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Modernizing U.S. E-Waste export governance for environmental and trade compliance

Cynthia Joycelyn Adzo Norgbey *

Brandeis University, USA.

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Abstract

The United States, as a leading generator of electronic waste (e-waste), faces mounting challenges in regulating its transboundary movement in a manner that aligns with environmental sustainability and international trade norms. This literature review critically examines the inconsistent landscape of U.S. e-waste export governance, highlighting regulatory gaps at federal and state levels, limited enforcement capacity, and non-compliance with global frameworks such as the Basel Convention. Drawing on peer-reviewed scholarship and policy analyses, the review explores the environmental and social consequences of e-waste exports, particularly in developing countries where informal recycling practices pose significant health and ecological risks. Comparative models from the European Union and Canada demonstrate the efficacy of extended producer responsibility (EPR), centralized oversight, and traceability mechanisms. Reform proposals, including legislative initiatives like the Secure E-Waste Export and Recycling Act (SEERA) and the CIRCLE Act are evaluated for their potential to strengthen domestic recycling, improve compliance, and foster a circular economy; an approach that minimizes waste through reuse, repair, and recycling, creating a closed-loop system that reduces resource input and environmental impact. The review concludes that scalable reform is achievable through harmonized federal policy, stakeholder engagement, and digital innovation, offering a pathway toward environmentally sound and legally coherent e-waste export governance.

Keywords: E-waste governance; Electronic waste exports; Trade compliance; Basel Convention; Extended Producer Responsibility (EPR); Environmental regulation; Circular economy

1. Introduction

The exponential growth of electronic consumption in the United States has led to a corresponding surge in electronic waste (e-waste), which refers to discarded electrical or electronic equipment, posing significant environmental and regulatory challenges. As one of the largest producers of e-waste globally, the U.S. faces mounting pressure to modernize its export governance frameworks to ensure environmental sustainability and compliance with international trade norms [1].

E-waste contains hazardous substances such as lead, mercury, and brominated flame retardants, which pose serious risks to human health and ecosystems when improperly handled or disposed of [2]. Despite the existence of state-level regulations and voluntary industry initiatives, the absence of comprehensive federal legislation has resulted in fragmented governance and inconsistent enforcement across *U.S.* jurisdictions [3].

Internationally, the Basel Convention is the most comprehensive global agreement regulating the transboundary movement of hazardous and other wastes, including electronic waste. Although the United States has signed the Convention, it has not ratified it and therefore is not legally bound by its provisions. As a result, under Article 4(5) of

* Corresponding author: Cynthia Joycelyn Adzo Norgbey

the Convention, Basel Parties are generally prohibited from trading hazardous waste with non-Parties like the U.S., unless a separate bilateral or multilateral agreement exists [4]. Recent amendments to the Convention, effective January 2025, now require prior informed consent for both hazardous and non-hazardous e-waste exports, in line with the new international requirements for electrical and electronic waste, placing new compliance demands on U.S. exporters [5].

Scholars have emphasized the need for a coordinated and enforceable governance framework that aligns domestic policy with international environmental standards. This includes addressing loopholes in trade compliance, enhancing transparency in export chains, and adopting extended producer responsibility (EPR) models to reduce the environmental footprint of discarded electronics [6].

This literature review synthesizes existing scholarship and policy analyses to evaluate the effectiveness of current U.S. e-waste export governance, identify key environmental and trade compliance challenges, and explore reform proposals aimed at achieving a more sustainable and legally coherent system.

2. Methodology

This literature review adopts a narrative and thematic approach, relying exclusively on secondary sources to examine the governance of U.S. e-waste exports in relation to environmental and trade compliance. No primary data was collected. Instead, the review synthesizes insights from peer-reviewed academic articles, policy documents, and institutional reports to identify regulatory gaps, environmental impacts, trade compliance challenges, and reform proposals. This approach was chosen due to the abundance of existing scholarly and policy literature on e-waste governance.

2.1. Search Strategy

A structured search was conducted across academic databases and institutional websites, including Google Scholar, JSTOR, ScienceDirect, SpringerLink, Oxford Academic, and official sources such as the U.S. Environmental Protection Agency (EPA), Congress.gov, and the Basel Convention Secretariat. The following keywords were used: E-waste governance, Electronic waste exports, Trade compliance, Basel Convention, Extended Producer Responsibility (EPR), Environmental regulation, and Circular economy. Results were refined through the application of Boolean operators and filters, specifically delimiting the search to publications from 2015 onwards, English-language materials, and documents classified as peer-reviewed articles, reports, or legal texts.

2.2. Inclusion and Exclusion Criteria

2.2.1. Inclusion Criteria

- Studies and publications issued from 2015 to the present
- Investigations pertaining to U.S. e-waste export governance, international compliance frameworks, and comparative policy models
- English-language publications exclusively
- Peer-reviewed articles and publications issued by institutions of established credibility

2.2.2. Exclusion Criteria

- Articles focused solely on technical recycling processes without policy relevance
- Non-scholarly sources lacking citations or institutional credibility
- Duplicates and inaccessible full texts

2.3. Screening and Selection Process

The initial search yielded ninety-two records. After removing thirty-three duplicates, fifty-nine records were screened based on titles and abstracts. Of these, twenty-one were excluded due to irrelevance or insufficient policy focus. The remaining thirty-eight sources were reviewed in full and selected for thematic analysis.

2.4. Data Extraction and Analysis

Selected literature was analyzed to extract key themes related to:

- U.S. regulatory structures and enforcement mechanisms
- Environmental and social impacts of e-waste exports

- Trade compliance challenges and international obligations
- Comparative governance models from the EU, Canada, and other jurisdictions
- Policy reform proposals and their feasibility within the U.S. context

The findings were synthesized to inform a critical discussion on the modernization of U.S. e-waste export governance, with attention to both environmental sustainability and trade law compliance.

3. Regulatory Landscape

The governance of e-waste exports in the United States is shaped by a complex interplay of federal statutes, state-level regulations, and international obligations. At the federal level, the Resource Conservation and Recovery Act (RCRA) of 1976 provides the foundational legal framework for hazardous waste management, including certain categories of electronic waste. However, the classification of e-waste under RCRA remains inconsistent, as not all electronics are deemed hazardous, and materials destined for reuse may be exempt from regulation [7; 8]. For instance, cathode-ray tubes are classified as hazardous, while intact circuit boards intended for reuse may be exempt.

State-level legislation has emerged to fill regulatory gaps, with 25 states and the District of Columbia implementing e-waste recycling laws, many of which are based on Extended Producer Responsibility (EPR) models, which makes producers financially and operationally responsible for end-of-life management. These laws vary significantly in scope, covered products, and financing mechanisms, creating a disparate regulatory landscape that complicates compliance for manufacturers and recyclers [9]. Empirical studies have shown that such regulations can stimulate eco-innovation among producers, particularly in states with more stringent take-back requirements [3].

Despite these efforts, the absence of comprehensive federal legislation on e-waste exports has left enforcement largely decentralized. Agencies such as the Environmental Protection Agency (EPA), U.S. Customs and Border Protection (CBP), and the Office of the U.S. Trade Representative (USTR) play roles in regulating transboundary shipments, but coordination remains limited, and enforcement is often reactive rather than preventive [10; 11].

Internationally, the Basel Convention governs the transboundary movement of hazardous waste, including e-waste. Although the United States is a signatory, it has not ratified the Convention, which restricts its ability to engage in formal trade with Basel Party countries unless bilateral agreements are in place [4]. Recent amendments to the Convention, effective January 1, 2025, now extend control to non-hazardous e-waste under the new Y49 listing, requiring prior informed consent (PIC) for all exports to Basel Parties [5]. These changes significantly impact U.S. exporters, who must now navigate stricter notification and consent procedures even for materials previously considered outside the scope of regulation.

4. Environmental and Social Impacts

The export of electronic waste from the United States to developing countries has generated significant environmental and social consequences, particularly in regions with weak regulatory frameworks and informal recycling sectors. E-waste contains hazardous substances such as lead, mercury, cadmium, and brominated flame retardants, which pose serious risks to ecosystems and human health when improperly handled [12].

In many recipient countries, informal recycling practices such as open burning, acid leaching, and manual dismantling release toxic pollutants into the air, soil, and water, contributing to biodiversity loss and long-term ecological degradation [13]. Case studies from Agbogbloshie in Ghana and Guiyu in China illustrate severe health impacts on workers and nearby communities, including respiratory illnesses, skin disorders, and DNA damage [14]. These practices also expose individuals to toxic metals such as cadmium and lead, increasing risks of respiratory issues and developmental disorders [13].

Studies have documented elevated concentrations of hazardous substances near informal recycling sites, with adverse effects on workers and surrounding communities [15]. These findings are corroborated by global studies showing elevated risks of hormonal imbalances, renal dysfunction, and cardiovascular symptoms among exposed populations [16].

Beyond physical health, the social impacts of e-waste dumping are significant, including displacement of traditional livelihoods and increased child labor in informal recycling sectors. The practice disproportionately affects marginalized communities in the Global South, raising concerns of environmental justice. Scholars argue that the transboundary

movement of e-waste from high-income to low-income countries reflects a form of modern waste imperialism, where environmental burdens are externalized to vulnerable populations [17; 18].

The environmental justice lens highlights the unequal distribution of environmental harms and the need for corrective and procedural justice in global waste governance. Without robust international cooperation and domestic accountability, the environmental and social costs of e-waste exports will continue to undermine sustainable development and public health in affected regions.

5. Trade Compliance Challenges

Trade compliance in the context of U.S. e-waste exports is fraught with legal ambiguities, enforcement gaps, and systemic loopholes that undermine environmental and regulatory integrity. Despite the presence of federal agencies such as the U.S. Customs and Border Protection (CBP), Environmental Protection Agency (EPA), and the Office of Foreign Assets Control (OFAC), enforcement of e-waste export regulations remains inconsistent and reactive [11].

Section 321 of the Trade Facilitation and Trade Enforcement Act (TFTEA) is originally intended to expedite low-value shipments and reduce customs burden. One major challenge, however, is the exploitation of informal trade routes and the use of de minimis exemptions under the TFTEA, which allows shipments under $800 to bypass formal customs declarations. This loophole has enabled the export of small parcels of e-waste without adequate oversight, contributing to regulatory evasion and environmental harm. Wijethilake, Adhikari, and Upadhaya [19] argue that such regulatory gaps facilitate transboundary waste dumping from the Global North to the Global South, undermining accountability and enabling environmental harm through informal and poorly monitored channels.

The lack of harmonized export controls also complicates compliance. The United States has not ratified the Basel Convention, which prohibits trade in hazardous waste between Parties and non-Parties. As a result, U.S. recyclers often rely on bilateral agreements or operate in legal grey zones, risking violations of international law and reputational damage. Renckens [20] argues that the U.S.'s failure to ratify the Basel Convention, combined with weak domestic legislation on e-waste exports, has created regulatory gaps that non-state actors have attempted to fill through voluntary certification programs, such as e-stewards and R2 certification schemes. These efforts, however, reflect fragmented governance and underscore the challenges of enforcing environmental standards in the absence of binding international commitments.

Case studies reveal widespread non-compliance among U.S. recyclers, particularly in the export of mixed plastic fractions of e-waste. These materials are often shipped to countries with inadequate recycling infrastructure, where they are dumped or burned, violating both environmental and trade norms. Saxena and Chaudhary [15] document how informal recycling practices in countries like India and China result in toxic exposure and environmental degradation, exacerbated by the export of poorly sorted e-waste from developed nations such as the United States.

Moreover, the World Trade Organization (WTO) framework presents legal constraints on unilateral export restrictions. Any attempt by the U.S. to impose a ban or quota on e-waste exports must be carefully justified under Article XX of the General Agreement on Tariffs and Trade (GATT) to avoid trade disputes. Rathore and Singh [21] argue that while Article XX provides a legal basis for environmental exceptions, its application is constrained by strict requirements of necessity, non-discrimination, and good faith. WTO jurisprudence, including cases like *US–Shrimp* and *US–Gasoline*, demonstrates that environmental trade measures must pass both the specific exception criteria and the chapeau test to be deemed WTO-compliant, making unilateral restrictions legally complex and vulnerable to challenge.

6. Comparative Models and Global Best Practices

Comparative analysis of international e-waste governance reveals several models that offer valuable lessons for reforming U.S. export policies. Table 1 summarizes key features, strengths, and challenges of these governance models, providing a quick reference for comparative insights. The European Union (EU) stands out for its comprehensive regulatory framework, particularly the Waste Electrical and Electronic Equipment (WEEE) Directive, which mandates Extended Producer Responsibility (EPR) and sets ambitious collection and recycling targets. Under the WEEE Directive, producers are financially and operationally responsible for the end-of-life management of electronic products, including proper collection, treatment, and recycling [22].

Despite challenges, including high compliance costs and low consumer participation in take-back programs in meeting collection targets, the EU's approach has led to significant improvements in formal recycling infrastructure and

stakeholder coordination. A recent review of 20 years of EU e-waste regulation highlights the integration of circular economy principles and the evolution of innovation technologies for low-impact recycling [23]. Countries such as Germany, Belgium, and Italy have implemented national EPR schemes with varying degrees of success, often through Producer Responsibility Organizations (PROs) that facilitate compliance and logistics [24].

In Canada, e-waste governance is decentralized, with provinces adopting their own Extended Producer Responsibility (EPR) programs. While this mirrors the decentralized U.S. state-level approach, Canadian provinces have achieved higher collection rates through harmonized standards and centralized coordination bodies. Leclerc and Badami [25] found that multilevel governance frameworks in Canadian provinces, particularly those that foster collaboration between municipalities and producer responsibility organizations, contribute to more effective e-waste collection and recycling outcomes. Their empirical study highlights how program legitimacy, logistical efficiencies, and funding mechanisms drive municipal participation, while lack of transparency and limited scope can hinder success.

Globally, best practices in e-waste export regulation include mandatory take-back schemes, traceability systems, and prior informed consent (PIC) procedures aligned with the Basel Convention. The International Telecommunication Union (ITU) and UNITAR report that 81 countries have adopted e-waste legislation, with 67 incorporating Extended Producer Responsibility (EPR) provisions. These frameworks aim to reduce illegal dumping, promote domestic recycling, and ensure environmentally sound management of exported waste. Forti, Baldé, and Kuehr [26] emphasize that while global e-waste generation reached 62 million tonnes in 2022, only 22.3% was formally collected and recycled, underscoring the urgency of harmonized policy implementation and international cooperation.

Table 1 Comparative Models of E-Waste Governance

Region	Key Features	Strength	Challenges
European Union (EU)	WEEE Directive; Mandatory Extended Producer Responsibility (EPR); Collection and recycling targets	Strong centralized oversight; High formal recycling rates; Integration of circular economy principles	Difficulty meeting ambitious collection targets; Compliance costs for producers
Canada	Provincial EPR programs; Harmonized standards; Collaboration between municipalities and Producer Responsibility Organizations (PROs)	Higher collection rates; Clearer coordination; Strong stakeholder engagement	Decentralized governance; Variability in program scope and transparency
Global Best Practices	Basel Convention controls; Prior Informed Consent (PIC) for exports; Traceability systems	Reduces illegal dumping; Promotes environmentally sound management; Encourages international cooperation	Enforcement gaps; Limited capacity in developing countries

Effective e-waste governance is characterized by EPR, centralized oversight, and robust traceability. The EU's harmonized approach and Canada's decentralized model highlight the importance of coordination and stakeholder engagement. Basel Convention principles emphasize international cooperation and prior informed consent. These insights inform U.S. policy reform, underscoring the need for harmonization, transparency, and innovation in e-waste export governance.

7. Policy Reform Proposals in Literature

Recent literature and legislative developments underscore the urgent need to modernize U.S. e-waste export governance through comprehensive policy reforms. Scholars and policymakers alike have proposed a range of interventions aimed at strengthening federal oversight, incentivizing domestic recycling, and enhancing transparency in export chains.

One of the most prominent legislative efforts is the Secure E-Waste Export and Recycling Act (SEERA), introduced in the 119th Congress as H.R.2998. The bill seeks to prohibit the export of untested, non-working electronic waste to countries with inadequate recycling infrastructure, thereby curbing environmental harm and reducing the risk of counterfeit

electronics re-entering U.S. supply chains. According to Díaz-Balart and Espaillat [27], SEERA also aims to create domestic jobs by mandating that e-waste recycling occur within the United States, aligning with broader circular economy goals and national security priorities.

Complementing SEERA, the CIRCLE Act proposes fiscal incentives for private and municipal investments in recycling infrastructure, underscoring a burgeoning recognition that economic instruments can expedite the transition to a circular economy by enhancing the financial viability of domestic recycling initiatives. According to Fitzpatrick and Suozzi [28], the CIRCLE Act institutes a 30% investment tax credit, incrementally phased out over a 10-year period, for qualified investments in recycling infrastructure, encompassing machinery, equipment, and software. Municipalities are eligible for direct rebates, thereby enabling local governments to modernize recycling systems without imposing additional fiscal burdens on taxpayers. Projections indicate that the bill is poised to stimulate over $30 billion in economic value, generate over 200,000 jobs, and avert the landfilling of 169 million tons of recyclable materials. The EPA's National Recycling Strategy also emphasizes the need for systemic reforms, including improved market development for recycled materials and stakeholder-led actions to build a resilient recycling system [29].

Academic literature supports these policy directions. Padi and Nyapom [30] advocate for holistic and enforceable frameworks that integrate education, infrastructure, and global collaboration to manage e-waste sustainably. Similarly, Singh et al. [31] highlights the importance of circular economy models and calls for stronger regulatory mechanisms to improve recycling rates and reduce environmental harm.

Transparency and traceability in export chains are also central to reform proposals. Emerging technologies such as blockchain and IoT are being explored to track e-waste from origin to final processing, to ensure accountability and reduce illegal dumping [32; 33]. These innovations offer promising avenues for enhancing compliance and building trust among stakeholders.

8. Feasibility and Scalability

While policy reform proposals for U.S. e-waste export governance are abundant, their feasibility and scalability are shaped by a complex mix of political, institutional, economic, and stakeholder dynamics. The fragmented ~~heterogeneous~~ nature of U.S. e-waste legislation, where 25 states have adopted varying policies, and the federal government has yet to enact comprehensive national regulation poses a significant barrier to harmonized reform [34]. A barrier that can be mitigated through a federal harmonization mandate supported by enhanced interagency coordination.

Institutional constraints such as limited federal authority, competing agency mandates, and budgetary limitations hinder the implementation of cohesive national strategies. The National Strategy for Electronics Stewardship (NSES), developed by the EPA and other federal agencies, outlines goals for improving domestic recycling and reducing harmful exports, but its voluntary nature and lack of enforcement mechanisms limit its impact [5].

Political will is another critical factor. Although EPR frameworks have gained traction in several states, federal-level adoption has stalled due to industry lobbying, regulatory inertia, and competing legislative priorities. Walls and Calcott [35] argue that fragmented governance and strong producer opposition have hindered national EPR legislation in the United States, despite evidence that harmonized federal standards could improve recycling efficiency and reduce compliance costs. Their analysis highlights how political economic dynamics, particularly electronics manufacturers' lobbying, shape the feasibility of nationwide e-waste policy.

Stakeholder perspectives reveal both opportunities and challenges. Manufacturers express concern over cost burdens and logistical complexities, while recyclers advocate for clearer standards and financial support. Civil society organizations emphasize the need for transparency and environmental justice, particularly in preventing harmful exports to the Global South [36; 37].

Implementation pathways must also consider infrastructure readiness. Many U.S. states lack adequate recycling facilities, and informal handling persists in some regions. Technological innovations such as AI-driven sorting and blockchain-based traceability offer scalable solutions but require investment and regulatory support [38]. For example, the implementation of blockchain-based traceability systems in European recycling programs has improved compliance rates and reduced the incidence of illegal exports.

9. Strategic Pathways for Harmonized E-Waste Governance

The evolving regulatory landscape underscores the urgent need for a harmonized federal policy that aligns with international standards and supports environmentally sound management of e-waste [4; 26]. Without such alignment, the United States risks continued non-compliance and reputational damage in global environmental governance. Current trade compliance is marked by disparate oversight, legal loopholes, and limited international engagement, necessitating coordinated policy reform, enhanced enforcement mechanisms, and stronger global alignment [35; 34]. Comparative evidence from successful governance models highlights key features, including clear legal mandates, centralized oversight, robust data systems, and strong enforcement that remain largely absent in U.S. export governance [23; 25]. Consequently, the literature converges on a multi-pronged reform agenda: strengthening federal oversight, incentivizing domestic recycling, aligning with international standards, and leveraging digital technologies for traceability [32; 33]. Scalable reform is possible but contingent on multi-level coordination, stakeholder engagement, and sustained political commitment. Best practices identified across literature include: (i) mandatory Extended Producer Responsibility (EPR) schemes, (ii) centralized oversight and harmonized standards, (iii) robust traceability systems using digital technologies, and (iv) international cooperation through Basel Convention principles. These elements collectively form the foundation for effective and scalable e-waste governance. A phased approach, beginning with federal harmonization, followed by infrastructure development and digital integration, offers the most viable pathway toward an environmentally sound and legally coherent e-waste export governance framework [28].

10. Conclusion

The literature reveals that U.S. e-waste export governance is characterized by disparate domestic regulation, limited federal oversight, and weak alignment with international environmental and trade standards. The environmental and social harms associated with informal recycling in importing countries underscore the urgency of reform. Comparative models from the EU and Canada demonstrate the effectiveness of extended producer responsibility, centralized oversight, and traceability mechanisms. Policy proposals such as SEERA and the CIRCLE Act offer promising pathways, but their success depends on overcoming institutional inertia, political resistance, and infrastructure gaps. A harmonized, enforceable, and transparent governance framework, grounded in circular economy principles and global cooperation is essential for ensuring environmentally sound and legally compliant e-waste export practices in the United States. Future research should explore the integration of AI-driven sorting technologies and assess the effectiveness of blockchain in ensuring traceability. Policymakers should prioritize federal harmonization as the first step toward reform.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Seeberger, J., Grandhi, R., Kim, S. S., Mase, W. A., Reponen, T., Ho, S., & Chen, A. (2016). Special report: E-waste management in the United States and public health implications. Journal of Environmental Health, 79(3), 8–17. https://www.jstor.org/stable/26330534

[2] Nandan, A., Suresh, A. C., Saole, P., Jeevanasai, S. A., Chandrasekaran, R., Meili, L., Wan Azelee, N. I., & Selvasembian, R. (2023). An integrated approach for electronic waste management-Overview of sources of generation, toxicological effects, assessment, governance, and mitigation approaches. Sustainability, 15(24), 16946. https://doi.org/10.3390/su152416946

[3] Peng, Y., Song, S., Venkataraman, S., & Dong, Y. (2025). E-waste take-back and producer eco-innovation: Empirical analysis of state regulations in the United States. Production and Operations Management. https://doi.org/10.1177/10591478251328587

[4] Basel Action Network. (2025). Frequently asked questions about the new e-waste controls required by the Basel Convention. https://wiki.ban.org/images/b/b2/Frequently_Asked_Questions_About_the_New_e-wasted-Jan20-Update.pdf

[5] U.S. Environmental Protection Agency. (2025). National Strategy for Electronics Stewardship (NSES). https://www.epa.gov/electronics-batteries-management/national-strategy-electronics-stewardship-nses

[6] Chaudhary, N. (2025). Norms and challenges in the global movement of e-waste. Journal of Environmental Law and Policy, 5(1), 258–289. https://doi.org/10.33002/jelp050110

[7] U.S. Environmental Protection Agency. (2013). Overview of e-waste management policies in the U.S. https://www.epa.gov/sites/production/files/2014-05/documents/overview.pdf

[8] Gallo, D. T. (2013). Broad overview of e-waste management policies in the U.S. U.S. EPA. https://www.epa.gov/sites/production/files/2014-05/documents/overview.pdf

[9] Schumacher, K. A., & Agbemabiese, L. (2020). E-waste legislation in the US: An analysis of the disparate design and resulting influence on collection rates across states. Journal of Environmental Planning and Management, 64(6), 1067–1088. https://doi.org/10.1080/09640568.2020.1802237

[10] U.S. Environmental Protection Agency. (2025). EPA research publications. https://www.epa.gov/research/publications

[11] Duffey, D. (2024). A new era of export compliance: Key developments in 2024. C.H. Robinson. https://www.chrobinson.com/en-us/resources/blog/export-compliance-in-2024/

[12] Abalansa, S., El Mahrad, B., Icely, J., & Newton, A. (2021). Electronic waste, an environmental problem exported to developing countries: The good, the bad and the ugly. Sustainability, 13(9), 5302. https://doi.org/10.3390/su13095302

[13] Darshini, C., Bhadauria, K., Nimmala, L. B., Pilodia, S., Tejal, S., Pavithra, G., Ninawe, S. S., & Manjunath, T. C. (2025). Human health risks and environmental impacts of informal e-waste recycling. Grenze International Journal of Engineering and Technology, 11(1). https://thegrenze.com/pages/servej.php?fn=551_2.pdf

[14] Liu, Z. (2023). Informal electrical and electronics waste recycling and its health impacts: Evidence from developing countries. Yale School of Public Health Theses. https://elischolar.library.yale.edu/ysphtdl/2296/

[15] Saxena, S., & Chaudhary, A. (2025). Environmental, Health, and Socioeconomic Impacts of E-Waste: Challenges and Future Directions for Sustainable Management. In P. Shukla, S. Choudhary, P. S. Ranjit, & A. Verma (Eds.), E-Waste: From Generation to Management-Practices, Challenges, and Solutions (pp. 55-80). Springer. https://doi.org/10.1007/978-981-95-0329-2_4

[16] Eckhardt, B., & Kaifie, A. (2024). Bridging the knowledge gap: Health outcomes in informal e-waste workers. Journal of Occupational Medicine and Toxicology, 19(11). https://doi.org/10.1186/s12995-024-00410-z

[17] Favarin, S., Berlusconi, G., Aziani, A., & Corradinic, S. (2023). Transnational trafficking networks of end-of-life vehicles and e-waste. Global Crime, 24(3), 215–237. https://doi.org/10.1080/17440572.2023.2217101

[18] Natarajan, U. (2021). Environmental justice in the Global South. In S. A. Atapattu, C. G. Gonzalez, & S. L. Seck (Eds.), The Cambridge Handbook of Environmental Justice and Sustainable Development (pp. 39–57). Cambridge University Press. https://doi.org/10.1017/9781108555791.005

[19] Wijethilake, C., Adhikari, P., & Upadhaya, B. (2024). Regulatory capture in transboundary waste dumping: (Lack of) accountability in the Global North–South context. Organization & Environment, 37(1), 84–116. https://doi.org/10.1177/10860266241235220

[20] Renckens, S. (2015). The Basel Convention, US politics, and the emergence of non-state e-waste recycling certification. International Environmental Agreements: Politics, Law and Economics, 15, 141–158. https://doi.org/10.1007/s10784-013-9220-7

[21] Rathore, D., & Singh, U. (2025). Environmental exceptions under GATT Article XX and climate change: Scope and limitations. Indian Journal of Legal Review, 5(10), 255–261. https://ijlr.iledu.in/wp-content/uploads/2025/06/V5I1077.pdf

[22] WEEE Forum. (2020). An enhanced definition of EPR and the role of all actors. https://weee-forum.org/wp-content/uploads/2020/11/EPR-and-the-role-of-all-actors_final.pdf

[23] Serpe, A., Purchase, D., Bisschop, L., Chatterjee, D., De Gioannis, G., Garelick, H., Kumar, A., Peijnenburg, W. J. G. M., Piro, V. M. I., Cera, M., Shevah, Y., & Verbeek, S. (2025). 2002–2022: 20 years of e-waste regulation in the European Union and worldwide trends in legislation and innovation technologies for a circular economy. RSC Sustainability, 3, 1039–1083. https://doi.org/10.1039/D4SU00548A

[24] Ahlers, J., Hemkhaus, M., Hibler, S., & Hannak, J. (2021). Analysis of extended producer responsibility schemes: Assessing performance in EU countries. Adelphi. https://erp-recycling.org/wp-content/uploads/sites/39/2021/07/adelphi_study_Analysis_of_EPR_Schemes_July_2021.pdf

[25] Leclerc, S. H., & Badami, M. G. (2023). Extended producer responsibility: An empirical investigation into municipalities' contributions to and perspectives on e-waste management. Environmental Policy and Governance. https://doi.org/10.1002/eet.2059

[26] Forti, V., Baldé, C. P., & Kuehr, R. (2024). The Global E-waste Monitor 2024. International Telecommunication Union (ITU) & United Nations Institute for Training and Research (UNITAR). https://www.itu.int/en/ITU-D/Environment/Pages/Publications/The-Global-E-waste-Monitor-2024.aspx

[27] Díaz-Balart, M., & Espaillat, A. (2025). Representatives reintroduce bipartisan Secure E-Waste Export and Recycling Act (SEERA). U.S. House of Representatives. https://mariodiazbalart.house.gov/media-center/press-releases/diaz-balart-espaillat-reintroduce-bipartisan-secure-e-waste-export-and

[28] Fitzpatrick, B., & Suozzi, T. (2025). Fitzpatrick, Suozzi launch bipartisan plan to transform waste into economic opportunity. U.S. House of Representatives. https://fitzpatrick.house.gov/2025/7/fitzpatrick-suozzi-launch-bipartisan-plan-to-transform-waste-into-economic-opportunity

[29] U.S. Environmental Protection Agency. (2025). National Recycling Strategy: Part one of a series on building a circular economy for all. https://www.epa.gov/circulareconomy/national-recycling-strategy

[30] Padi, D., & Nyapom, K. (2025). Rethinking e-waste: Environmental risks, human exposure, and the need for holistic policy reform. International Journal of Science and Research, 14(6), 984–990. https://doi.org/10.21275/SR25504190516

[31] Singh, A., Yadav, A., Le, T. T., & Singh, S. (2023). Recycling of Electronic Waste for Circular Economy Goals: Systematic Literature Review. Journal of Global Business and Commerce, 18, 145-161. https://doi.org/10.1007/s42943-023-00081-3

[32] Dissanayake, H., Manta, O., & Khan, S. (2025). Enhancing supply chain transparency and traceability in waste management practices through blockchain technologies and digital innovations. In Blockchain Technologies for Smart Circular Economy and Organisational Sustainability (pp. 177–193). Springer. https://doi.org/10.1007/978-3-031-89183-0_12

[33] Santhuja, P., & Anbarasu, V. (2023). Blockchain-enabled IoT solution for e-waste management and environmental sustainability through tracking and tracing. International Journal of Engineering Trends and Technology, 71(12), 157–167. https://doi.org/10.14445/22315381/IJETT-V71I12P216

[34] Biedenkopf, K. (2020). E-waste policies in the United States: Minimalistic federal action and fragmented subnational activities. In Handbook of Electronic Waste Management (pp. xxx–xxx). https://doi.org/10.1016/B978-0-12-817030-4.00018-8

[35] Walls, M., & Calcott, P. (2020). Extended producer responsibility for waste management: Policy drivers and barriers in the U.S. Journal of Industrial Ecology, 24(2), 259–273. https://doi.org/10.1111/jiec.12956

[36] Gunwant, D., Parvez, Y., Bora, A., Mahima, & Gunwant, S. (2025). Sustainable e-waste management: Challenges, innovations, and stakeholder engagement. In E-Waste: From Generation to Management (pp. xxx–xxx). Springer. https://doi.org/10.1007/978-981-95-0329-2_6

[37] Cao, D., Puntaier, E., Gillani, F., Chapman, D., & Dewitt, S. (2024). Towards integrative multi-stakeholder responsibility for net zero in e-waste: A systematic literature review. Business Strategy and the Environment, 33(8), 8994–9014. https://doi.org/10.1002/bse.3960

[38] Quinto, S., Law, N., Fletcher, C., Le, J., Antony Jose, S., & Menezes, P. L. (2025). Exploring the e-waste crisis: Strategies for sustainable recycling and circular economy integration. Recycling, 10(2), 72. https://doi.org/10.3390/recycling10020072