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Environmental justice in municipal solid waste management: decision-makers' attitudes as barriers to inclusive implementation

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ABSTRACT

This article examines how institutional assumptions and policy design shape uneven implementation outcomes in environmental policy, and demonstrates that inequality is not merely a by-product of policy failure but a structuring condition of its persistence. Focusing on municipal solid waste management (MSWM), a domain marked by both environmental and social inequality challenges, the study addresses persistent implementation gaps that existing scholarship has largely attributed to technical, regulatory, and economic constraints. Based on a mixed-methods approach, and drawing on insights from environmental justice (EJ) scholarship, the study combines statistical analysis of municipal recycling rates with in-depth interviews with senior policymakers to identify systematic disparities in performance along socio-economic, sectoral, and geographic lines. Specifically, Jewish municipalities show significantly higher recycling rates than Arab municipalities, with recycling performance correlating positively with socioeconomic cluster, and negatively with peripherality. It further shows that these disparities are not treated as policy failures but are normalised within policymakers' interpretations. Implementation is guided by efficiency-oriented reasoning and operationalised through ostensibly neutral instruments that systematically advantage high-capacity municipalities while marginalising weaker ones. We conceptualise these dynamics as a self-reinforcing policy cycle in which dominant policy framings shape instruments that both reproduce inequality and undermine MSWM policy goals. The study focuses on Israel, with particular attention to disparities affecting Arab municipalities as the most disadvantaged localities within the system. While Israel represents an analytically intense case, the findings speak to broader challenges in environmental governance, highlighting how universal policy frameworks may reproduce inequality when applied across unequal local contexts.

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1. Introduction

The global climate crisis and widening inequalities represent two of the most pressing challenges of our time (Ahmad et al. 2022; J. Martin 2007). Their interconnection highlights urgent environmental justice (EJ) concerns, drawing attention to the uneven distribution of environmental harms and benefits along lines of class, race, and geography (Brainard, Jones, and Purvis 2009; Lankes, Soubeyran, and Stern 2022; Moellendorf 2022). One of the first and most enduring arenas where justice concerns have materialised is the domain of waste (Martuzzi, Mitis, and Forastiere 2010). Scholars of EJ underscore how waste practices are shaped by, and reproduce inequality, from the siting of landfills and hazardous facilities in low-income and racialized communities (DeVoy et al. 2021; Norton et al. 2007) to the global unevenness of waste flows, recycling markets, and environmental burdens between North and South (Li et al. 2013; Slattery, Dunn, and Kendall 2024).

Within the broader realm of waste, municipal solid waste management (MSW/MSWM) plays a central role in shaping daily life. It comprises the collection, transport, treatment, and disposal of household waste, aimed at public health, environmental protection, and efficiency (Singh et al. 2024). MSW accounts for a large share of global waste and is a key environmental challenge of the twenty-first century (Kaza et al. 2018). Over the past two decades, MSWM scholarship has shifted from a primary focus on technical, managerial, and environmental factors (Charles 2024; Juárez-Hernández 2021; Morrissey and Browne 2004) to increasingly integrating EJ and other social aspects (Jiang, Leng, and Xi 2024), directing attention to questions such as public participation and discourse, valuing fairness of MSWM solutions (Baxter et al. 2016; Elia, Gnoni, and Tornese 2015; Etim, Tashi Choedron, and Ajai 2024) inclusive MSWM systems (Ferri, Chaves, and Ribeiro 2015), social conflicts (Hung, Ma, and Yang 2007), and unequal outcomes across groups (Ma and Hipel 2016). Seen as a whole, this trajectory highlights waste management as a political arena in which resource inefficiency and environmental harm intersect with unequal social impacts, even under ostensibly sustainable policy frameworks (Ogunseitan 2023).

This growing recognition has prompted calls to more systematically integrate EJ insights into policy research (Grabowski et al. 2022; Turnhout 2024; A. M. Wilson et al. 2025). Yet, despite this shift, such insights remain largely underdeveloped in scholarship on public policy implementation. Waste policy objectives have proven consistently difficult to realise, with many countries experiencing a persistent policy gap between formal commitments and actual performance (Hemidat et al. 2022; Khan et al. 2022). Studies on public policy, and implementation gap research in particular, have largely examined these discrepancies through regulatory, planning, financial, technical, and engineering barriers (Hill and Hupe 2021; Zotos et al. 2009). While this body of work offers important insights, it still directs little attention to the social and distributive dynamics that contribute to recurring implementation failures. This focus is crucial since implementation research shows that barriers left unrecognised cannot be effectively addressed (Hudson, Hunter, and Peckham 2019).

Thus, this paper shifts focus to uneven social dynamics, arguing that they constitute a crucial, yet underexplored, locus where MSWM policy goals are impeded. This move builds on EJ scholarship that has increasingly conceptualised waste governance as a

set of social and political processes through which environmental harms and benefits are allocated (Petts 2005; Skinner-Thompson 2022), and extends it into the study of policy implementation. We argue that while technical or economic obstacles tend to generate corresponding technical solutions, failures rooted in socially structured inequalities often remain invisible within dominant policy framings. These persistent failures reinforce environmental injustice, undermining MSWM goals. We develop this argument through a case study of Israel: a highly centralised, developed country, yet with some of the deepest socio-economic disparities among OECD nations (OECD 2019, 2021). The country's lowest-ranking group is the Palestinian Arab community, which comprises approximately 20% of its population.¹ Arab municipalities are mostly located in peripheral regions and are consistently ranked at the bottom of socio-economic indices (Khalaila, Badran, and Rudnitzky 2024). This large minority group consists of the descendants of the Palestinian population who remained in their communities after the 1948 War (also known as the *Nakba*, "catastrophe"). Although officially granted citizenship by the State of Israel, they are subject to systematic discrimination in many arenas of daily life (Ghanem 1998; Jaba-reen 2008; Kook 2019; Kretzmer 2019; Smootha 1990). This community differs from the Palestinians in the West Bank and the Gaza Strip, who are not Israeli citizens, but rather military subjects following Israel's occupation in the 1967 War. We thus complement existing research on waste management systems in these areas, most notably Salah et al (2021, 2023, 2025) which frame waste treatment as delivering co-benefits for waste and energy.

Notwithstanding nearly three decades of changing policy plans to set and reach recycling targets, Israel has long faced failures in MSWM policy (Marti and Puertas 2021). Most academic and policy analyses have focused on economic, regulatory, or technical explanations (Ayalon and Daskal 2023; Daskal, Ayalon, and Shechter 2018, 2022), downplaying how its structural marginalisation and socio-economic disparities may contribute to this failure. Drawing on interviews with former waste policy decision-makers revealing their "core beliefs" (Sabatier 2019), and policy documents analysis, we examine how social inequalities and ethno-class biases are silenced or disregarded in policy discourse. Rather than treating environmental injustice as a downstream outcome of failed policy, the study analyzes how the absence of justice-oriented considerations within policy processes helps explain persistent implementation failures themselves. Thus, implementation failures are not only administrative or procedural but embedded in, and reproduce, deeper environmental injustices and structural discrimination. By integrating an EJ perspective into the analysis of policy implementation, the paper contributes to both waste policy and EJ scholarship, advancing a more equity-oriented understanding of waste-governance in developed contexts.

The article proceeds as follows: we first review literature on EJ and waste policy, then describe our methodology and present Israel's waste policy as a case study. We next turn to empirical findings from interviews and policy documents, and conclude with a discussion of their implications and a conclusion.

2. Literature review

Among the different waste streams, including industrial, agricultural, and construction waste, MSW stands out as a particularly pressing and politically contested challenge (Abdel-Shafy and Mansour 2018). With rapid urbanisation and changing consumption

patterns, the burden of MSWM has intensified, falling on local governments (Hoorweg and Bhada-Tata 2012; Zhang et al. 2025). Municipalities worldwide have been tasked with implementing policy instruments such as landfill taxes, recycling targets, source separation, and extended producer responsibility, to improve system efficiency and sustainability (Galavote et al. 2025; Tumu, Vorst, and Curtzweiler 2023). Yet, despite these efforts, especially in less-affluent areas, waste management often fails to meet its objectives (Hemidat et al. 2022; Khan et al. 2022).

The limited success of MSWM reform cannot be fully understood without engaging broader literature on public policy processes. Public policy research examines how societal goals are translated into practice within institutional settings (Hill and Hupe 2021), emphasising negotiation, contention, and the constraints posed by multiple actors and institutional contexts (Cairney 2019; Sabatier 2019). A central concern is the *implementation gap*, the persistent discrepancy between policy design and real-world execution (Howlett 2018; Pressman and Wildavsky 1984; Winter 2012). This concept serves as a powerful analytical tool: it illuminates how policies fail not simply due to poor design or compliance, but due to deeper structural and political, and administrative dynamics (Hill and Hupe 2021; Schofield 2001). It reveals that implementation gaps are shaped by power relations, institutional fragmentation, and uneven administrative capacities (Lipsky 2010; May 2012), foregrounding the multi-scalar nature of policy processes, in which centrally designated policies rely on local actors whose capacities and motivations vary significantly (May and Winter 2009). Despite its sensitivity to institutional complexity and power relations, mainstream implementation scholarship has seldom incorporated distributive or justice-oriented perspectives into its analytical core.

Yet, this perspective is particularly crucial in environmental policy domains, where ambitious centralised goals (e.g. recycling targets or EU-inspired models) often overlook diverse social contexts and unequal local capacities (Blake 1999; European Environment Agency, 2024; Wu et al. 2017). Research on MSWM consistently highlights persistent implementation gaps between national policy goals and local practices, stemming from misalignment between centralised strategies and the limited institutional, financial, and administrative capacities of local authorities, as well as poor public policy and coordination (J. G. C. Martin et al. 2025; Read 1999; Zotos et al. 2009). Comparative research shows that interdependencies between actors and institutions can either enable or constrain progress, depending on local authority and leadership capacity (Filimonova and Birchall 2024). In the global north, OECD reviews show that municipalities often lack the capacity to assume new responsibilities, leading to uneven implementation across local authorities (OECD, 2019). In the Global South, we find further barriers, including policy ambiguity, poor inter-agency coordination, and uneven community engagement (Jerin et al. 2022; Trinh, Hu, and Phu 2021). For instance, Ren and Zuo (2024) identify how China's waste segregation policies are hindered by unclear authority structures, weak coordination, and limited public participation, especially in disadvantaged areas. Thus, implementation failures in MSWM reflect more than technical shortcomings: they expose governance tensions that perpetuate unequal environmental outcomes and reveal systemic weaknesses in environmental management, where institutional design and policy framings reproduce both inefficiency and inequity. While differences exist between global north and global south challenges, as shown in the following sections, the Israeli case illustrates how such dynamics may coexist within a developed institutional

setting, combining high formal capacity with pronounced, structural socio-spatial disparities.

A growing body of waste-management research highlights the social dimensions of MSWM, including vulnerability, participation, inclusion, and equity. Ma and Hipel (2016) Systematically review these studies, noting persistent inequalities and local variation in implementation, but focus on outcomes rather than the policy assumptions and governance logics producing them. Other studies have examined uneven diffusion of waste-separation campaigns or unequal social costs of treatment options in terms of health, job quality, and local impacts (Etim, Tashi Choedron, and Ajai 2024; Jiang, Leng, and Xi 2024), and structural factors like municipal autonomy or inter-local cooperation (Soukopolová et al. 2022; Struk and Boda 2022). From the perspective of policy makers, underlying assumptions and governance logics, Davies (2008) shows how policy failures often reflect institutional exclusion of certain voices rather than merely technical or managerial shortcomings. Petts (2005) highlights the procedural dynamics of decision-making in waste management, showing how participation, expertise, and legitimacy are structured within policy processes, and critiques sustainability frameworks that privilege environmental over social dimensions. Following suite, we focus on the assumptions and normative worldviews of environmental policymakers, a crucial, yet often overlooked, dimension in understanding MSWM implementation failures. The Advocacy Coalition Framework (Sabatier and Weible 2019) highlights how core beliefs about society, governance, and change shape policy preferences. Analyzing these beliefs is essential for understanding how policies are framed and justified, and for identifying gaps between intentions and local implementation. In-depth interviews are particularly useful for revealing such interpretive frameworks (Yanow 2000). We examine these dynamics through MSWM in Israel, where persistent implementation gaps intersect with ethnic and socio-economic disparities.

Our perspective draws on EJ and sustainability scholarship, which emphasises how institutional practices and decision-making reproduce social inequalities (Bullard 1996; Pellow 2025; Schlosberg and Collins 2014). Specifically, exploring waste policy as a political process that reflects and reinforces existing power relations, social hierarchies, and cultural norms (Davies 2016; Moore 2012; Watson and Bulkeley 2005; Willis, Putten, and Hardesty 2024) highlights the procedural and systemic dimensions of EJ, emphasising who participates in decision-making and how institutional structures shape outcomes (Lejemtel et al. 2025).

These critical prisms move beyond MSWM paradigms centred on technical efficiency and cost optimisation, to examine the social implications and power dynamics embedded within MSWM systems (Alexander and Reno 2012; Gille 2007). Our research extends this approach by connecting EJ with the study of policy implementation failures, specifically focusing on decision-makers “core beliefs” regarding overlooked socio-spatial and ethnic differentiation. Together, these approaches reveal how waste becomes a site for understanding justice, inclusion, and state accountability within socio-environmental systems.

3. Methods

Rooted in policy studies, this study adopts an institutional and interpretive approach to examine barriers in MSWM implementation, combining qualitative and quantitative

approaches. Specifically, we combined in-depth interviews with multi-level policymakers, including current and former senior officials from the Ministry of Environmental Protection (MoEP) and its regional branches, and policy document analysis with a quantitative analysis of self-reported municipal waste data (collected by MoEP), linking institutional reasoning to measurable environmental outcomes. Qualitative methods are widely used to examine the underlying logics and principles shaping policy design (Fischer and Miller 2017; Hollstein 2011), as interviews reveal how policymakers construct meaning and frame narratives (Liu et al. 2010). Formal document analysis, e.g. ministerial strategic plans, MoEP call for proposals, or legislation, uncovers the formal rationales and goals embedded in policy texts (Bowen 2009; Cheung, Mirzaei, and Leeder 2010). Complementary quantitative analysis strengthens these insights by grounding them in observable spatial patterns and disparities (Castro et al. 2010; Hendren et al. 2023).

The research proceeded in three stages. First, we collected national waste policy and strategy documents outlining Israel's waste management agenda over the past 15 years, beginning with the 2009 source-separation programme. Documents were sourced from the MoEP, the *Knesset* (Israeli parliament) Research and Information Center, and the State Comptroller. Because implementation data were not publicly available, we submitted a Freedom of Information request (January 2025) to obtain records on municipal participation and government funding. The response was partial, yielding proposal calls and municipal lists but no financial details. Additional references from the Central Bureau of Statistics (CBS) on municipal recycling rates enabled the quantitative analysis in Stage 2.

In Stage two we conducted correlation and regression analyses to assess relationships between waste management performance and municipal socio-demographic variables. Data were drawn from annual municipal reports ("Form 1") and cross-referenced with CBS indicators (peripherality index, sector (Jewish/Arab), and socioeconomic cluster) defining local variation in capacities and outcomes.

In the third stage, eleven in-depth interviews were held with current and former senior officials from the MoEP and its regional branches. Interviews explored policymakers' interpretive frameworks, assumptions, and explanatory narratives concerning MSWM failures. Two guiding questions were asked: (1) Why has Israel's waste policy repeatedly failed to meet national goals? (2) How do officials perceive the relationship between this failure and inequalities among municipalities and social groups?

All interviews were audio-recorded, transcribed, and analyzed through thematic content analysis to identify recurring ideas and interpretive patterns (Alejandro and Zhao 2023; Clarke and Braun 2017; Fereday and Muir-Cochrane 2006). Themes were organised to capture how institutional logics mediate between environmental goals and social inequities.

Two methodological limitations should be acknowledged. First, access to serving MoEP officials was limited, requiring spokesperson approval; thus, several potential participants declined to participate. The final sample included six former directors-general (including the most recent), one former senior Waste Division official, one current staff member, two regional waste coordinators, and one former regional waste-association director. Second, local government representatives were not interviewed, as the study focused on national-level policy rationales and institutional framings rather than municipal implementation. Future studies should address how local waste managers interpret and enact national directives within diverse contexts.

3.1. Case study: Israel

While Israel is a high-income OECD member and an advanced EU trading partner² (European Union, 2000), it ranks among the highest in income inequality, exceeding most Western European states (OECD, 2021, 2024). Its lowest-income group comprises Palestinian Arab citizens, representing about one-fifth of the population (and whose status differs from the West Bank and the Gaza Strip Palestinians). Inequality stems from long-term structural discrimination in land allocation, housing, employment, and education, as well as chronic underinvestment in infrastructure and social services (Hesketh 2011; Kheir and Portnov 2024). This juxtaposition of advanced economic status and persistent inequality makes Israel a salient case for exploring how socio-spatial disparities shape environmental policy implementation and environmental justice outcomes.

Israel's governance system is highly centralised, granting local governments narrow fiscal and regulatory autonomy (Eshel and Hananel 2019). Municipalities are largely seen as service providers rather than policy actors (Finkelstein 2020). Since the late 1980s, however, several municipalities have initiated independent environmental programmes (Derry 1999; Frisch-Aviram, Cohen, and Beeri 2017). This uneven autonomy has deepened municipal disparities: wealthier localities can act independently, while weaker ones remain dependent on central directives (Blank 1994; Razin 1998). These patterns echo broader governance asymmetries evident during crises such as the COVID-19 pandemic (Zaychik et al. 2025) and in unequal distribution of urban environmental benefits, such as tree-canopy coverage (Ben-Shahar and Nayer 2025).

3.2. Waste policy in Israel: key developments

Israel's waste policy is set by the MoEP, which defines national targets and strategies, while municipalities handle collection and disposal but are not mandated to meet treatment quotas or specific technologies (Daskal, Ayalon, and Shechter 2020). Hence, the system relies primarily on economic incentives and voluntary adoption mechanisms to encourage compliance, placing substantial operational responsibility on local authorities with uneven capacities.

Since the 1990s reform that closed unregulated dumpsites and established regulated landfills (Nissim, Shohat, and Inbar 2005), Israel has implemented several major MSWM instruments (Ayalon and Daskal 2023). These include the *landfill levy* (mid-2000s), intended to internalise externalities and promote recycling and composting; a short-lived national *source-separation program* (2009–2015), still maintained voluntarily by a handful of municipalities (Eliyahu 2022); and *consumer-oriented measures* such as deposit and plastic-bag laws alongside packaging waste regulation of *extended producer responsibility* (Eliyahu 2021).

Over time, these instruments have yielded only modest and uneven improvements. Recycling rates rose from 3% in 1993–18% in 2007 (Nissim, Shohat, and Inbar 2005) but subsequently plateaued, reaching approximately 24% in 2023 (CBS, 2024). Persistent regional and ethnic gaps remain: in 2023 recycling rates ranged from 19.6% in the Northern District to 34.5% in Tel Aviv. Arab municipalities consistently exhibit lower treatment rates, visible waste accumulation, and limited service provision (e.g. 75% lack paper-recycling bins) with average recycling rates of 8% versus 22% in Jewish localities (MoEP, 2022).

These patterns illustrate how long-standing socio-economic inequalities and weak governance translate into uneven operational outcomes, undermining both environmental targets and equity. In response, targeted policy interventions have attempted to address these gaps. Between 2014 and 2020, the “*Equal Environment*” programme sought to reduce waste-management gaps in Arab, Druze, and Bedouin municipalities. Yet only 41% of its budget was spent, emphasising ongoing administrative bottlenecks and institutional exclusion (Eliyahu 2019). While symbolically important, the programme remained peripheral to national strategy and did not substantially alter the broader governance trajectory of MSWM.

3.3. MSWM policy failures in Israel

While common policy instruments have been shown to improve waste management performance in some contexts (Kaza et al. 2018), Israel has experienced persistent implementation gaps despite repeated policy reforms, reflecting limited aggregate improvements in system performance (Cohen 2024). These long-term trends are evident in enduring operational bottlenecks, with around 75-80% of municipal waste in Israel still landfilled (Daskal, Ayalon, and Shechter 2018, 2020; Marti and Puertas 2021) as opposed to the goal of 20% landfilling till 2030 (Laster and Karni 2020; MoEP, 2020). Research attributes these gaps to technical and institutional factors, including insufficient infrastructure, e.g. separated-waste treatment sites, recycling plants or suitable bins and trucks (Ayalon and Daskal 2023; Ayalon et al. 2023), high programmes costs, for example for two separate collection routes (Ayalon and Daskal 2023; Daskal et al. 2022), and a centralised framework lacking enforcement mechanisms (Broitman, Ayalon, and Kan 2012; Daskal, Ayalon, and Shechter 2019). Frequent regulatory changes and ministerial turnover further undermine stability and public trust, notably in the case of the source-separation programme, which was discontinued after about five years following a change in ministerial leadership (Ayalon et al. 2021). While these accounts highlight structural, regulatory and economic barriers (e.g. Kan, Ayalon, and Federman 2010), they often overlook the socio-political context in which policy unfolds.

Taken together, this literature tends to conceptualise MSWM policy failure primarily in terms of technical capacity, regulatory design, and administrative coordination. Fried’s ethnographic work (2020; 2024) demonstrates how recycling practices in Israel intersect with national identity, colonial imaginaries, and moral discourse, revealing the cultural logics that sustain unequal policy outcomes. Building on this insight, our study conceptualises MSWM as a field where institutional beliefs and social hierarchies co-produce persistent implementation gaps. By examining decision-makers’ worldviews and assumptions, we show how these biases normalise unequal municipal capacities and obscure accountability for policy failures – linking environmental management effectiveness directly with justice and inclusion.

4. Uneven ground: understanding local disparities in waste policy implementation

Before exploring how senior decision-makers understand and justify ethnic, socio-economic disparities in MSWM, this section maps these disparities empirically. Using

national-level data on municipal recycling performance, we identify broad patterns as a structural baseline. These patterns frame the interpretive analysis that follows and illuminate how disparities are produced, perceived, and maintained in Israel's waste policy landscape.

4.1. Step one: mapping structural disparities

To establish this baseline, we analysed municipal recycling rates against three structural variables: population sector (Jewish/Arab), socio-economic (SE) cluster, and geographic peripherality (CBS, 2024). Recycling data were obtained from annual municipal reports ("Form 1") submitted to the MoEP and cross-referenced with CBS indicators for 2023. Approximately 15 municipalities were excluded from the analysis due to missing recycling data.

Independent-sample t-tests and Pearson correlations ($n = 240$) examined associations between recycling rates and the three variables. Jewish municipalities ($M = 26.11$) showed significantly higher recycling rates than Arab municipalities ($M = 11.71$), $t(182) = -8.41$, $p < 0.001$ (Welch's t-test). Recycling rate also correlated positively with socio-economic cluster ($r = 0.417$, $p < 0.001$) and negatively with peripherality ($r = -0.367$, $p < 0.001$), reflecting consistent socio-spatial patterns.

While population sector shows the strongest association, the three dimensions overlap considerably: most Arab municipalities (82 of 86) fall within socio-economic clusters 1–5 (of 10), and weaker municipalities are typically peripheral. Some exceptions exist where regional environmental unions mitigate capacity gaps. Nevertheless, the overall trend demonstrates persistent, structural inequalities in waste management performance. Although these findings reflect measurable performance disparities and limited aggregate gains across municipalities, the purpose of this analysis is not to reassess efficiency outcomes per se, but to establish the empirical baseline for examining how implementation processes contribute to uneven results.

Hence, these patterns raise critical questions for environmental management: How do policymakers perceive and rationalise these inequalities, and to what extent do they view them as governance failures or social inevitabilities? The following section addresses these questions through interpretive analysis of decision-makers' narratives and institutional assumptions.

5. Thrown away: a qualitative analysis of waste policy and local disparities

This section deepens the analysis of implementation inequality, exploring how senior decision-makers recognise and rationalise disparities between localities. Although most interviewees acknowledge that municipalities differ in their ability to manage waste, few view these disparities as policy failures requiring systematic intervention. Consequently, inequality remains structurally embedded, recognised but unaddressed, allowing governance weaknesses to persist beneath the surface of national waste policy.

5.1. Recognition without action

For some interviewees, disparities between localities are treated as given conditions, that do not necessarily call for policy intervention. They acknowledge that wealthier

municipalities are better equipped to manage waste, while weaker ones struggle, but do not see this as something the MoEP should actively address:

"First of all, there's a clear socioeconomic effect. It's about how many street-sweeping machines you have, how many bins, and so on ... [But] the Ministry shouldn't have to help. I don't think it should be dealing with that." (*Interviewee 1, Former Director General*)

Interviewee 5 similarly emphasises the advantages of higher SE-ranked municipalities, which have the capacity to transport waste to distant treatment sites and negotiate contracts with facilities. In contrast, lower-ranked municipalities, particularly in the Arab sector, are more vulnerable to disruptions in service and are more likely to resort to illegal dumping:

"Municipalities with higher socioeconomic status know how to handle their waste. They lead in recycling, they have the means to transport it south if necessary. They've also secured contracts with sorting facilities and landfill sites. But those in lower socioeconomic positions—especially in the Arab sector—if they face a problem or high treatment costs, or if a site refuses to accept their waste, they won't make the extra effort to find alternatives. So we see more dumping in open areas, more burning." (*Interviewee 5, Regional Waste Coordinator*)

Other interviewees viewed these gaps as requiring state action, but not through strengthening weaker municipalities. Instead, they proposed removing responsibilities from them altogether, further centralising authority and limiting their capacity for independent operation. For example, interviewee 2 argued that the gap between high- and low-SE-ranking municipalities is unacceptable and that expecting small, weak municipalities to manage waste is unrealistic. His solution was not targeted support, but transferring waste management, including contracting and service provision, to regional or national authorities.

"Local government includes some excellent municipalities and others that are shockingly poor—maybe to an extreme degree. The gap between municipalities ranked 8–9 and those at 1–2 is just unacceptable. For those at the lowest levels, managing their own waste simply doesn't make sense ... The smart approach is to join forces and manage it regionally ... Frankly, if I were the Minister of the Interior, I'd say: all municipalities ranked 1–3 on the CBS scale would no longer handle tenders on their own ... You have to take it out of their hands. We know there's a problem. We know there's corruption. Just take it away from them." (*Interviewee 2, Former Director General*)

Such proposals, while acknowledging the gap, sidestep its structural roots. By stripping local authorities (especially in the Arab sector) of control, rather than enabling them to address waste management challenges, they risk deepening dependency and limiting their long-term capacity. This was the case in Nazaret, the largest Arab city in Israel, with an estimated population of 80,000 in 2025. It is the only major Palestinian town to remain largely intact after the 1948 war, and it functions as an administrative, economic, and Christian religious centre for the Galilee. Despite its centrality, the municipality failed to manage its waste, creating a serious public health hazard. The Ministry eventually stepped in and organised waste collection for several months. However, this was not accompanied by any structural reform or recognition of the disparities that similar municipalities suffer from. As Interviewee 5 described, it was a temporary patch, and once the Ministry withdrew, conditions quickly deteriorated:

"Once the budget ran out, the city's contractor either dumps the waste at an illegal transfer station, or the garbage just piles up—sometimes residents burn it, or it ends up in open areas ... Right now, the whole city is full of waste" (*Interviewee 5*)

State intervention is minimal and limited to extreme cases; it does not offer a comprehensive response or reflect recognition of a recurring structural problem likely to reappear in other marginalised localities. This pattern was also evident in the "*Equal Environment*" programme (2014–2020), which explicitly recognised municipal disparities but treated them as exceptional cases to be mitigated through general infrastructure investment, rather than as symptoms of a broader structural problem in MSWM.

5.2. Peripheral gaps: geography, sector, and socio-economic status

The disparities stand also for the geographical area. For instance, Interviewee 6 described how some municipalities in the Northern District, geographically peripheral and with a majority of Arab localities, lack any waste collection, and those in the Tel-Aviv District, which includes only Jewish municipalities, most of which are SE strong, focus on advanced waste initiatives:

"In the north, there are municipalities with no waste collection at all. So they just burn it. In the Tel-Aviv District, there's no such problem—it's wealthy and well-functioning ... When it comes to household waste, there's no issue; they manage it without the ministry. That allows us to focus on Hiriya [waste sorting facility] and promote advanced initiatives." (*Interviewee 6, Regional Waste Coordinator*)

While the interviewee acknowledges regional disparities, he highlights the success of strong, central municipalities that manage to act independently. Yet this perspective catches the core structural problem: beneath the broader issue of unified national policy, with blurred responsibilities between national and local authorities lies a persistent divide—under such conditions, only well-resourced municipalities are able to take initiative, while weaker ones are left behind. For example, there is no legal obligation for municipalities to employ an environmental officer, meaning only wealthier ones can afford to do so. As a result, weaker municipalities are rarely in a position to pursue more advanced environmental efforts, reinforcing existing power imbalances:

"Let me remind you: in a city, there's no requirement to have an environmental officer. There's a requirement to have a Director of Education, but not a Director of Environment. So if they don't have one, or only half of one, how are they supposed to deal with this?" (*Interviewee 1, Former Director General*)

The most extreme example of local initiative stepping in where the state fails is the recurring proposal to implement a "pay-as-you-throw" waste fee. Interviewee 11 explained that, in the absence of national leadership, a few wealthy municipalities have attempted to advance such models independently:

"Now there are mayors saying, 'we'll take this on ourselves—we want a waste tax.' There are maybe two or three like that in the country ... Rich municipalities, usually from the Forum 15. Or small, affluent ones, with an enlightened, 'Green' mayor who's willing to do it." (*Interviewee 11, Former Regional Environmental Unit Official*)

Such patterns are not unique to Israel. Similar subnational gaps have been documented in OECD contexts, where aggregate national targets often mask uneven municipal capacity and localized disparities in implementation (OECD, 2019). In Israel, however, these capacity gaps intersect with pronounced socio-ethnic and spatial inequalities, intensifying their distributive consequences. In accordance, interviewee 9 similarly highlighted the gap between central and peripheral municipalities. She noted that while residents in affluent areas expect environmental services such as source separation, in weaker localities the issue is simply not prioritised:

"I don't see more municipalities seriously entering this space [separation at source]. In places like Givatayim or Ra'anana [Jewish, central Israel, 8–9 SE ranking], the public expects it. But in the periphery, people just don't care. The municipalities are poor—they need affordable solutions. If there's a contractor who won a tender and collects waste cheaply, that's what the city wants. It's not a priority." (*Interviewee 9, Former Director General*)

Her words suggest a culturalist interpretation of periphery residents, whether due to hardship or value systems that prioritise financial survival over "green" practices (seen as luxuries). At times, such views veered toward explicitly racialized or paternalistic assumptions. For instance, Interviewee 8, echoing similar arguments, stated that the poorer level of waste treatment in the north stems not only from budget constraints, but also from the high proportion of Arab municipalities, implying a lack of interest as an inherent trait:

"In my view, in the north district this [MSWM failure] stems from two things: first, it's farther from the center, meaning the costs are somewhat higher. Second, we shouldn't pretend otherwise—many of these are Arab municipalities, which are significantly weaker. This deepens their inherent disincentive to deal with waste, since they're already operating in deficit." (*Interviewee 8, Former Director General*)

Interviewee 2 took this further, expressing low expectations for "certain tribal" or "weak" populations. His framing was less about structural barriers and more about presumed cultural, awareness, or behavioural deficits:

"Especially within a weaker sector, marked by a certain tribalism—you can't really expect anything different ... One could say that this public has lower environmental awareness. And one could also argue that any disadvantaged population tends to show lower compliance with these kinds of regulations." (*Interviewee 2, Former Director General*)

In other words, regardless of the cause: cultural norms, low awareness, or structural poverty, these populations are framed as incapable of sustainable waste practices. Three other interviewees made similar references to "cultural" or "value" gaps, though they requested these not be quoted directly.

5.3. Institutional priorities and the uneven landscape of policy implementation

This qualitative analysis affirms the overlap seen in the quantitative data: Arab sector, geographic periphery, and low SE ranking all coincide with weaker performance in waste treatment. Yet interviewees rarely framed this inequality as central to policy implementation, treating it instead as a side issue – acknowledged, but external to the core policy failure.

To further understand the Ministry's priorities and its approach to different municipalities, we examined a list provided by the MoEP detailing the localities that received grants in response to calls for proposals (CFPs) for municipal waste separation during 2010–2015. It appeared that all 16 winners (across two separate CFPs) were Jewish municipalities (see Appendix 1: Municipalities list). Although requested, data on who applied and who was rejected was not provided.

Several interviewees, including senior professionals within the system, were critical of this outcome. They argued that the eligibility criteria and selection process disproportionately favoured municipalities aligned with the ruling political parties, that in Israel primarily represent the Jewish majority. In this view, the CFPs were designed in ways that systematically advantaged certain localities while leaving others, particularly Arab municipalities, effectively excluded from access to funding and policy implementation.

Beyond political dynamics, others emphasised the role of structural disparities between municipalities. A senior official in the ministry openly acknowledged the link between SE status and success in CFPs. Though in theory all municipalities are eligible, in practice the competition is unequal, with small and weak municipalities disadvantage:

"The barrier lies in the ability of [weaker/smaller] local authorities to request the funding, to receive it, to demand the money afterward, and in between, also to implement. Each of these steps is a barrier ... I believe there is a correlation between the capacity to deal with the ministry's CFPs and the socioeconomic ranking. If someone were to examine it, I'm sure they'd find a correlation. The stronger the local authority, the more experienced and better-compensated its personnel, the more knowledgeable they are, and the more regular their communication with the ministry." (Interviewee 10, Senior Ministry Official)

Thus, the system ignores embedded disparities. The appearance of universal policy masks an uneven playing field, widening the gap between strong and weak localities. Another way policy design deepens inequality is through its emphasis on volume and scale. Officials rationalise focusing on high-population, central areas as a way to maximise impact. This approach is driven by economic and operational efficiency, yet it overlooks considerations of social equity and, in doing so, further deepens existing inequalities.

"When you're talking about six million tons per year, even if we manage 70% properly, that's huge. You can't reach 100% everywhere. Finally, it's the big cities, Hadera-Gadera [the country's central region] that matter most." (Interviewee 4, Former Director General)

This logic reinforces a centre-focused model, where the periphery and marginalised populations are excluded from targeted investment. Interviewee 1 offered a slightly different take. Rather than pushing either for excellence or for equity, he advocated for achieving a functional average, an "80% solution." His critique was directed not at inequalities, but at the policy mindset itself:

"We fail when we focus on edge cases. Solve for the 80%, then deal with the rest. It's this Israeli engineer mindset, always trying to solve the rarest, most extreme scenario. Forget the exceptions. Let's get 80% working well, then we can address specialized solutions." (Interviewee 1, Former Director General)

But this average "80%" is itself an imagined norm, one that preserves the success of strong municipalities while excluding those unable to keep up. The result is a policy that rewards locales that are already equipped to take initiative, even in the absence of state support.

As noted, Tel Aviv-area municipalities achieved waste treatment rates 1.5 times the national average precisely because the government was not involved:

“What happened in the Dan Sanitation Association [Tel-Aviv] was a success. These were strong municipalities, and part of why they succeeded was because the Ministry lost its ability to interfere—there was no funding for this project.” (*Interviewee 7, Former Senior Official*)

Thus, even universal policies reproduce privilege: strong municipalities win grants, build infrastructure, and innovate, while weaker ones remain structurally excluded. The result is a policy landscape that equates efficiency with justice, masking inequality beneath the rhetoric of neutrality.

6. Discussion

This study examined how policymakers interpret and explain persistent failures in MSWM implementation, with particular attention to the institutional assumptions and blind spots shaping these interpretations. Drawing on both quantitative and qualitative analyses, the findings reveal a consistent pattern of disparity alongside three central themes in policymakers’ narratives. First, disparities between municipalities are widely recognised but rarely framed as policy failures requiring structural intervention (*recognition without action*). Second, implementation is guided by efficiency-oriented reasoning that prioritises aggregate outcomes, often at the expense of weaker municipalities. Third, policy instruments are designed and implemented in ways that systematically advantage high-capacity localities while marginalising others. Together, these findings show how institutional reasoning contributes to the persistence of uneven outcomes.

The findings reveal a consistent pattern of socio-spatial and sectoral disparity in Israel’s MSWM system. Quantitative analysis demonstrates that recycling performance systematically correlates with population sector, socio-economic ranking, and geographic peripherality. These patterns indicate that inequality in MSWM performance is systematically associated with social, economic, and geographic lines, though the analysis does not seek to determine their relative weight.

The qualitative findings further explain how these disparities are produced and maintained within implementation processes. Disparities are acknowledged but framed as inherent differences in local conduct, resources, or cultural orientation, rather than structural governance failures. Efficiency-oriented reasoning, exemplified by the “80% solution” logic, prioritises high-performing localities and sidelines weaker ones. This logic is also reflected in national performance targets and their uneven realisation across municipalities. The ambitious national target of 80% recycling by 2030 (Laster and Karni 2020) remains unattainable under a framework that disregards local inequality. Central districts already exceed the national average by over 10%, while peripheral and marginalised areas lag far behind, dragging down aggregate outcomes. As prior research has consistently shown (Daskal, Ayalon, and Shechter 2018, 2020), Israel’s MSWM policy has repeatedly failed to meet its stated goals; our findings suggest that these failures are rooted, in part, in the social and distributive dimensions embedded in policy design. These dynamics are further reinforced through ostensibly neutral policy instruments, such as calls for proposals (CFPs) and performance-based funding,

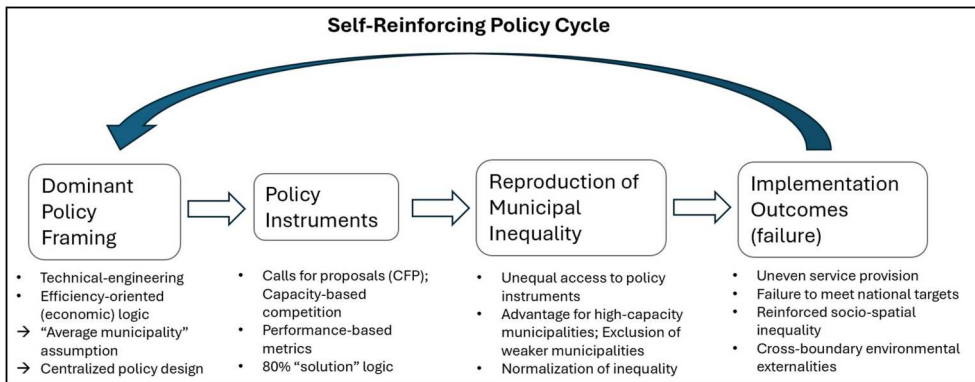


Figure 1. Conceptual model of a self-reinforcing policy cycle in MSWM implementation.

which operate in practice as distributive filters that advantage well-resourced municipalities.

Taken together, the findings suggest that uneven performance is not merely the outcome of technical or financial constraints but is embedded within institutional priorities and decision-making logics. Implementation gaps persist not only because some municipalities lack capacity, but because existing governance arrangements accommodate and reproduce structural disparities.

These dynamics can be conceptualised as a self-reinforcing policy cycle, in which dominant policy framings shape the design of policy instruments, reproduce municipal inequalities, and ultimately generate uneven implementation outcomes, which in turn reinforce the underlying institutional logic (see Figure 1).

While policymakers often acknowledge disparities among local authorities, they rarely treat them as implementation failures requiring structural action. Instead, inequality is discussed in administrative terms, attributed to local capacity, conduct, or priorities. Such framings shift attention away from institutional design and render disparity administratively manageable rather than politically problematic. These dynamics are reflected in the operation of policy instruments, such as calls for proposals (CFPs), eligibility criteria, and performance-based funding, which in practice advantage municipalities with greater administrative and financial capacity.

7. Conclusions

By integrating EJ into policy implementation research, this study demonstrates how policy instruments, despite their apparent neutrality, function as distributive mechanisms that privilege stronger municipalities while marginalising weaker ones. While prior analyses have explained waste-policy failures primarily through technical, regulatory, or economic factors, our findings reveal that inequality in MSWM is not merely a by-product of policy failure but a structuring condition, embedded in both material disparities as well as institutional assumptions and narratives that shape policy design and implementation. Addressing implementation gaps therefore requires confronting not only technical or financial constraints but the governance logics that normalise uneven outcomes.

Environmental justice scholarship has long shown that technocratic approaches to environmental governance may reproduce, rather than mitigate, inequality (Bullard 2018; Willis, Putten, and Hardesty 2024). Building on these insights, this study extends EJ perspectives to the field of policy implementation, demonstrating that uneven outcomes do not arise solely from isolated technical failures, but from institutional logics that normalise disparity, depoliticise inequality, and distribute responsibility asymmetrically across local contexts. In this sense, policy instruments such as performance metrics, eligibility criteria, and competitive funding mechanisms operate as distributive devices, even when presented as neutral or universal (Grote 2022; Lejemtel et al. 2025; Pellow 2025). More broadly, these dynamics can be understood as a self-reinforcing policy cycle, in which dominant policy framings shape instruments that advantage already well-resourced localities, generate uneven implementation outcomes, and reproduce the very assumptions that justified these instruments in the first place.

Although Israel's socio-ethnic fragmentation, deep socio-spatial disparities and centralised governance make it a particularly intense case, the findings speak to broader dynamics in environmental governance. Institutional arrangements that treat equity as a secondary concern, subordinating it to aggregate performance metrics and technical efficiency, can reproduce and entrench inequality even within advanced economies and formally egalitarian frameworks. The Israeli case thus illustrates how formally universal policy designs may generate systematically uneven outcomes when applied across unequal local contexts. Moreover, these dynamics are not confined to municipal boundaries: where weaker localities experience poorer waste services, the consequences include broader environmental and public health harms, such as illegal dumping, open burning, and pest infestations that extend beyond local jurisdictions.

Addressing these disparities requires integrating differentiated instruments, such as capacity-based funding, targeted technical assistance, and regional cooperation frameworks, into the core of policy design. Doing so can improve not only fairness but also overall system performance, as aggregate targets are unlikely to be met while structural disparities remain unaddressed.

This study has several limitations that point toward future research. First, the analysis draws primarily on interviews with national-level officials and does not include local government or community perspectives, which future research should examine. Second, while Israel provides a particularly complex case, comparative studies are needed to assess how similar institutional dynamics operate in other governance contexts. Finally, the quantitative analysis establishes structural disparities but does not conduct a full performance or cost-efficiency evaluation; future research could integrate spatial and longitudinal data to deepen understanding of distributive outcomes over time.

In conclusion, equity is not an external normative add-on to waste governance but a condition for effective implementation. Incorporating environmental justice into policy analysis allows scholars and policymakers to better understand why implementation gaps persist, and how they might be addressed in ways that strengthen both sustainability and social inclusion. As urbanisation, climate change, and resource scarcity intensify, rethinking waste policy through the lens of inequality becomes not only a local imperative but a global one for environmental governance.

Notes

1. The discriminatory structure of Israel has been conceptualized as “ethnocracy”, reflecting a mix of democratic and oppressive elements (Yiftachel 2006). Among the Israeli Arabs, the most disadvantageous group is the Arab Bedouin in the Negev, who reside in indigenous villages, referred to by Israel as “illegally constructed villages”. Unrecognized by the state, these settlements are excluded from state waste-management programs and thus an analysis of their distinct situation exceeds the scope of the paper. They are not to be confused with recognized Bedouin dwelling communities.
2. Despite Israel’s current membership status, its standing with the EU has faced renewed scrutiny in the aftermath of October 7 Israeli war on Gaza, including calls to suspend participation in Horizon Europe and to introduce visa requirements for Israeli citizens (EuroNews, 2025; European Commission, 2025).

Authors’ contributions

First author: Conceptualisation; Data collection; Formal analysis; Methodology; Writing – original draft; Writing – review & editing; Second author (Supervisor): Supervision; Conceptualisation; Writing – review & editing; Project administration.

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Declaration of the use of AI-assisted tools

During the preparation of this manuscript, the authors used ChatGPT –4.0, to assist with linguistic editing and improving readability. The authors take full responsibility for the content, analysis, and interpretations presented, and have carefully reviewed and edited all AI-assisted suggestions.

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