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Promoting Sustainability and Legal Compliance in the Transboundary Transportation of E-Waste: Challenges, Risks, and a Framework for Improved WEEE Governance

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Abstract

The rapid expansion of digital technologies has generated unprecedented volumes of waste electrical and electronic equipment (WEEE), intensifying the environmental and human-health challenges associated with its collection, transport, dismantling, and disposal. This research critically examines the legal, institutional, and operational obstacles that hinder sustainable and lawful e-waste transportation, with particular focus on illegal transboundary movements that violate the Basel Convention. The paper investigates disparities in WEEE compliance mechanisms across developed and developing countries and evaluates the effectiveness of current governance models. Drawing on comparative insights from the European Union and the United States, the study assesses global WEEE supply chains, identifies major gaps in monitoring and enforcement, and discusses the role of informal recycling sectors in aggravating pollution risks. Based on these findings, the research proposes an integrated framework for sustainable e-waste management that strengthens traceability, enhances regulatory coordination, and promotes environmentally sound recovery practices. This framework aims to support countries—especially developing economies—in aligning with international obligations and reducing the harmful impacts of e-waste flows.

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Introduction:

The rapid technological development in the field of electronics has led to the availability of home appliances and office equipment at low cost and wide spread. This rapid growth and the high rates of continuous modernization

contribute to the increase of large quantities of electrical and electronic equipment in the waste stream, which requires the establishment of foundations and procedures for its management.

E-waste management is a concern in developing countries, especially with increasing urbanization, and addressing its growing challenges is a vital issue. It is noted that e-waste is moving uncontrolled to developing countries, causing global concern due to its serious effects. E-waste is a comprehensive problem that requires joint efforts between sectors, and suffers from conflicting definitions and global regulations, as it includes old, broken and unusable electronic equipment, and poses serious health and environmental challenges.

E-waste management is a comprehensive problem that deserves global attention and consideration, requiring joint efforts from all sectors. It is noteworthy that the term "e-waste" first appeared in the 1980s as a result of the acceleration in the import of hazardous materials to developing countries. The discrepancy in understanding and use of the term "e-waste" in legislation and routine uses leads to confusion, and this has led to the existence of multiple definitions in laws and strategies related to e-waste management.

E-waste includes electronic equipment that is no longer usable, has lost its effectiveness or has been damaged, and does not meet any consumer need. This equipment includes, but is not limited to: "mobile phones, cameras, CD players, radios, televisions, fax machines, engraving machines, scanners, printer inks, printers, ink cartridges, etc".

The increasing quantities of electrical and electronic waste, with the complexity of the mixtures and the presence of hazardous materials, raise concerns about serious health and environmental impacts. There can be high levels of pollution in e-waste recycling sites, especially informal ones, where e-waste is dismantled by simple manual processes without the use of any personal protection measures. As a result, there may be almost no barriers separating toxic materials, workers and the surrounding environment. As a result, assessing the impact of pollutants resulting from e-waste recycling becomes an urgent necessity, especially in developing countries that have many informal e-waste recycling sites.

Recycling or valorization of electrical and electronic equipment waste as a new term in particular has become a profitable business because electronic products contain precious metals such as gold and copper, as well as non-metallic materials such as plastic and glass.

E-waste management mechanisms

Due to the absence of appropriate legislation and procedures, developing countries face much greater challenges than developed countries in the field of e-waste management, and accordingly, the comparison between them certainly deserves special discussion and consideration.

E-waste management has been improved in developed countries through the implementation of many plans and programs. However, low- and middle-income countries still face great difficulties in managing e-waste effectively. The inability to deal with this waste appropriately results in many problems, including air, soil and water pollution, in addition to serious risks to public health and the environment, which requires the implementation of mechanisms to track the movement and flow of waste.

- EPA has several options to enhance the federal role in reducing harmful exports of used electronics. Even if full compliance with the CRT rule is achieved, it will have limited impact on the small percentage of potentially harmful used electronics that are exported. The Enforcement and Compliance Assurance Guidelines indicate that if the environmental problem is not 100 percent resolved within the regulated community, it may be necessary to consider amending the regulations or taking additional initiatives.

-The import of e-waste raises environmental and health issues in many developing countries. Current policies focus on banning inappropriate practices, such as open burning, and regulating imports. However, the implementation of such policies has been relatively weak to date, and only marginally managed to address the risks associated with e-

waste handling. In addition, these countries generate increasing amounts of household e-waste that require addressing.

The transboundary flow of e-waste highlights the importance of effective legislation to manage this challenge. In the context of e-waste laws and transboundary movements, regulation and oversight are vital.

-Legislation refers to appropriate measures to control the flow of e-waste across borders, with an emphasis on prohibiting harmful practices such as irresponsible disposal and open burning, and thus the regulatory system aims to ensure safe and healthy treatment of e-waste, whether it is exported or imported.

These legislations also include mechanisms to monitor and evaluate the environmental and health impacts of such waste, as well as ensuring compliance with international waste treatment standards, as it is necessary that transboundary e-waste management requires effective international cooperation and enhanced communication between countries to ensure the implementation of effective and consistent legislation at a global level.

It is noted that there is a major problem with the illegal flow of electronic waste across borders, and this problem is of great concern to both exporting and importing countries, as there is an informal transfer of electronic waste from the northern hemisphere to developing countries for disposal. This means that some developing countries bear the burden of managing this waste in an improper manner, which causes negative effects on the environment and public health, which requires establishing foundations to control the movement of such hazardous waste by enacting agreements between countries that ensure the proper functioning of regulating its flow.

At the same time, evidence shows that some valuable components of e-waste, such as printed circuit boards (PCBs), are moving across borders from the Southern to the Northern Hemisphere for recycling. This indicates a shift in e-waste streams and shows that cross-border movement is not limited to exports from rich to poor countries, but also includes exports from some prestigious importing countries to other regions[1].

Current trends also show a regional shift in e-waste streams, with e-waste being shipped more consistently within specific regions, such as Western/Northern Europe to Eastern Europe, rather than a major north-south movement. This points to changes in the dynamics of e-waste trade and flows, and makes it imperative to strengthen international cooperation and develop effective policies and regulations to reduce this global problem and protect the environment and human health.

All 11 countries or regions in Asia[2] recognize the serious pollution and problems caused by WEEE and have enacted laws or regulations on hazardous waste. Many countries or regions already have specific rules on WEEE. In principle, all 11 countries or regions restrict the import of WEEE. However, many countries or regions allow the import of WEEE for reuse or recycling. However, for import control purposes, most countries or regions do not have specific definition rules or standards for WEEE. It is noted that only Malaysia and Thailand have issued legal documents describing the detailed import purposes and requirements.[3].

[1] - Vanessa Forti, Cornelis Peter Baldé, Ruediger Kuehr, Garam Bel, The Global E-Waste Monitor 2020, Quantities, Flows, And The Circular Economy Potential, Unu/Unitar And Itu, 2020, p 55.

[2] - These countries are ":Cambodia -China -Hong Kong, China -Indonesia -Japan -Republic of Korea -Malaysia -The Philippines -Singapore –Thailand -Vietnam ."

[3] - Jinhui Li, And Nana Zhao, Controlling Transboundary Movement Of Waste Electrical And Electronic Equipment By Developing International Standards, Environmental Engineering Science, Volume 27, Number 1, Jan 2010, Copyright 2009, Mary Ann Liebert, Inc, p8. Https://Doi.Org/10.1089/Ees.2009.0097,

For example, India has recently imported printed circuit boards (PCBs) from China, and it turns out that there are two ways to do this[4]:

(a) By ship from China to Delhi via Mumbai, Kolkata and Chennai,

(b) By trains and trucks from China to Delhi via Kathmandu in Nepal.

It is noted that the first route benefits from the donation rule; the second is smuggling abroad, and the import of PCBs found in electrical and electronic equipment, from China to India is alarming and gives a trend that India may become a larger disposal hub for WEEE in the near future compared to China.

Controlling the movement of e-waste across borders is crucial to preserving the environment and human health. There are several measures that can be taken to achieve this. Countries must put in place strict laws and regulations to prevent the illegal flow of e-waste. These laws must also set environmental and health standards for the treatment of this waste and specify penalties for violators. In addition, countries must cooperate together to prevent the illegal flow of e-waste. This can be achieved by signing international agreements and working together to implement them.

There are recommendations coming from a reliable and prestigious source such as the United Nations Special Committee on the Transport of Dangerous Goods, which demonstrate a deep understanding of the environmental, health and technical challenges that countries face in relation to the cross-border transport of dangerous goods[5].

The importance of implementing these recommendations is evident in preserving the safety of people, property and the environment and in directing rapid technological progress in the field of transport and logistics in a sustainable manner. Coordinating efforts at the international and national levels to comply with these recommendations can contribute significantly to reducing the risks associated with the transport of dangerous goods and achieving greater security for communities and the environment .

The majority of hazardous wastes transported globally are destined for recycling, and are an important source of secondary raw materials and energy conservation in developing countries. However, this trade faces challenges. Restrictions on it can eliminate a major source of raw materials and jeopardize economic development and environmental protection. The Convention focuses on this by allowing hazardous wastes to be handled within countries that can process them. The challenge is to balance trade support for recycling with environmental protection[6].

The international community's response to incidents of indiscriminate final disposal in developing countries has been through interaction with the Basel Convention, and although such incidents have decreased significantly,

[4] - Sadhan Kumar Ghosh, Biswajit Debnath, Waste Electrical And Electronic Equipment Management And Basel Convention Compliance In Brazil, Russia, India China And South Africa (Brics) Nations,, Waste Management & Research, Volume 34, Issue 8, July 2016, p 700. Https://Doi.Org/10.1177/0734242x16652956

[5]- Recommendations on the, TRANSPORT OF DANGEROUS GOODS, Model Regulations, Volume I, Thirteenth revised edition, UNITED NATIONS, New York and Geneva, 2003, p1.

[6] - Sadhan Kumar Ghosh, Biswajit Debnath, Waste Electrical And Electronic Equipment Management And Basel Convention Compliance In Brazil, Russia, India China And South Africa (Brics) Nations, Waste Management & Research, Volume 34, Issue 8, July 2016, p 699-700, Https://Doi.Org/10.1177/0734242x16652956.

there is a divergence of views within the international community on the issue of banning shipments of hazardous waste from developed to developing countries for final disposal.

Referring to the Basel Convention, we find that it provides a good legal system for managing hazardous waste and clearly defining it, as the Convention relies on an organized methodology to define and classify this waste. However, the classification it provides is based on the chemicals and scientific names of these wastes, which means that understanding this classification requires sufficient chemical knowledge. Here, it is necessary for legislators to understand the composition of these materials and to be fully aware of the extent of the toxicity of these materials in order to be able to enact laws regulating the flow of electronic waste. In general, the Convention represents a challenge for countries with limited geographical and economic reach, as it may be difficult to implement its requirements to the same extent and efficiency that can be achieved in more economically and scientifically advanced countries.

Promoting Sustainability in E-Waste Governance

-The new EU WEEE Directive came into force in February 2014. One of the most important innovations is the introduction of different recycling targets now based on the additional percentages of electrical and electronic equipment placed in each national market in a pre-defined period. This new approach overcomes the previous approach based on a fixed percentage (i.e. 4 kg per head of population) equal for all Member States, which was verified to be incompatible with current market conditions. An imposition towards the design of collection systems geared to maximising the reuse of entire appliances is also introduced together with new targets on recycling and recovery of secondary materials[7].

-Since Switzerland is not a member of the European Union and has not signed the European Economic Area (EEA) Agreement[8], it is not obliged to implement EU directives in its national legislation, and as a result there are some differences between WEEE legislation and collection systems in Switzerland and those in the EU.

For example, the Swiss WEEE legislation covers the first seven categories mentioned in Directive 2002/96/EC, while categories 8 (medical devices), 9 (monitoring and control devices) and 10 (automatic dispensers) are not included according to the WEEE statistics provided by the Swiss Federal Office for the Environment (FOEN). Furthermore, the Swiss system appears not to separate collection from private households and other sources, and therefore WEEE data from FOEN are always presented as aggregate statistics without distinguishing between sources generating WEEE[9].

[7] - Florin Mihai,Maria-Graziegnoni,Christiameidiana,Chukwunonyeezeah,Valerioelia, Waste Electrical And Electronic Equipment (Weee): Flows, Quantities, And Management-Aglobal Scenario, Electronic Waste Management And Treatment Technology, Science Direct, 2019, P9, Https://Doi.Org/10.1016/B978-0-12-816190-6.00001-7.

[8] - The European Economic Area (EEA) Agreement is an agreement signed between the European Union (EU) and member states of the European Free Trade Association (EFTA). The agreement aims to expand a single market for goods, services and labour between EU member states and EFTA countries. The agreement aims to achieve economic union between member states, and to apply the laws of the European internal market and related legislation in EEA member states. The EEA Agreement also contributes to strengthening economic cooperation between member states and promoting trade, investment and economic growth in the region. The agreement also provides a framework for cooperation in other areas such as scientific research, environmental protection and economic assistance.

[9] - J. Ylä-Mella, E. Román, Waste Electrical And Electronic Equipment Management In Europe: Learning From Best Practices In Switzerland, Norway, Sweden And Denmark, Waste Electrical And Electronic Equipment (Weee) Handbook, Elsevier Ltd, 2019, p489, Https://Doi.Org/10.1016/B978-0-08-102158-3.00018-5.

The Swiss WEEE management system is designed on the basis of a voluntary philosophy, with the aim of achieving maximum flexibility and efficiency. Responsible producers, whether manufacturers or importers, organize themselves as non-profit organizations responsible for managing the recovery of WEEE, which significantly reduces management costs.

The role of government authorities is limited to monitoring and observing the results of the various stakeholders in the WEEE management system, which contributes to achieving a balance between sustainability and effectiveness in the process.

Under this system and as a solution to reduce the exacerbation of the volume of electrical and electronic waste, consumers are required to pay a recycling fee in advance, or an advance recycling contribution when purchasing new equipment, and in return the system allows them to re-dispose of their old devices for free when they turn into waste, which enhances the active participation of consumers in supporting waste management efforts and environmental sustainability.

Waste Electrical and Electronic Equipment Management and Compliance with the Basel Convention in BRICS Countries as a New Economic Order

-Brazil, Russia, India, China and South Africa (BRICS) account for more than a quarter of the world's land area, more than 40% of the world's population, and a quarter of the world's gross national income. In terms of economic size, BRICS is also an important group that is expected to surpass the G7 economies. This is one of the main reasons why it is important to study the management systems of WEEE in BRICS countries.

-India faces a major challenge in dealing with WEEE, whether locally produced or illegally imported. WEEE meets the demand for cheap used equipment and is used in informal and semi-formal sectors, exposing the environment and people to significant risks. Despite a lucrative market for reusing products, collection and processing of WEEE in India is minimal. Informal recycling occurs in large cities without adequate oversight, leaving poor individuals to benefit economically from the recovery of valuable parts. This makes it imperative to introduce e-waste management and processing regulations, although implementation and oversight still need to be strengthened. We should also focus on Extended Producer Responsibility (EPR) and restrictions on e-waste imports, where producers are directed to finance the collection, processing and recovery of e-waste.

These illegal operations thus contribute to the continuation of informal activities, as illegally imported WEEE appears to be the major source of e-scrap in India, and without effective measures to address these practices, this situation will continue to fuel informal growth in India, resulting in greater losses than would have been possible if the focus had been on dealing with domestic WEEE only.

-The Russian Federation produces a large amount of waste electrical and electronic equipment, as its market deals with millions of electronic and electrical devices annually. In the capital, Moscow, a significant amount of this waste is produced, but only a small part is collected and processed according to an approved system. The Federal Law of the Russian Federation "On Production and Consumer Waste" defines the general principles of waste management in Russia. The management of waste household appliances and electronics in Russia is supported by the General Law on Waste Management. There is no separate legislation for waste electrical and electronic equipment. Hence, we can notice the increasing challenges with changes in laws and the imposition of responsibility on manufacturers and importers to dispose of their products. In order to solve this problem, the Association for the Recycling of Waste Electrical and Electronic Equipment was established with the support of the Chamber of Commerce and Industry of the Russian Federation and Moscow, in cooperation with the UNIDO Center for International Industrial Cooperation. The Ministry of Natural Resources issued a decision obliging entities to keep a register of waste electrical and electronic equipment.

-For a long time, China has been importing large quantities of WEEE from all over the world. The Chinese government introduced a policy of import ban on non-recycled waste, which caused large quantities of waste to

flow into China. This move made China more in control of the flow of WEEE and gave a boost to the domestic recycling industry. Not to mention that the Chinese economy is fast-growing and leads the country to increase demand for raw materials. One way to meet this demand is to import used electronic products. Once they arrive in China, most of the dismantling is done manually, with workers using primitive methods in workshops with several employees. In one city, it is clear that the current situation of the WEEE recovery and recycling market in China is characterized by:

* WEEE recovery and dismantling enterprises are rational and make decisions to maximize profit;

* The cost of dismantling each piece of WEEE is the same for all dismantling companies, and the market demand for their products is linear;

* The relationship between formal dismantling companies and informal companies is monopolistic competition;

* WEEE recovery companies have absolute market advantages and may practice price discrimination;

It is noteworthy that the continuous increase in the volume of electrical and electronic equipment waste has succeeded in enhancing the growth of the recycling industry for such waste, as estimates indicate that the production of electrical and electronic equipment waste is expected to increase in the future, and it is expected to reach significant levels in the coming years.

-Brazil generated large quantities of WEEE in 2017, ranking third among BRICS countries in generating this type of waste after India. It is worth noting that the figures used in this context depend on the methodology adopted, and results may differ between studies due to the lack of accurate data on the effective disposal of electronic equipment. Different studies show different results, as the Brazilian Development Agency estimates the per capita share of this waste differently from other estimates. The production of WEEE in Brazil is expected to reach its peak in the future, and then begin to gradually decrease in subsequent years. These trends are linked to the increased use of smaller and lighter devices, rather than to an increase in active participation in sustainable consumption. The lack of official data on the size of the gray market for electronic products shows the challenges of managing waste flows in Brazil. While Brazil is considered a destination for WEEE across borders, it remains difficult to estimate the volume of illegal imports due to the nature of this activity. Despite the lack of infrastructure in managing WEEE flows, Brazil faces other challenges in this context, including a lack of a number of stations Waste recycling, with greater concentration in the wealthier parts of the country, while analysis shows that every kilogram of waste can generate a certain economic value, there are difficulties in realizing this economic potential due to the lack of adequate infrastructure in all aspects of waste management.

-The problem of waste electrical and electronic equipment (WEEE) disposal in South Africa is a complex one. Despite its developing economy, there is no specific legislation to deal with this waste. The National Environmental Management Waste Amendment Act addresses a number of waste-related issues, including e-waste. However, the implementation of these laws is left to different government departments, resulting in a lack of a unified approach to WEEE. With buy-back centers and formal recyclers, the main challenge is to contextualize the challenges of e-waste management, control them at the municipal level and promote recycling.

A comparative analysis of compliance with the Basel Convention in BRICS countries can be conducted by collecting available information on the legislation, policies and measures taken by these countries regarding the management of hazardous waste. Official government reports, legal documents and environmental reports should be reviewed to gain a deeper understanding of how these countries implement the Convention and the extent of their compliance with the required standards and regulations. This will contribute to the enactment of domestic legislation in line with international agreements in enshrining the provisions of the Basel Convention regarding the control of the movement and management of special hazardous wastes and their trade across countries.

There appear to be significant challenges in managing the transport of hazardous waste and balancing the need for recycling and environmental protection. The problem of deliberate trade in hazardous waste is an important issue, and mechanisms must be put in place to prevent it and enforce compliance with the Basel Convention.

The international legal regulation of e-waste management is based on several international agreements and guidelines aimed at controlling the safe and sustainable disposal of e-waste and protecting the environment and public health. There are several international mechanisms and organizations involved in this field, including:

* Basel Convention: The aforementioned, this United Nations agreement aims to control the movement of hazardous waste and its disposal across international borders.

* WEEE Directive: This agreement deals with the management of e-waste in the European Union countries, setting guidelines for producers, consumers and organizations to deal with e-waste properly and safely.

* World Trade Organization (WTO): The World Trade Organization seeks to regulate the international trade of e-waste and encourage international standards for its disposal in healthy and sustainable ways.

* Rotterdam Convention: This agreement deals with the control of international trade in hazardous chemicals and products, which can be part of e-waste.

In addition to these international mechanisms, there are several countries that have established national laws and legislation to deal with electronic waste and protect the environment, without forgetting the role of the international community in enhancing cooperation and exchanging information and expertise to improve the management of electronic waste and reduce its negative effects on health and the environment.

Given the shared responsibilities of producers, importers, consumers and governments in dealing with this issue, a series of measures must be implemented to ensure that this waste is collected and returned to the production sector for reuse in current production cycles or dealt with in an environmentally sound manner. This is achieved when there is awareness of the risk of toxicity of electronic waste to the environment, which enhances the intensification of efforts and the identification of responsibilities to rationalize the movement of electronic waste.

Conclusion:

The world is increasingly moving towards awareness and interest in managing WEEE in a sustainable and effective manner. Global legislations and initiatives have emerged to address the growing challenges of WEEE. However, some countries, such as India, have not adopted any specific guidelines or legislation for managing WEEE. This gap in legislation has made India, along with China and African countries, a global hub for illegal dumping of WEEE.

Some of the factors that exacerbate this negative development are:

* The lack of strong legislation and effective implementation of waste management of electrical and electronic equipment, which leads to the accumulation of problems and delays in dealing with this waste.

* The growth of middle and lower economies leads to an increase in demand for electronic devices and thus an increase in waste production.

* The lack of a clear legal structure encourages some individuals and companies to engage in illegal trade in the field of recycling and waste disposal in unsustainable ways.

Despite the efforts made through the Basel Convention to combat the trade in hazardous waste, this trade is still widespread, as huge quantities of hazardous waste are shipped from industrialized countries to developing

countries. This demonstrates the need to make more efforts to address this problem, and to reduce this phenomenon, it is necessary to:

* Increase penalties for the illegal export of electronic waste in order to provide a strong deterrent or at least great inconvenience to those who try to break the law, which will contribute to reducing attempts to export waste illegally.

* Promote recycling and reuse by providing financial incentives for companies to recycle their electronic devices, in addition to encouraging start-ups that provide innovative solutions for managing electronic waste.

* Develop environmentally friendly technologies by encouraging companies to design products that can be easily disassembled and recycled, and to use environmentally friendly materials in the manufacture of electronics.

* Imposing strict laws and enacting laws prohibiting the export of e-waste to developing countries without proper treatment

* Enhancing cooperation between countries to develop joint policies and international standards for e-waste management, and exchanging expertise and technologies between countries in the field of e-waste treatment

* We call on governments and regulatory bodies at the national and international levels to promote and implement legislation to promote the polluter pays principle as a compensatory responsibility in the field of e-waste, as it encourages the definition of a clear legal framework that obliges producers, consumers and processors to take effective measures to reduce the impact of e-waste on the environment and public health.

* The international community should intensify efforts to address the problem of international trade in e-waste, by enhancing international cooperation and developing mechanisms to monitor and control this trade. We also call for adopting methods such as imposing export fees or strengthening environmental controls for proper waste treatment. Exporting countries should also strengthen control procedures for companies to ensure responsible and safe disposal of e-waste.

* We call on the international community, environmental organizations, companies and individuals to work together to reduce the export of electronic waste to countries that cannot handle it in a responsible manner, as the trend towards local recycling and sustainable and responsible waste management must be encouraged by providing appropriate infrastructure and supporting the development of recycling facilities in countries with needs.

* Seeking to value electrical and electronic equipment waste, as it is one of the positive models that seek to invest rationally in electrical and electronic equipment, and reduce its risks

Methodology:

1. Legal and Documentary Analysis

A systematic review of Basel Convention provisions, EU WEEE directives, U.S. EPA regulations, and national hazardous waste laws was conducted to evaluate compliance gaps and enforcement challenges.

2. Comparative Case Study Approach

The study compares WEEE management systems in the EU, the United States, and selected developing countries, focusing on institutional capacity, monitoring, and recycling infrastructure.

3. Supply Chain and Stakeholder Mapping

The research analyzes the full e-waste lifecycle, including manufacturers, consumers, collection centers, transporters, formal and informal recyclers, and exporting/importing ports.

4. Review of Empirical Studies and Secondary Data

The research incorporates studies from UNEP, WHO, Basel Secretariat, and peer-reviewed journals to assess environmental and public health impacts of e-waste flows.

5. Framework Development

Based on findings, an Integrated WEEE Governance Framework (IWGF) is proposed to enhance environmental sustainability and international compliance.

Ethical Considerations:

This study uses only secondary data, legal documents, and previously published sources. It does not involve human or animal subjects. All referenced materials are properly cited, and analyses adhere to academic integrity and environmental justice principles.

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Conflict of Interest:

The authors declare no conflict of interest. The views expressed are solely those of the authors.

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