear, often ran into borderline cases that required interpretation. For instance, factories that "*intend to discard*" a by-product versus those that find an industrial use for it: early EU case law had to determine if certain petroleum or mineral by-products were being "discarded" when given to another process or simply transferred as secondary raw material. The courts tended to err on labeling them waste unless a convincing case was made that they were integral to another production process. This legal cautiousness (broadly defining discard) sometimes contradicted the perspective of industry or even local custom, which might have seen those materials as useful. A concrete example: in a CJEU case, *Palin Granit* (2002), a Finnish quarry's leftover stone pieces used to build walls on site were initially considered waste by authorities, but the court eventually recognized they were not discarded since the company intended to use them (the key was showing genuine use, not sham disposal). This shows that while law and sociology agree on discard as concept, in practice law demands explicit proof of intention to use, whereas socially the line can be informal or assumed.

Another sub-theme is value and end-of-waste. Sociological insights (Thompson's Rubbish Theory, for example) highlight that waste status can be temporary, and value can be resurrected. The legal system's introduction of "end-of-waste" criteria is a significant move that complements this insight. These reforms are best understood within the broader paradigm of the circular economy, which explicitly frames waste as a "resource out of place". Circular economy policies legally operationalize the sociological recognition that value is fluid by creating mechanisms such as by-product status, recycling targets, and producer responsibility schemes that keep materials in productive loops. In this sense, the circular economy becomes the bridge between sociological theory and legal practice, compelling legal systems to adopt more dynamic, socially attuned understandings of value. The change in law (part of the 2008 Directive and 2018 amendments) was partly driven by those practical concerns. It signals that law can adapt in light of economic and social changes (here, the rise of the circular economy paradigm). One could say sociological reality (and economic reality) of waste-to-resource forced the legal definition to become more dynamic.

Nonetheless, there are still contradictions around value perception. Certain things have *subjective* value that law cannot easily account for. For example, a

person might keep what others see as junk for sentimental reasons (so they do not "intend to discard" it). Legally that's fine (it's not waste if you don't throw it), but problems arise in areas like hoarding disorder or property maintenance laws sometimes authorities intervene to clear "waste" from someone's yard despite the owner's claim that it's not waste to them. Here we see a conflict: socially (to that individual) it's not waste, but the broader social norm and legal stance might classify it as waste (debris, a nuisance). The law typically sides with collective notions of public health and aesthetics in such cases. This touches on Mary Douglas's idea of disorder: one person's private collection can be seen by neighbors as disorderly waste. Laws about waste often contain *nuisance* provisions or property standards that effectively override an individual's classification. While this is a tangent, it does illustrate that legal definitions ultimately assert an authority that can clash with personal or subcultural definitions of value.

In sum, regarding discard and value, sociological and legal perspectives largely complement each other in recognizing discard as central and value as a key factor but they can clash on the margins where intention or value is ambiguous. The complementarity is seen in evolving legal frameworks that now better accommodate the fluidity of value (e.g., by-products, end-of-waste), embracing the notion that waste is not a fixed identity of an object. The contradiction is seen when rigid application of rules labels something waste contrary to a community's practice or an owner's intent though legal systems have tried to minimize such friction through case-by-case interpretation.

4.2. Order, Stigma, and Waste's Social Meaning vs. Legal Treatment

Sociologically, as discussed, waste is wrapped up in concepts of order vs. disorder, purity vs. pollution. Mary Douglas's work implies that society's aversion to waste is not just about physical harm but about maintaining symbolic order. Waste is "*that which must not be included if a pattern is to be maintained*", essentially the excluded elements of a system. This perspective sheds light on *why* people react strongly to waste (and dirt) it's unsettling, transgressive to our sense of how things should be.

Legal systems, on the other hand, tend to frame waste in more instrumental terms: as something requiring management to protect health and environment. Yet, one can read between the lines of regulations a reflection of the same impulses. For instance, municipal ordinances that require waste to be put out in closed bags on certain days, or that penalize littering, are essentially enforcing an order *when and where waste is acceptable*. Litter is "matter out of place" in a very literal sense, and laws against littering echo societal disdain for disorder in shared spaces. These are complementary: legal rules often codify prevailing social norms about cleanliness and propriety in public. Even the concept of "nuisance" in common law (whereby an unhealthy accumulation of garbage on someone's property can be deemed illegal because it offends neighbors or attracts vermin) is an example of legal enforcement of social order regarding waste.

A poignant area of complementarity is how legal regimes treat hazardous waste, aligning with the idea of defilement or danger. Hazardous wastes (chemicals, biomedical waste, etc.) are subject to stricter rules because they are literally out-of-place in the general environment they must be confined, treated, isolated. Laws designate these materials as needing special labeling ("biohazard", "toxic") and restricted zones (special landfills, incinerators). This is a rational response to actual dangers, but it also resonates with a cultural notion of contamination. Terms like "contaminated land" have legal weight (triggering cleanup laws) and cultural weight (nobody wants to live on an old dump). Therefore, in managing the *stigma of place*, law and sociology meet. A contaminated site, once a dump, can carry a stigma even after cleanup; legal processes, such as declaring a site "remediated" or giving it a clean bill of health, are attempts to symbolically and materially restore order (convince society it's no longer defiled). Sometimes they succeed, sometimes the stigma remains (property values may stay low due to reputation).

Where contradiction can arise is in the treatment of people associated with waste. Sociologically, waste work and workers are stigmatized (the concept of "dirty work"). Legally, ideally, workers should all be protected and valued, but historically many waste-related occupations have been given low legal protection, falling through regulatory cracks because they were informal or seen as outside the modern economy. For example, waste pickers in many countries operated in illegality or semi-legality trespassing laws, municipal ownership of waste, or health regulations could be used to chase them off landfill sites. This legal stance effectively mirrored social stigma (treating the pickers as nuisances or threats rather than stakeholders). In countries like Colombia, as noted, this was challenged, and the law was reformed to recognize waste pickers' contribution. That is a case where sociological understanding (that these people provide a service and are marginalized unjustly) eventually influenced legal outcomes turning contradiction into complementarity.

Another interesting intersection is privacy and dignity. There is a social stigma in having one's personal waste exposed (e.g., someone rummaging through your trash can feel like a violation because waste can contain intimate traces of one's life). The law's treatment of this (the Greenwood case in the U.S.) basically said society doesn't recognize privacy in trash once discarded. But some argue this fails to account for the dignity aspect that case effectively said police digging through garbage is fine, whereas many people might instinctively feel it is intrusive. Canadian law seemed to incorporate a bit more of that sentiment by being cautious if trash is still on private property. This could be seen as a minor point, but it does reflect how legal definitions can run roughshod over personal or cultural perceptions of waste. The contradiction here is between a purely functional view of waste as abandoned property versus a sociocultural view of waste as still intimately connected to a person (their "leavings" as it were).

On the theme of order, legal systems also establish hierarchies of waste management (like the waste hierarchy: reduce, reuse, recycle, recover, dispose). This

hierarchy, embedded in laws (the EU WFD Article 4), reflects a value order disposal (landfilling) is least favored. One could argue this is law trying to reshape social behavior: to make people see waste disposal as a last resort, not the default. The success of such legal nudges depends on cultural change. In societies were throwing away is cheap and unseen, people might not follow the hierarchy despite it being official policy. Thus, sometimes a contradiction appears between the legal ideal (everyone should sort their trash and strive for zero waste) and social habits (the "throwaway culture"). Bridging that gap often requires public education and incentive structures beyond just legal definition.

In summary, regarding order and stigma, complementarity is evident where law enforcers cleanliness and proper waste handling, essentially backing up societal norms about separating the dirty from the clean. Contradiction arises when legal systems either neglect the social dimension (e.g., ignoring the plight of waste workers) or when social prejudices infiltrate laws (e.g., zoning decisions that treat certain communities as acceptable waste zones a form of structural stigma). Encouragingly, there are examples of laws evolving (as in Colombia) to reduce social stigma by formally valorizing waste work. Another example: some cities now call garbage workers "sanitation engineers" or similar, as an attempt (linguistic/legal) to elevate the status of the occupation. Small changes like that indicate a consciousness of stigma at the policy level, aligning legal language more closely with a desired social respect.

4.3. Fluidity of Waste Status vs. Legal Certainty

A fundamental difference in perspective comes from the purposes each side serves. Sociological observation embraces ambiguity and fluidity waste can be ambiguous (is it waste or not? It depends on who you ask or when you ask). Legal systems, conversely, strive for certainty and clear categorization, because regulation demands knowing what rules apply. This leads to some friction.

For instance, consider an object like a used tire. Sociologically: one person tosses it (to them it's waste), another person collects it to make sandal soles (to them it's a resource). These can coexist. Legally, however, at any given moment the tire likely must be classified either as waste or not, because that determines what you can do with it (do you need a waste transport license to carry it? can you store it without a permit?). Legal rules often categorize used tires as waste until they're processed into something (like shredded rubber) that meets end-of-waste criteria. This can be seen as *contradictory* to the recycler's perspective who might say "it's a product/service I'm providing by collecting these." Some jurisdictions have attempted flexible approaches, like giving temporary permits to community reuse centers so that materials they collect from waste streams are not legally "waste" on their shelves. But generally, law's binary nature (waste vs. product) can be at odds with the continuum acknowledged by sociologists (and businesspeople).

However, this dichotomy has been mitigated by creative legal mechanisms,

which show a complementarity emerging. The EU's by-product provision is one such mechanism: it inserts a middle ground category (not waste, not primary product, but by-product). Essentially, it legally recognizes the ambiguity something can be produced unintentionally yet still be intended for use. Likewise, many countries allow certain kinds of waste exchanges through exemptions (e.g., farmers spreading non-sewage sludge waste on fields as fertilizer under certain conditions, treating it not as waste disposal but as agricultural use). These are legal accommodations of real-world practices that treat some wastes as useful. The presence of these intermediate categories indicates law and practice finding a compromise.

Another example is the concept of "waste regimes" by sociologists like Gille, which pointed out that what counts as waste can shift historically and politically (e.g., during wartime scrap metal was not waste but precious, in post-war maybe not, etc.). Legal definitions also change over time reflecting shifting priorities. For instance, recently the world is seeing plastic waste being redefined in legal terms what was once normal trade (exporting mixed plastic scrap) is now increasingly seen as an illegitimate practice unless very pure, because of ocean plastic pollution concerns. In 2019, the Basel Convention was amended to categorize many mixed plastics as wastes requiring strict consent, whereas before they moved relatively freely as "recyclables." This legal change mirrors a societal awakening to plastic pollution; what industry might have considered a commodity (albeit low-grade) is now legally "waste" that cannot be easily dumped on poorer countries. Sociologically, one could say plastic in the ocean garnered so much stigma (images of garbage patches, dead marine life) that regulators responded by reclassifying and tightening control. Thus, over time, legal definitions can and do shift demonstrating a dynamic interplay rather than static contradiction.

Yet, regulatory lag can be an issue. Society's values can change faster than laws. Electronic waste is a case in point: for years, old electronics were traded with little oversight, often harming communities in Africa and Asia who did informal recycling. Environmental justice advocates labeled this as "digital dumps" and urged treating e-waste as hazardous waste. Eventually laws (including Basel, as noted, and national laws in importing and exporting countries) caught up, and now e-waste is much more regulated. During the lag, one had a contradiction: sociologically, this was seen as an injustice and a form of toxic dumping; legally, it was often permissible or loosely regulated trade. Now, with updated laws, there's more complementarity in the sense that law began to reflect the emerging social consensus that such practices were unacceptable.

On the flip side, sometimes laws lead, and social behavior follows. For instance, laws mandating recycling (or banning landfilling of certain items) attempt to push society toward seeing those materials not as mere waste. When the EU or some U.S. states banned landfilling of yard waste, it implicitly redefined grass clippings and leaves as a resource that should be composted. At first, people might see it as just extra hassle, but over time, new norms form (like separating organics). So law

can attempt to reshape the social construction of waste here complementarity is aspirational at first: the law sets a standard in hopes that society's attitudes will align (e.g., now many do view organic waste as shameful to throw in a landfill because it could be composted).

In evaluating fluidity vs. certainty, we see that contradiction arises when law's need for clear boundaries bumps up against waste's chameleon nature in practice. However, through iterative policy changes and feedback, many legal systems are incorporating more flexibility, essentially trying to mimic the flexibility that social systems already have. The drive towards a circular economy is essentially a paradigm shift trying to blur the line between waste and non-waste entirely by keeping materials in loops a concept long recognized by scavengers and tinkerers informally. In doing so, legal and economic structures could become more attuned to the reality that waste is often just "resources in the wrong place".

4.4. Governance, Power, and Environmental Justice

One of the richest areas to examine complementarity and contradiction is in who controls waste and who bears its burdens. Sociologically, waste is often about power relations: richer people or countries can avoid seeing or dealing with their waste, while poorer people or countries end up living with others' waste (whether through being waste workers or having waste facilities located near them). This is encapsulated in concepts like Bauman's "wasted lives" and in environmental justice activism. The question here is: do legal frameworks mitigate or exacerbate these inequities? And do they do so in line with, or contrary to, sociological understanding? Internationally, the Basel Convention and its Ban Amendment represent a legal response to a sociological problem: "waste colonialism." The Basel Ban (agreed in 1995, in force 2019) prohibits OECD countries from exporting hazardous waste to non-OECD countries. This is explicitly about environmental justice preventing wealthy nations from dumping toxic waste on poorer ones. In principle, this is a case of law complementing the ethical stance many in society took after incidents like Koko, Nigeria: that such dumping is wrong. The effectiveness of Basel, however, is mixed. Some have criticized that Basel's complex procedures still allow abuses (like mislabeling waste as second-hand goods). When the law doesn't fully stop the practice, a contradiction persists between the normative goal (justice and safety) and reality (continued toxic trade). But the trajectory has been toward strengthening the law to be more consonant with the moral stance. Regional agreements like the Bamako Convention (1991) in Africa, which outright bans import of hazardous waste into Africa, show an even stronger alignment with the sociological/ethical perspective of protecting vulnerable communities.

Nationally, environmental justice issues highlight contradictions. In the United States, early environmental laws in the 1970s were written largely color-blind and without explicit attention to inequality. It was only after grassroots movements and studies like "*Toxic Wastes and Race*" (United Church of Christ Commission

for Racial Justice, 1987) that policymakers realized a pattern: race was the strongest predictor of hazardous waste facility siting. Initially, there was a disconnect: powerful regulatory frameworks (like RCRA or Superfund) cleaned up waste sites but didn't address *where* new sites were being located. Over time, EPA developed EJ screening tools and governments began considering impacts on minority communities, moving toward complementarity with the social critique. But even today, communities often must fight facility permits on a case-by-case basis. Legal definitions of waste did not change here, but legal processes gradually changed to include public participation and civil rights considerations. EJ advocates sometimes use civil rights law (Title VI of the Civil Rights Act) to argue that permitting a waste facility in a black neighborhood (when white neighborhoods are spared) is discriminatory. The success of such claims has been limited in courts due to the difficulty of proving intentional discrimination. This is a case where legal structures struggle to fully accommodate sociological realities like institutional racism. There is partial complementarity: agencies now at least rhetorically commit to EJ, and some states have passed laws requiring cumulative impact reviews for new facilities in overburdened areas (e.g., New Jersey's 2020 EJ law). Those are instances of legal innovation driven by sociological insight.

Another aspect of governance is how the law views informal vs. formal systems. Sociologically, a "waste regime" may include both formal municipal waste collection and informal scavenging networks. Historically, law often only recognized the formal system and treated informal recyclers as illegitimate. This could be seen in many cities that granted exclusive waste collection contracts, thereby criminalizing or excluding the informal sector. The contradiction was stark: informal recyclers were often far more effective at resource recovery (especially in developing countries) than formal waste services, yet legal regimes ignored or suppressed them, resulting in worse outcomes (both social loss of livelihoods and environmental lower recycling). The trend in some places now, as noted with Colombia, is to legally recognize these groups. In India, waste pickers' associations have also lobbied for inclusion; some cities now integrate them into door-to-door collection for recyclables. International organizations (like the International Labour Organization and NGOs like WIEGO, 2021) have pushed for "inclusive recycling". When laws adapt to formally involve informal workers (through licenses, contracts, or protections), they transform a conflict into complementarity: aligning the legal waste management system with the sustainable social practice on the ground. This is both a justice issue and an efficiency one.

From a governance perspective, one can also examine who gets to define waste. Sociologist Mariana Valverde's concept of the "*work of jurisdiction*" (cited by Parizeau & Lepawsky) suggests that defining "what" is governed (in this case, what is waste) is a key part of asserting authority. Legal definitions can be seen as exercises of power deciding, for example, that emissions into air are "waste" (regulated) or not. An interesting cross-perspective note: international law notably lacks a single general definition of waste, which some scholars attribute to the fact

that waste issues have been handled piecemeal (hazardous waste, ship dumping, etc.). This "fragmentation" in law could be interpreted sociologically as reflecting the diffuse, often low-status nature of waste problems it wasn't considered glamorous enough to warrant a comprehensive regime initially, and powerful countries resisted constraints on their waste handling freedom. Over time, as waste problems compounded (massive waste generation, marine plastic pollution, climate impacts of waste), international governance is increasingly forced to pay attention. Talks of a new global treaty on plastic pollution, for instance, indicate a shift: the environment is so visibly impacted by "waste" that global power structures might create unified rules (something unthinkable decades ago).

In terms of complementarity, when legal systems consciously integrate social science insights for example, understanding that community engagement and cultural practices affect the success of waste policies outcomes improve. A case in point: recycling programs achieve better results when they consider why people might resist or misunderstand them. Early recycling laws mandated separation, but some failed because they didn't account for apartment dwellers or cultural attitudes. Now cities conduct social marketing, provide multilingual education, and work with community leaders. These are not changes in legal definition, but changes in legal implementation acknowledging sociological reality. It's a form of interdisciplinary complementarity where law is executed with a sociological sensibility.

Finally, on justice, one area where legal and sociological definitions might fundamentally diverge is *the concept of harm*. Environmental law defines certain wastes as hazardous based on scientific criteria. Sociologically, communities might perceive harm differently. For example, a community might fight a landfill not only because of measurable pollution, but because of the stigma and dread the sense of being a "sacrifice zone." Legal processes historically might dismiss those non-quantifiable concerns (odor, stigma, fear of devaluation) as NIMBYism or irrelevant sentiments. This can create deep mistrust. However, some legal frameworks now attempt to include more qualitative assessments via environmental impact assessments or EJ analyses, which consider "social impact" and not just technical compliance. This is an ongoing challenge: how to legally validate what communities feel (the sociocultural impact of waste presence). True complementarity would mean legal decision-making fully respects sociological aspects of waste (like stigma, community identity, procedural justice). We are not fully there, but awareness is growing.

In conclusion it can be seen that the sociological and legal definitions of waste are *partly complementary and partly contradictory*. They are complementary in that both recognize the central role of discard and the need for order legal definitions encode what socially is seen as unwanted material. They increasingly complement each other as laws adapt to concepts like resource recovery (aligning with the idea that waste has value) and environmental justice (aligning with social equity concerns). Moreover, legal definitions of waste are themselves products of

social values: as society's values evolve (e.g., towards sustainability), laws to redefine waste (consider the legal embrace of recycling or bans on certain single-use wastes).

However, there remain contradictions: law's need for clear, administrable categories can clash with the nuanced, context-dependent nature of waste in society. Laws may label something waste when social actors consider it a resource, creating friction. Similarly, laws might overlook the social dimensions (stigma, cultural meaning, power imbalances) unless deliberately prodded to include them. Where the sociological perspective sees waste as a lens onto social inequality and marginalization, legal regimes might initially treat waste as a neutral technical issue thereby inadvertently reinforcing those inequalities (e.g., siting all dumps in poor areas because the law didn't say not to). Only with conscious effort does the legal system address those issues, and that effort often comes from social pressure and evidence.

The analysis therefore suggests that while sociological and legal perspectives on waste stem from different paradigms (interpretive vs. prescriptive), they are not destined to be at odds. With interdisciplinary awareness, they can be mutually informing. Legal definitions can be designed or applied in ways that recognize sociological truths (like "waste is matter out of place" which implies context matters), and sociological research can focus on areas that need legal reform (like advocating for waste picker rights or highlighting externalized waste burdens). The result could be a more holistic waste governance, where what is considered "waste" and how it is dealt with reflects both environmental imperatives and social values.

5. Conclusion

This paper's critical examination of sociological versus legal definitions of waste reveals a multifaceted relationship at times complementary, at times contradictory, and often evolving. We find that sociological perspectives enrich our understanding of waste by exposing its socially constructed nature: waste is not an objective material fact but a label we assign within cultural and economic contexts. Legal definitions, on the other hand, serve the pragmatic function of delineating what materials fall under regulatory control, but they too carry implicit assumptions about value, risk, and social order.

Where the perspectives align**:** Both recognize that the act of *discarding* is pivotal. It is no coincidence that international and national laws define waste in terms of what someone "discards or intends to discard" this mirrors the everyday social act of relegating something as useless. Laws, in their broad strokes, have thus codified what Mary Douglas observed: that societies separate the clean/useful from the dirty/waste in order to maintain order. Furthermore, there is increasing alignment in seeing waste as something with potential value. Legal frameworks like the EU's Waste Directive now explicitly acknowledge that waste can become non-waste (through recycling and meeting end-of-waste criteria), reflecting a concept

long evident in human practice (one person's trash is another's treasure). Both perspectives also converge on the goal of mitigating the negative impacts of waste whether it's protecting human health and the environment (the legal objective) or removing sources of pollution and disorder from society (a sociological/sanitary objective).

Sociologically, waste is fluid and context-dependent, whereas legally it has often been treated in binary terms. This has led to cases where legal rules appeared to conflict with practical sense for example, classifying a reusable by-product as waste, or criminalizing scavenging that actually provides recycling. Sociologists emphasize the roles of power and stigma how waste can marginalize people (e.g., waste pickers, marginalized communities near dumps) while early legal regimes tended to be blind to these issues, focusing on technical management. This led to contradictions such as environmental laws that improved overall waste handling but inadvertently concentrated burdens on those least able to resist (a classic environmental injustice scenario). Additionally, sociological theory might question the very notion of "waste" as a fixed category (arguing it's a matter of timing, perception, and social agreement), whereas legal systems, especially in the past, presumed waste was a definable thing "out there". That difference in epistemology can cause friction for instance, when innovators try to repurpose waste but face legal hurdles, because the law still sees it as waste until proven otherwise.

Our analysis of international instruments like the Basel Convention and EU directives alongside sociological themes (purity, value, waste regimes) indicates that the gap between the perspectives has been narrowing. International law, spurred by moral outrage at dumping scandals, moved closer to a justice-oriented view that sociologists and activists held that waste trade can be an instrument of oppression or "toxic colonialism". European waste law, influenced by sustainability discourse, increasingly mirrors the idea that waste is a resource out of place and must be reintegrated (through recycling targets, circular economy strategies). Even national and local policies, by incorporating public participation and acknowledging informal sectors, show legal frameworks inching toward the holistic view that waste is not just a technical issue but a social one.

Recognizing both perspectives can lead to better outcomes. Laws drafted with an awareness of social behavior and cultural attitudes towards waste are likely to be more effective and equitable. For example, if a law aims to increase recycling, it must consider why people might resist sorting trash (inconvenience, lack of knowledge, etc.) a sociological insight and address that through policy design (education campaigns, convenient infrastructure) rather than merely mandating it. In framing waste definitions, policymakers should remain flexible to encourage innovation: overly rigid definitions can stifle creative reuse. At the same time, clarity is needed to prevent loopholes (as seen when exporters mis-declare waste as "recyclables"). It's a delicate balance between flexibility and enforceability, but one that can be informed by ongoing dialogue between legal experts, sociologists, industry, and communities.

Environmental justice considerations are paramount. The study underlines that who defines waste and how it's managed are deeply political questions. Ensuring that laws do not disproportionately harm marginalized groups and indeed that they empower those groups (as in the case of waste picker inclusion) is essential. This is an area where sociological advocacy and research have clearly influenced legal reforms and must continue to do so. Conversely, legal mandates (like requiring community impact assessments for waste facility siting) can operationalize fairness in ways that sociological analysis advocates.

In conclusion, rather than viewing sociological and legal definitions of waste as fundamentally at odds, it is more accurate to see them as distinct but intersecting narratives about the same phenomenon. The sociological narrative provides context, meaning, and critique it reminds us that waste is not just material to manage but also a symbol and a symptom of how we live. The legal narrative provides structure, accountability, and tools for intervention it establishes who must do what with waste to protect public interests. When these narratives inform each other, waste governance can be both effective and socially attuned. Where they are isolated, policies may fail or cause unintended harm. Therefore, a key recommendation emerging from this study is for continued integration: legal frameworks should be developed and evaluated with input from social science. This integration can be operationalized through concrete policy tools. For example, dynamic permitting systems could support urban mining initiatives that recover critical materials from electronic waste; legal safe-harbors could be created for community repair workshops that extend product lifespans; and procurement laws could mandate recycled content in public contracts, reinforcing waste-as-resource principles. Such mechanisms embody an integrated sociological-legal approach, ensuring that waste governance promotes both environmental sustainability and social justice.

Ultimately, achieving sustainable and just waste management requires seeing waste through both lenses simultaneously: as a physical substance that must be regulated and as a social relation that must be understood. In doing so, we can transform what has long been seen as an undesirable end into an opportunity for social innovation, resource recovery, and greater environmental justice.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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