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Governing through fragmentation: Waste marketization and contamination rights in semi-peripheral EU regions

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Abstract

Between 15–30 per cent of all waste shipments within the European Union are estimated to be illegal, with representing a value of € 9.5 billion annually. Criminal networks of illegal and hazardous waste trafficking exploit fragmentation in EU environmental governance, contributing to persistent waste crises. This article examines why increasingly comprehensive EU environmental regulation, funding and escalating penalties have failed to prevent recurrent municipal waste crises in Italy, Greece and Bulgaria between 1994 and 2024. Through process-tracing and structured comparison across three semi-peripheral regions, the analysis shows how EU governance architecture fragmented regulatory authority across supranational, national, and regional levels, producing accountability gaps, rather than effective environmental protection.

1. Introduction

To manage waste collection and treatment, public authorities coordinate across governance levels to protect public health and prevent environmental degradation. The EU possesses comprehensive legal instruments, such as the Landfill Directive 1999/31/EC, Hazardous Waste Directive 91/689/EEC, and Waste Framework Directive 2006/12/EC, that are being systematically violated. An estimated 15–30 per cent of the 67 million tonnes of shipped waste is illegal within the EU, despite efforts to combat criminal networks, that benefit from expertise of environmental regulations (Europol, 2022; Garruto and Grassin, 2024). Illicit waste increasingly flows to southern and eastern European, semi-peripheral regions, while western Member States function as both origin and transit countries (Europol, 2022). Existing accounts of semi-peripheral development do not fully address the emerging question: how can disembeddedness emerge where regulatory architecture is extensive rather than absent?

Dominant accounts of European integration and disembeddedness explain semi-peripheral trajectories through state-business coalitions, and accumulation-regimes (Baccaro and Pontusson, 2016; Bohle and Greskovits, 2012; Elteto and Medve-Bálint, 2023; Nölke, 2016). Drawing on Polanyi's (1957) conception of disembeddedness, as erosion of societal control over harmful marketization, this article instead traces disembeddedness to institutional proliferation rather than state withdrawal. When states embed market architecture across multiple tiers rather than privatizing, they can entrench market mechanisms in ways that diffuse accountability (Block and Somers, 2016; Bryant and Spies-Butcher, 2020). Waste management exemplifies this multilayered governance, where privatized management services, contracting intermediaries and contested regulatory authority create spaces of informal oversight (Guy et al., 2011; Iddris et al., 2026; Rasmussen and Lund, 2018). Waste, therefore becomes a site of contested market exchange in the semi-periphery, in which environmental degradation can generate value.

This dynamic was institutionalized through the governance architecture of the 90s. The Maastricht Treaty (1993) and Cohesion Policy, reinforced administrative decentralization through NUTS–2 regional governance, seeking to bring decision making closer to citizens while supporting peripheral development. Yet, fragmentation across competing supranational, national, and regional levels generated regulatory gaps and jurisdictional conflicts that marketization forces exploited (Guibrunet et al., 2017; Hoornweg and Bhada-Tata, 2012; Iddris et al., 2026; Rasmussen and Lund, 2018). EU integration exemplifies a broader paradox in state interventions against uneven development (Lim, 2014): state powers proliferate across institutional levels without necessarily producing coordination (Genschel and Jachtenfuchs, 2013). In waste governance, this proliferation can constrain local public services amidst marketization (Warner and Clifton, 2014). Although participatory processes mobilize resistance within these accountability voids, fragmented authority can foreclose such countermovements, as no single authority bears responsibility for environmental harm (Stokes-Ramos, 2023).

Semi-peripheral regions combine extensive despotic power with limited infrastructural power to enforce environmental protection (Mann, 1984). Excess state architecture consequently can structure opportunities for organized criminality (D'Amato et al., 2015; Favarin and Tchachuk, 2022; Ruga Riva, 2023), enabling parallel territorial authority through mechanisms that characterize associated with state-making, including violence, institutional infiltration, and resource extraction (Tilly, 1985).

This analysis advances three arguments: 1) disembeddedness can emerge through excess rather than absence of state architecture; 2) waste generates revenue through environmental degradation; 3) governance fragmentation can structurally foreclose countermovements by diffusing responsibility, rather than weakening their tactical capacity.

2. Waste as the Subverted Commodification of Contamination Rights

Governance arrangements create tradeable rights over environmental capacities commodifying nature's productive and absorptive potential (Osborne, 2015; Robertson, 2004). Waste, as a fictitious commodity, is central to understanding third-wave marketization under neoliberalism, because its commodification produces distinctive social costs and countermovements (Burawoy, 2015). Yet, waste differs from conventional commodities as its economic value can derive not only from extraction or recovery, but from the capacity to dispose and contain it.

Several economic benefits emerge from waste commodification that make it attractive particularly to criminal market actors (D'Amato et al., 2015). First, waste collection and transport generate steady revenue through service fees and contracts. Second, and most critically for harmful commodification, landfills generate economic value through contamination rights, the ability to receive waste, particularly hazardous industrial waste. Third, land for disposal sites can be acquired cheaply in semi-peripheral regions, while the material complexity of waste streams creates information asymmetries that enable illegal dumping beyond monitoring systems. These opportunities require organized networks capable of coordinating transactions and operating beyond regulatory control (Europol, 2022). Waste is therefore not simply produced by market exchange, its commodification emerges from the interaction of material flows, economic actors and governance arrangements.

This process is facilitated by waste's ambiguous property status. Citizens relinquish household waste to the State, which assumes responsibility for its collection and treatment

through redistributive and regulatory functions, with an implicit social contract for collective protection from hazards. In post-socialist contexts, privatization has reclassified waste as a disposable commodity, restoring dumping and incineration as the dominant modes of disposal (Gille, 2007). Unlike land, whose property rights are legally established and contested, waste lacks an equivalent property regime. Its materiality facilitates exchange: its volume is measurable and transportable across space, while its hazardousness increases value of transferring responsibility for its disposal. Illegal handling, transport, and disposal consequently become profitable forms of waste crime (Europol, 2022).

The crucial economic transformation occurs when disposal capacity becomes commodified. Landfills easily become sites of hazardous waste dumped uncontrolled. Leachate leaking to groundwater; uncontrolled wind dispersion of evaporates can extend contamination beyond disposal sites, devaluing surrounding land and threatening public health and water supplies. The costs are spatially displaced onto communities and territories that do not participate in the transaction.

Waste subverts commodification: nature is valued as not a resource to extract, but a sink of absorbing harmful externalities. 'Contamination rights' capture this inversion: the generation of value through the capacity to degrade rather than extract. Fictitious commodities can function as negative externality absorption mechanisms under conditions of weak or fragmented oversight.

Household waste is managed through redistributive state functions coordinated across local, municipal, regional levels, while industrial waste is governed through producer-responsibility principles embedded in international and national regulatory frameworks. When the same market mechanisms govern both, governance fragmentation enables harmful commodification across all waste streams simultaneously.

3. Method and Data Sources

3.1. Case Selection and Comparison

The EU's NUTS classification has undergone several reforms, some tied to the enlargements: the first important one in 1981, then in 1994, followed by several, such as the 2007 one (Eurostat, n.a.). Countries adapted their previous governance structures to become eligible for support from Cohesion funds on NUTS–2 level. The 1994 NUTS–2 restructuring created specific institutional architectures, in contexts that lacked pre-existing coordination mechanisms to integrate multi-level authorities (Bartolini, 2005).

This article deploys a comparative analysis of three semi-peripheral contexts in the EU, selected to demonstrate fragmentation mechanisms across variation in 1) timing of EU integration, 2) prior governance legacies, 3) exposure to NUTS–2 restructuring. The presented three cases have different historical, economic and administrative trajectories, and joined the EU and the Cohesion funds at different times, yet share escalating waste crises driven by criminality, inadequacy of funding and governance fragmentation. Italy, the lead case, is a founding Member State of the European Union (1957), where the waste crisis in Naples had reached international scale in 1994 by the time the administrative reforms, defined by the Maastricht treaty, were rolled out. Greece joined the EU later, in 1981, to safeguard its newly restored democracy in 1975, while receiving derogation for several economic sectors. Bulgaria with a socialist governance heritage joined the EU in 2007, to face the challenge of the EC Directive 1999/31/EC on landfill waste. This most-different-system design enables identifying common mechanisms despite divergent contexts, in which cases converge on a shared outcome (Przeworski and Teune, 1970). In all cases, substantial EU funding and market-based solutions led to contradictory results. Semi-peripheral regions are understood here as sub-national territories structurally positioned between EU core and external periphery: recipients of cohesion transfers, exposed to governance restructuring through NUTS-2 reforms, and subject to uneven marketization pressures that core regions do not face (Elteto and Medve-Bálint, 2023).

3.2. Propositions, Data Sources and Process Tracing

Drawing on EU-level sources (such as Commission Reports, European Court of Justice rulings), national and regional level reports, civic society documentation and international monitoring reports and with triangulation across governance levels and actor perspectives, the analysis focuses on 1) the changing regulatory frameworks and gaps in enforcement mechanisms in the context of fragmented governance, 2) the process of marketization of waste as an inverted commodity; and 3) the countermovement efforts – foreclosed by accountability diffusion, with structured focused comparison (George and Bennett, 2005). For this end, process-tracing tests propositions (P1-P3) against timelines of fragmentation, commodification and mobilization (George and Bennett, 2005) across three countries. Propositions:

P1. *Jurisdictional overlaps in fragmented systems enable regulatory arbitrage for market actors*. In the cases examined, this manifests as criminal and commercial actors exploiting gaps between governance levels to generate profit from non-compliant waste disposal.

P2. *Accountability diffusion across levels prevents effective protective countermovements despite mobilization*. The cases show civil society achieving tactical victories without forcing systemic governance reform.

P3. *Waste commodifies through contamination rights where value derives from degradation capacity rather than resource extraction* – observables were degradation-value links traced through regional reports. This emerged iteratively from the case material, as existing literature does not theorize contamination rights directly.

As a limitation, the data cannot capture informal coordination mechanisms that may partially mitigate formal fragmentation in some localities.

4. Three pathways of Governance Fragmentation – Case Studies

4.1. Italy – Battle in the Triangle of Death

Pre-existing criminality exploited sudden governance fragmentation to transform waste management into systematic extraction, generating €44 billion through institutional infiltration and regulatory arbitrage. The Naples, Campania waste emergency, spanning from 1994 to 2010 and beyond, stands as Europe's environmental and governance crisis, where the convergence of organized crime infiltration, institutional paralysis, and multi-level coordination failure created an environmental and public health crisis affecting 2.9 million residents (Di Nola et al., 2018). The crisis extended beyond collection failure, from 1990–2005, Camorra's criminal networks illegally dumped 14 million tonnes of industrial toxic waste, while emergency governance mechanisms designed to resolve the crisis instead perpetuated it for 16 years (Alberti, 2022; Armiero and Sgueglia, 2019; Greyl et al., 2010).

The European Court of Justice condemned Italy three times (2007, 2010, 2014) (European Parliament, 2011) and imposed fines totaling €325.76 million, yet the crisis persisted, ultimately resulting in cancer rates 47 per cent above national averages and 9,960 deaths directly linked to toxic contamination (Alberti, 2022; Triassi et al., 2015). The case illuminates how EU environmental directives, despite comprehensive legal frameworks, can fail when confronted with entrenched organized crime, political corruption, and fragmented governance exposing weaknesses in European environmental enforcement architecture.

4.1.1. Governance Fragmentation and Criminal Infiltration as Market Strategy

The case demonstrates how the Camorra profited from FIBE jurisdictional voids. Having diversified from narcotics into waste in the mid-1980s the organization recognized lower risks. By 1992 garbage was viewed as 'gold' (De Rosa, 2016). The Casalesi clan transformed waste disposal from a public service into a criminal enterprise, trafficking hazardous waste, including heavy metals, dioxins, asbestos and radioactive materials from Germany, and burying it 20–30 meters deep at night throughout the countryside. Disposal costs of €0.09–0.10 per kilogram, compared with € 0.21–0.62 for legal disposal, offered 50–70 per cent savings and secured contracts from at least 440 northern Italian industries (Alberti, 2022; Armiero and Sgueglia, 2019; De Rosa, 2016, 2018; Triassi et al., 2015). The municipalities of Acerra, Nola, and Marigliano, became known as Triangolo della Morte (Triangle of Death), one of Europe's largest illegal waste dumps.

Camorra's infiltration extended from disposal into political corruption and administrative structures. The organization controlled private refuse management through trucking firms and bribed officials, while by 2001–2003, only three of 21 waste companies in Naples province were mafia-free. Although Operation Spartacus (1998–2008), secured 16 life sentences for Casalesi leaders, it failed to dismantle structural infiltration (Alberti, 2022; Dovizio, 2024; Greyl et al., 2010; Martone, 2014).

This persistence was enabled by institutional proliferation: the national government held environmental regulatory authority, regions controlled waste management, provinces coordinated implementation, and 551 Campanian municipalities managed collection. The resulting fragmentation enabled blame-shifting and weakened enforcement (Alberti, 2022).

Following the 1994 declaration of state of emergency, a special commissioner received powers to derogate from environmental and procurement rules. This parallel governance persisted for 16 years (1994–2010), bypassing democratic accountability. In 2008 Guido Bertolaso further centralized authority, designating waste facilities as strategic national interest sites and criminalizing nearby protests.

The FIBE consortium exemplified these contradictions. In 1997, commissioner Rastrelli awarded FIBE (Salini Impregilo) a contract for refuse-derived-fuel plants and incinerators, allowing sites to be selected without local consultation or environmental assessment. The national commissioner could award contracts but lacked effective mechanisms to enforce performance (Armiero and Sgueglia, 2019; Greyl et al., 2010). The Acerra incinerator, planned for 1998, opened only in 2009, while Santa Maria La Fossa was never built. Local authorities were excluded from decisions, while officials who opposed the Acerra incinerator were arrested in 2004 (Greyl et al., 2010). The result was not an absence of state authority, but its proliferation across overlapping and contradictory jurisdictions.

4.1.2. EU Enforcement Failure

By February 2008, 55,000 tonnes were littered on Campania's roads with further 110,000–120,000 tonnes awaiting treatment. Sorted collection reached only 10.6 per cent compared with a 33 per cent EU average, while only one legal landfill remained operational.

The Commission initiated infringement proceedings, and in March 2010 the European Court ruled that Italy had violated EU law, rejecting force majeure defenses based on organised crime (Eur-lex, 2010). Yet violations continued with no immediate penalty.

European Parliament missions found democratic deficits in Campania (European Parliament, 2010), while the EU suspended € 145.5 million in structural funds following the 2007 infringement proceedings, upheld by the European Court in 2013 (Eur-lex, 2013). Rather than producing functional alternatives, fund withholding compounded the region's fiscal crisis. From the first warnings in 2004 to meaningful penalties in 2014 a decade elapsed while environmental and health damage intensified.

Italy ultimately incurred € 325.76 million in penalties, but compliance followed only two decades after (Carević, 2015; European Parliament, 2025). The European Court of Human Rights subsequently found that despite state knowledge since 1988, Italy failed to protect 2.9 million citizens (ECHR, 2025).

The Campania case illustrates the limits of EU environmental enforcement, when authority and implementation capacity are fragmented. The Commission could impose financial sanctions and monitor compliance, but could neither counter the Camorra, build technical capacity, nor override local opposition. Its monitoring system also relied heavily on domestic reporting and offered limited capacity to verify outcomes or detect funds reaching corrupt networks. By March 2008, fourteen years after the emergency declaration, the Commission suspended payments under Article 32(3) of Regulation 1260/1999, but significant funds had already been disbursed to failed programmes. EU intervention remained largely reactive, as procedural mechanisms could trigger infringement and financial sanctions, but provided few intermediate tools for addressing institutional failure before environmental damage entrenched.

4.1.3. Countermovements: Victories without Reform

The waste crisis generated sustained citizen resistance in Italian environmental movements, evolving from isolated local committees to interconnected regional networks mobilizing tens of thousands (De Rosa, 2018). The Rete Campania Salute e Ambiente (Health and Environment Network of Campania), formed in 2005 in Acerra, and Coordinamento Regionale Rifiuti della Campania (Regional Coordination of Campania Waste), led grassroots coordination for 15 years, denouncing criminal links and proposing alternative waste plans (Armiero and Sgueglia, 2019; Greyl et al., 2010). The Assise Permanente della Città di Napoli, a weekly public forum bringing epidemiologists, environmental scientists, and citizens together, functioned as a popular university where activists developed expertise on dioxins and health impacts (Alberti, 2022).

The January 2008 Pianura mobilizations blocked reopening of the Pisani landfill, closed in 1996, but reopened during the December 2007 waste emergency to stock waste until Acerra's completion. Despite violent police repression of 10,000 residents (De Biase, 2015; Greyl et al., 2010), local committees and activists involved magistrates, and the landfill was closed by month's end due to groundwater contamination and health impacts. The 'Pianura Battle' became a symbol of civil society mobilization success (Greyl et al., 2010).

In Uttaro (Caserta province) a landfill site occupied by civil society closed due to high toxic concentrations. Protests against the Acerra incinerator were violently repressed in 2004, yet the incinerator was built by 2009, and authorized to non-compliant materials (Greyl et al., 2010).

The May-September 2008 Chiaiano protests employed innovative tactics including 'slow-walking', traffic blockades and symbolic funerals (Armiero and Sgueglia, 2019; Greyl et al., 2010). Despite militarization, sustained resistance succeeded when the landfill closed in 2011 after Camorra connections were revealed. The 2013 Stop Biocidio (end the biocide), demonstration brought 100,000 participants to Naples streets. Hazardous industrial waste had been exported from Northern Italy and Europe since the 1990s, buried and burned without safeguards (De Rosa, 2013).

Movements challenging official expertise on health developed the 'biocide' concept – causing death through ecological destruction and economic injustice. They investigated health consequences of illegal dumping of highly toxic and radioactive waste since the 1980s, revealing irreversible damage (Limoli et al., 2019; Marfe and Di Stefano, 2016). While movements achieved significant legislative reforms, the criminal-political nexus proved resilient. The Berlusconi government's criminalization of protests near waste facilities paradoxically strengthened criminal organizations by eliminating opposition (De Rosa, 2013).

4.2. Greece – Market for Landfills

When Greece joined the European Union on January 1, 1981, it inherited an extensive environmental acquis with minimal infrastructure to implement it (CVCE, 2016). The waste management situation through the 1990s was characterized by near-total reliance on uncontrolled dumping. By 2004, approximately 1,458 illegal landfills operated across the country, serving 47 per cent of the population (Edie, 2005). Recycling infrastructure was virtually nonexistent, hazardous waste lacked proper treatment facilities, and municipalities managed waste through semi-controlled or entirely uncontrolled dumpsites with no separation, treatment, or recovery systems (Ezeah and Byrne, 2014). Despite € 3 billion in EU funding and €180 million in penalties the landfilling rate is 80 per cent (Touchtidou, 2025).

4.2.1. Authority Without Capacity: The Kallikratis Fragmentation

The core governance dysfunction lies in Greece's 13 NUTS–2 regions (peripheries), established in 1987 as statistical units for EU regional policy and strengthened in the 1994 reform that created elected Prefectural Self-Government entities. The Kallikratis Programme (2010) transformed NUTS–2 regions into self-governing entities with elected governors, while abolishing prefectures (NUTS–3) that had developed operational capacity, transferring responsibilities to FODSAs (non-profit entities constituted by municipalities) that lacked electoral accountability and enforcement power. This created authority without capacity at regional level and capacity without authority at FODSA level, while municipalities retained collection responsibilities without disposal authority.

The regions reportedly lacked dedicated waste management staff, budgets sufficient for enforcement, and authority over the actual operators (Ezeah and Byrne, 2014). The Ministry of Environment and Energy sets national policy and targets; seven Decentralized Administrations (grouping the 13 regions) issue environmental permits; 13 NUTS–2 regions develop Regional Waste Management Plans (RWMPs) plans without implementation power, (NCESD, 2019); the 13 FODSAs (Solid Waste Management Organizations) operate waste infrastructure without electoral accountability; and 325 municipalities handle collection without disposal authority (Ezeah and Byrne, 2014). No entity holds integrated responsibility. Even after the Kleisthenis programme' refinements toward more decentralization, municipalities still have insufficient financial autonomy, while coordination mechanisms remain virtually absent. EU technical assistance recommendations call for regular semi-annual meetings between municipalities, FODSAs, regions and government, implicitly acknowledging such basic coordination currently does not occur (Ferraro and Failler, 2024).

4.2.2. Criminality in Governance Gaps

The governance vacuum intersected with the commodification of waste during the 1990s–2000s liberalization period. Waste management shifted from purely public service to market-organized activity, with FODSAs structured as potential public-private partnerships and waste treatment conceptualized as a commodity service subject to competitive dynamics (SEE-Industry, 2016).

Greece faces significant environmental criminality, though evidence of systematic organized crime control is limited (D'Amato et al., 2015; Ruga Riva, 2023). Illegal activities include 400 tonnes of end-of-life vehicle waste falsely declared for export from Thessaloniki port in 2017, and recurring incidents like 200 tonnes of rotten animal products illegally buried near Louros River in 2025 (Keep Talking Greece, 2025). Organized crime profited from low landfill prices, substandard disposal, falsified documentation (Favarin and Tchachuk, 2022) Corruption is deeply embedded in the waste system, with legitimate companies systematically violating disposal standards (Kallianos and Dalakoglou, 2023). Greece lacks gate fee differentiation, and municipal waste incinerator and

composting capacities (EEA, 2022). Enforcement capacity is weak, with only 10 officers in the Special Environmental Protection Unit nationwide (Council of the European Union, 2018). Greece serves as both origin and transit for illegal shipments exploiting Balkan and Turkish routes. Environmental crime has low penalties and rare prosecutions and grown international (Europol, 2022; FATF, 2021). The Fyli landfill receiving 90 per cent of Attica's waste, has been described as a 'monument of environmental degradation, sickness and human suffering for at least the next three generations' (Kallianos and Dalakoglou, 2023).

4.2.3. Funding

Greece received funding from the Cohesion Fund and the European Investment Bank: recycling rates declined from 21 per cent in 2019 to 17 per cent in 2022, while landfilling remained at 80 per cent, virtually unchanged from the 82 per cent in 2010. The flagship Ano Liosia Materials Recovery Facility (MBT) in Athens, with 300,000 tonnes per year capacity among Europe's largest, exemplifies systemic failures: issues reported about the PPP tenders and facilities failing to deliver. Contamination rates in blue bin collection reach 45–50 per cent (versus best practice of 2–5 per cent), rendering recyclables unmarketable, while MBT compost outputs achieve only 'Compost-Like Output' classification rather than agricultural standards, forcing landfill disposal (in Thanos) (Bourtsalas and Themelis, 2022).

Greece's implementation failures triggered extensive environmental enforcement action in EU history. The European Court of Justice has issued multiple rulings with financial penalties since 2005. Greece now leads EU members in Article 260 TFEU environmental sanctions, with 14 of 20 open infringement cases concerning environmental law. Yet penalties have not produced compliance (Pouikli et al., 2024), because systemic failures and embedded international criminality operate within governance gaps, making nation-level sanctions ineffective. The 'burden-capacity' gap further compounds this: growing policy requirements exceed efficient implementation (Kallianos and Dalakoglou, 2023).

4.2.4. Resistance Meets Institutional Deflection

The 2010 Keratea uprising saw residents fight police for 128 days over a new dumpsite in Attica following the bailout, part of sustained blockages and occupations of landfills, including Fyli near Athens in long-term struggles over health harms (Kallianos and Dalakoglou, 2023). When severe environmental degradation including radiation of the wider landfill area was reported, the municipality deflected civil concerns by converting them into a 'scientific debate' questioning the report's validity (Kallianos and Dalakoglou, 2023). Social environmental movements and conflicts remain constant in Greece (Velegrakis and Frezouli, 2016).

4.3. Bulgaria – Unified Resistance

Bulgaria's accession to the European Union on January 1, 2007 triggered an immediate collision between EU environmental requirements and inadequate local governance structures, specifically the criteria of Directive 1999/31/EC on the landfill waste, namely closing non-compliant landfills or upgrading them to meet EU standards. At accession, 2,500 landfills operated across the country, with only nine meeting EU standards according to regional environmental inspectorates (Reichenbach, 2017). Over the decades since joining the EU, there was an increase of average amount of municipal waste per capita (Stan, 2022). However there are discrepancies in data collection, particularly on city-level (The World Bank, 2022).

4.3.1. Statistical Regions, Real Fragmentation

Bulgaria failed to close 113 non-compliant landfills until 2024, fifteen years past the 2009 EU deadline despite € 6.7 billion in funding transfers (2007–2013). The European Commission closed the landmark infringement procedure in April 2024 after threatening significant financial penalties for the Landfill law infringement (Ministry of Environment and Water, 2024). Bulgaria still risks missing 2025 recycling targets (currently at 31 per cent versus 55 per cent required) and maintains one of the EU's highest landfilling rates at 61 per cent compared to the 24 per cent EU average (EEA, 2025). The poorest regions, Northwestern at 42 per cent of EU GDP per capita and North Central at 35 per cent, show the worst compliance (Eurostat, 2025; Karagyozov, 2025) accounting for majority of 263 dumpsites found by end of 2024 (almost half cleaned by end of 2025).

4.3.2. Europe's Lucrative Landfill: Transnational Criminal Networks

Bulgaria's position as 'Europe's lucrative landfill' stems from dramatic cost differentials: landfilling costs € 30–50 per tonne in Bulgaria versus € 113 in the United Kingdom, whilst waste burning costs 50 per cent less than Italy. The European Commission's 2017 Landfill directive derogation created profitable arbitrage opportunities systematically exploited by networks with documented Camorra and 'Ndrangheta connections (Gospodinova and Stoyanov, 2025; Tsoneva, 2020).

Waste imports increased fivefold from 2010 to 2017 with Bulgaria importing 70,000–100,000 tonnes of plastic waste annually, more profitable than investing in domestic separate collection systems. Waste incineration disincentivized recycling, while Producer Responsibility Organizations systematically underreported 29 per cent of plastic packaging: The National Statistical Institute reporting 148,367 tonnes in 2022 versus PROs' declared only 105,359 tonnes (Zero Waste Europe et al., 2024).

Municipal capacity limitations constitute the most significant barrier: the World Bank noted a 'disconnection between central government aspirations and local level ability to meet [them]', with poorer, rural municipalities lacking technical skills to develop large-scale investment projects, navigate international procurement rules, and manage contracts (The World Bank, 2022).

Regional waste management associations, created top-down, face 'strong local opposition' and remain barely operational. Regional enforcement suffers parallel weaknesses: 16 Regional Inspectorates of Environment and Water must supervise 55 waste regions plus 265 municipalities but cannot effectively implement sanctions, with soft fines of € 1,500–5,000 and imposed only on individuals like mayors rather than municipalities (The World Bank, 2022).

The governance vacuum enabled criminal penetration beyond individual corruption to state capture. Networks with Camorra and 'Ndragheta connections operated through Bulgarian intermediaries, exemplified by the December 2019 seizure of 800 tonnes of illegal garbage in freight trains from Naples, refused entry by Romania and redirected to Bulgaria (Stoyanov and Gospodinova, 2019; Tsoneva, 2020), and Bivol's 'Waste Gate' journal investigation identifying 9,000 metric tonnes reaching Pleven from Naples between 2016–2020 through shell companies (Tsoneva, 2020).

Political infiltration reached ministerial levels exemplified by the July 2020 arrest of Deputy Environment Minister Krasimir Zhivkov the Bobokov Brothers scandal involving trafficking of at least 7,000 tonnes of waste (Gospodinova & Stoyanov, 2025). Energy oligarchs controlling waste import networks secured multi-million euro contracts for failed facilities, with executives including former Deputy Energy Minister Anton Pavlov (Gospodinova & Stoyanov, 2025; Zero Waste Europe et al., 2024).

4.3.3. Perverse Incentives

EU structural funds architecture created perverse incentives through cost-benefit methodology based on funding gap calculations, incentivizing oversized facilities to maximize grants regardless of long-term sustainability, with almost half of 23 regional landfill systems serving fewer than 100,000 people, below economic minimum (The World Bank, 2022).

4.3.4. Civil Society against EU-backed Projects

Bulgarian civil society organizations, notably Za Zamiata – For the Earth – (member of CEE Bankwatch Network and Zero Waste Europe) have led sustained campaigns against waste management corruption and governance failures since 1995. Their efforts include the 2005 Suhodol landfill blockades, opposition to Sofia's waste policies from 2008–2012 proposing 50-75per cent recycling targets; and the successful campaign blocking Sofia's incinerator from 2019–2023 (zazemiata.org).

During the Suhodol blockade the municipal council agreed to emergency closure by September but a state of epidemic crisis was declared in July due to health risks from accumulated garbage, and on 8 July, riot police forcibly ended the Suhodol blockade. The landfill officially closed in October 2005 but reopened in December 2007 with Environment Ministry backing (Novinite, 2010).

On 26 September 2023, the Supreme Administrative Court blocked the incinerator, approved by the European Commission in 2020m ruling it had inadequate health risk assessments and violated requirements for public consultation, despite EU backing (Zero Waste Europe, 2023). The victory demonstrated that civil society pressure combined with legal action can overcome EU-backed projects when procedural violations exist. Za Zamiata, Bankwatch, Greenpeace Bulgaria, and others organized public hearings, submitted formal objections, and sent open letters demanding a complete ban on incineration and policy revision, based on January 2020 street protests in Pernik Bulgaria over toxic air (Tsoneva, 2020).

The 2018 GP Gate scandal exposed corruption in EU-funded projects, implicating GP Group and Vodstroy 98 (Bivol, 2018). The Prime Minister seized €14 million, and journalists who exposed it were briefly detained in retaliation (Dimitrov, 2019).

Bulgaria can be described as the external exploitation pathway of a slow post-socialist transition combined with EU-accession and its perverse incentive-systems fostering transnational criminal penetration.

5. Discussion

Findings support P1–P3 across divergent national contexts, with the mechanisms holding across variation in accession timing and institutional legacies, suggesting broader applicability to EU semi-peripheral regions. Italy exemplifies competing incompatible authorities: the emergency commissioner system (1994–2010) attempted to resolve governance fragmentation through concentrated authority, but deepened disembeddedness by bypassing democratic accountability. Greece followed a pathway of weak state capacity and gradual institutional fragmentation, causing a prolonged governance failure. State-controlled enforcement in protection of landfills and questionable investments sustained waste markets serving international criminal interests. Bulgaria's post-socialist transition and EU accession created perverse incentive-systems that enabled transnational criminal penetration of waste management.

In all three cases, corruption and capacity limits operated through, rather than independently jurisdictional voids that dispersed authority created.

5.1. The Subverted Commodification of Waste

Contemporary market-building combines movements for recognition of social relationships with simultaneous market expansion and social abstraction, creating opportunities to void the market's social limits (Moncrieff, 2015). This dynamic operates acutely where landfills markets exist to the detriment of people and environment, operating beyond effective societal control. In all three cases markets operate through coercive enforcement maintaining exchange between local government structures and profit-driven actors. Economic incentives intensify when each governance level assumes another bears responsibility, creating regulatory vacuums that market actors exploit.

Land as basis for social belonging and livelihood security (Goodwin, 2018) erodes through contamination by devaluing the expropriated land and surrounding territories, expanding zones of degradation. Semi-peripheral regions that are unable to coordinate oversight across fragmented governance become sacrifice zones. Civil organizing needs to be present in the most vulnerable areas, as expropriation and contamination happens exactly there at first place: small communities in hidden areas: river communities as the Louros River in Greece where rotten animal products were buried; agricultural land acquired cheaply for landfills: the Land of Fires in Italy, where hazardous waste was burned in and buried under gardens; forests, lakes, rivers, such as around Velingrad city in Bulgaria (Tcherkezova et al., 2023); dumping into the sea in Greece (EEA, 2022; Palaiologos, 2013). Civic organizing has reverted some of the process, the island of Tilos in Greece is exemplary in net zero, and several are piloting (Touchtidou, 2025).

The urban-rural service gap creates particular vulnerability. Rural areas across Bulgarian regions had less than 40 per cent waste collection coverage in 2006, improving to 98 per cent by 2010, but with limited bring-point density and absence of treatment facilities outside urban centers. Investment flows disproportionately to urban areas leaving rural communities pay more for inferior service (Zero Waste Europe et al., 2024).

Waste as subverted commodity targets vulnerable areas. Trafficking patterns evolved from national and EU-level regulations to exploiting multi-level protective economies and trade routes. Early trafficking dumped in remote landfills, followed North-South, West-East patterns: the Port of Burgas served as entry point for illegal waste from Western Europe, including 800 tonnes of Italian garbage. From Southern Italy's semi-peripheral regions waste was later exported to more vulnerable Eastern European peripheries.

These patterns support P3: waste generates value through the capacity to degrade, with (semi)-peripheral regions functioning as sacrifice zones precisely because governance fragmentation prevents communities from contesting contamination rights. They extend P3 by showing that the North-South, West-East trajectory of trafficking is not incidental: fragmentation creates cost differentials that direct degradation toward institutionally vulnerable regions. This simultaneously supports P1, as the arbitrage exploited by criminal networks is not merely regulatory but spatial, produced by the uneven institutional architecture of EU multi-level governance itself.

5.2. Decommodification as Persistent Struggle

Removing obstacles to equal participation requires recognizing diverse forms of expertise –experiential and place-based along technical (Fraser, 2013). Italian movements challenged official narratives with sophisticated counter-expertise of the Assise Permanente della Città di Napoli functioning as a popular university where activists gained knowledge on dioxins and contamination pathways (Alberti, 2022). This participatory knowledge making enabled movements to frame the crisis as 'biocide' – systematic cause of death through ecological destruction – directly connecting illegal dumping to cancer rates and deaths (De Rosa, 2013; Limoli et al., 2019; Triassi et al., 2015). The 2013 Stop Biocidio demonstration emancipated communities from passive victims into informed actors capable of contesting official risk assessments, reinforcing the motive for political participation (Rayner and Morales Rivera, 2020).

The dialectical reading emphasizes that movement and countermovement occur simultaneously within pluralities of movements rather than being sequential (Goodwin, 2018, 2022; Stokes-Ramos, 2023). Successfully closed landfills due to resistance, soon have been mobilized to re-commodify through new plans. As with Sofia incinerator (4.3.4) sustained civic action with legal strategy achieved policy-interlocutor standing forcing accountability. Countermovements are neither singular achievements nor permanent victories but ongoing struggles of restless sources of open-ended dynamism and political indeterminacy (Peck, 2013).

Persistence of participatory processes must remain vigilant against subsequent marketization attempts. The December 2019 seizure of Naples eco-bales trafficked to Bulgaria (4.3.2) shows that materials from supposedly resolved crises continue circulating through governance gaps. Even where communities successfully resist landfills or demand stricter regulations, marketization pressures resurface through different channels. EU directives may be implemented in ways enabling harmful practices, by not being enforced regionally. This adaptive quality of marketization under fragmentation directly confirms P2: accountability diffusion does not merely delay countermovements but structurally forecloses systemic reform, as movements achieving tactical victories (Pianura, Chiaiano, the Sofia incinerator), find no integrated authority capable of translating local wins into governance-level change.

6. Conclusion

The cases examined here show that comprehensive regulatory architecture without coordinated enforcement can be enabling of criminal market actors and equally foreclosing of civil society countermovements. Effective mechanisms must integrate authority, rather than add layers (Ergen and Schmitz, 2025); build cooperation capacity, rather than regulatory frameworks alone, and prevent responsibility diffusion, through accountability structures. Citizens should be able to pursue environmental protection at any governance level.

The analysis opens further trajectories. First, if waste management demands coordinated territorial control and sustained monitoring; fragmentation may operate differently in domains requiring only episodic intervention or lacking a territorial dimension; predictive indicators of fragmentation an EU-level harmonization of penalties merit further research. Second, Bulgarian and Italian movements suggest pathways through legal strategies, transnational coordination, and procedural exploitation, but systematic research examining when civil society successfully forces coordination remains underexplored. Third, extending Polanyian analysis of contamination rights, where capitalism commodifies capacities to absorb degradation, would connect literature on sacrifice zones and environmental racism.

Declarations

Author Contribution

The article was conceptualised and written entirely by one Author, no other Author contributed.

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