

INNOVATIONS IN PACKAGING WASTE MANAGEMENT THROUGH CORPORATE SOCIAL RESPONSIBILITY

Hannin PN Soulthoni ^{a*)}, Maya Itasari ^{b)}

^{a)} Universitas Halu Oleo, Kendari, Indonesia

^{b)} Politeknik Negeri Ujung Pandang, Makassar, Indonesia

^{*)}Corresponding Author: hanninpradita@uho.ac.id

Article history: received 08 April 2024; revised 16 May 2025; accepted 14 June 2025

DOI: <https://doi.org/10.33751/jssah.v5i2.12845>

Abstract. This study explores corporate social responsibility (CSR) initiatives and innovations in packaging waste management implemented by PT. Indofood Sukses Makmur Tbk, one of Indonesia's largest food and beverage companies. Amid rising concerns over plastic waste and its impact on marine ecosystems, the research examines how Indofood's CSR programs—namely the Waste Bank Program, Green Warmindo Initiative, and Drop Box Program—contribute to sustainability and the circular economy. Employing a qualitative approach, the study uses document analysis of official CSR and sustainability reports from 2021 to 2023, complemented by cross-referenced data from industry publications and government policies. The findings reveal that Indofood successfully recycled over 1,000 tons of plastic waste within three years, increased public awareness of recycling practices, and strengthened community participation in waste management. Furthermore, its collaboration with PRAISE and IPRO underscores the company's effort to establish an integrated waste management ecosystem aligned with Sustainable Development Goals (SDG) 12 and 14. Despite significant progress, challenges remain in expanding program coverage, particularly in rural areas and regions with limited recycling infrastructure. The study concludes that corporate CSR can serve as a catalyst for environmental innovation, combining economic, social, and ecological objectives to promote sustainable industry transformation in Indonesia's food and beverage sector.

Keywords: corporate social responsibility; packaging waste management; circular economy; food and beverage industry

I. INTRODUCTION

Plastic production in Asia has seen rapid growth, increasing from 136.34 million tons in 2013 to 174.35 million tons in 2017, with an annual increase of 9.5 million tons. By 2017, Asia accounted for 50.10% of global plastic production [1]. This surge, coupled with urbanization and rising living standards, has exacerbated plastic waste challenges. Indonesia, as one of the largest contributors to global marine debris, generates approximately 3.2 million tons of unmanaged plastic waste annually, with 1.29 million tons polluting marine ecosystems [2]. The resulting environmental consequences include marine biodiversity loss, public health risks due to microplastic ingestion, and a decline in tourism potential.

Plastic's non-biodegradable nature renders traditional disposal methods ineffective, necessitating sustainable development approaches [3]. Strategies such as waste reduction, reuse, and recycling, aligned with circular economy principles, are pivotal solutions. However, the food industry's reliance on single-use plastics presents significant challenges, requiring innovative packaging solutions and waste management systems to reduce greenhouse gas emissions and resource depletion [4].

As an archipelagic nation with over 17,000 islands, Indonesia faces acute challenges in marine waste management. The government has introduced various regulations, such as the 2019 *Roadmap for Waste Reduction by Producers*, to address these issues. However, the implementation of such policies remains inadequate. Previous studies have highlighted the role of such regulations in reducing plastic waste [5], [6], as well as the importance of community-based approaches, such as waste banks and local recycling initiatives [7], [8]. Nonetheless, most of these studies focus on government policies or community initiatives, with limited exploration of the private sector's contributions, particularly through Corporate Social Responsibility (CSR) programs, in supporting sustainable plastic waste management. Although numerous studies discuss circular economy principles and packaging innovations [9], [10], the lack of attention to long-term sustainability and the integration of CSR programs with national strategies represents a significant research gap.

This study aims to address these gaps by examining the CSR initiatives of PT. Indofood Sukses Makmur Terbuka, one of Indonesia's leading food and beverage companies, during the 2021–2023 period. By analyzing programs such as the Waste Bank, Green *Warmindo* Initiative, and Drop Box Program, this

study seeks to identify best practices and examine how these initiatives can integrate with national policies and contribute to global environmental goals. The findings of this research are expected to provide practical insights for companies and policymakers to enhance sustainability and support the achievement of global environmental targets.

II. RESEARCH METHODS

This study adopts a qualitative approach, utilizing document analysis as the primary method to examine PT. Indofood Sukses Makmur Tbk's CSR efforts in packaging waste management. This method was chosen to enable a comprehensive understanding of the company's initiatives and strategies. Document selection was based on relevance, credibility, and comprehensiveness, focusing on official publications such as CSR reports, sustainability reports, and program descriptions from 2021 to 2023 [11], [12], [13]. Data collection involved systematic techniques, including detailed reading, annotating, and categorizing information under themes related to CSR and waste management. An iterative analysis process ensured the inclusion and accurate interpretation of all relevant information. Validity was enhanced through cross-referencing official documents with supplementary data from the company's website, industry reports, and academic publications. Reliability was ensured through repeated data verification and meticulous categorization. Triangulation strategies, comparing findings with theoretical frameworks on CSR and waste management, further ensured that the analysis was consistent and aligned with both academic and practical perspectives.

III. RESULTS AND DISCUSSION

The sustainability report of PT. Indofood Sukses Makmur Tbk highlights its dedication to integrating sustainable practices within its operations as a leading food industry player, aligning with the United Nations Sustainable Development Goals (SDGs). Covering January 1 to December 31, the report emphasizes the company's commitment to balancing corporate growth with environmental and social responsibility, particularly through its Environmental Policy and Sustainable Agriculture Policy. Key initiatives include Packaging and Waste Management, targeting SDG 14: Life Below Water, with programs like Waste Banks, the Green Warmindo Program, and the Drop Box Program promoting recycling and waste reduction. These initiatives not only address hazardous and non-hazardous waste but also foster economic and environmental benefits for communities, food stalls, and consumers, supporting a circular economy. Indofood's CSR division reinforces its focus on innovative packaging designs and external collaborations, reflecting its long-term commitment to regulatory compliance and sustainable waste solutions.

A. Identification of Packaging Waste Management Efforts (2021-2023)

Over the past three years, the company has consistently demonstrated its long-term commitment to sustainability, even amidst the uncertain global economic challenges in the post-pandemic era. Adopting the theme "Continuing to Grow Amidst Challenges for a Sustainable Future" in 2021, the company has focused on improving environmental and social performance by strengthening supply chains and enhancing productivity [12]. In 2022, the company reinforced its commitment to addressing climate change through waste management and the principles of a circular economy [11]. By 2023, the company expanded the scope of its sustainability initiatives across various operational aspects, particularly in managing energy and water resources, waste, and biodiversity protection [13].

As part of its environmental stewardship efforts, the company, through its CSR division, has undertaken several initiatives focused on packaging waste management, including:

1) Packaging Design and Development

Between 2021 and 2023, PT. Indofood Sukses Makmur Terbuka demonstrated consistent efforts in improving packaging design with a strong focus on sustainability. In 2021, the company introduced monolayer packaging, which enhanced recyclability, and aseptic filling technology to reduce plastic usage during production. The company also utilized carton packaging materials sourced from sustainable suppliers, aligning with its commitment to responsible resource use. These early initiatives laid a solid foundation for sustainable packaging practices. By 2022, the company refined its packaging innovations by optimizing monolayer packaging and expanding the use of sustainable carton materials across more product lines. These developments were further enhanced in 2023, with the company emphasizing research and development of new environmentally friendly packaging solutions, incorporating circular economy principles into its packaging processes. This consistent focus on sustainable materials and innovative design reflects the company's broader goal of reducing resource consumption and greenhouse gas emissions.

2) Managing Post-Consumer Packaging Waste

As the largest food and beverage industry in Indonesia, the company manages post-consumer packaging through independent initiatives and collaborations with industry partners. These initiatives include community-based Waste Bank programs, the Green Warmindo program, the PRAISE Association, and IPRO.

a. Community-Based Waste Bank Program

PT. Indofood's community-based Waste Bank program evolved significantly over the three years. In 2021, the program emphasized engaging local communities in waste sorting and collection, providing both environmental awareness and economic benefits. The initiative established partnerships with communities to foster the effective management of post-consumer waste. By 2022, the program had expanded to include more regions, supported by public education campaigns aimed at improving awareness and participation in waste sorting. In 2023, the Waste Bank program was further strengthened and implemented in Jakarta, Semarang, Yogyakarta, and Pasuruan, with a

particular focus on increasing waste sorting volumes and improving community engagement. This progression highlights the scalability and effectiveness of community-driven waste management in Indonesia.

b. Program Green Warmindo

The Green Warmindo initiative, launched in 2021, aims to educate small food stall (Warmindo) owners and employees on proper waste sorting and collection practices, fostering environmental responsibility within the informal sector. By 2022, the program expanded to drive behavioral change among operators, and in 2023, it targeted clusters in Tembalang, Gunungpati (Semarang), and Umbulharjo (Yogyakarta), emphasizing daily waste sorting to establish a sustainable waste management model. Integrated with Waste Bank systems, the initiative begins with community-level sorting, categorizing waste as recyclable or non-recyclable, which is then channeled through Unit, Sectoral, and Main Waste Banks for consolidation. Sorted waste proceeds to collectors and large-scale operators before reaching recycling industries, where it is processed into reusable materials, completing a circular waste management cycle. This program underscores PT. Indofood's commitment to environmental sustainability and awareness among small business stakeholders.

c. Public Education Through the Drop Box Program

In 2022, the company launched the Drop Box Program in collaboration with several companies, retailers, Waste Banks, collection partners, and NGOs to educate the public about sorting and recycling post-consumer packaging waste. The program began by providing education to the public on how to properly sort waste and place it in Drop Boxes located at 11 locations across Jakarta and Solo.

The Drop Box Program collects waste in three categories: paper packaging (e.g., duplex, beverage cartons, and paper cups), plastic packaging (e.g., bottles, cups, containers, and sachets), and glass packaging (e.g., bottles and cups). Partner Waste Banks regularly retrieve these materials, supporting the development of a circular economy while providing direct benefits to the community. By 2023, the program expanded its reach with new partnerships, additional Drop Box locations, and broader geographic coverage, focusing not only on waste collection but also on public education about waste sorting and recycling. Operating in 11 locations across Jakarta and Solo, the program has raised awareness of post-consumer waste management, demonstrating the company's commitment to sustainability and its positive impact on environmental stewardship.

d. Collaborative Program through PRAISE and IPRO

The company, along with other major industry players, established PRAISE in 2010 to develop solutions for addressing post-consumer waste issues in Indonesia. In 2020, PRAISE launched IPRO to promote broader stakeholder responsibility in creating an integrated waste management ecosystem. This initiative aims to enhance the collection and recycling of used packaging through collaboration with various stakeholders, including the informal sector and community organizations, aligning with the Indonesian government's efforts.

In 2021, IPRO was implemented in Bali and Lombok, focusing on improving PET packaging recycling through TPS3R facilities and Waste Banks while initiating collection networks for HDPE and UBC. As a result, the company successfully managed approximately 150 tons of packaging waste. In 2022, IPRO strengthened its collection networks for PET, HDPE, and UBC and began building recycling chains for flexible plastic packaging, increasing the collection and recycling rates of plastic waste. Since its launch, IPRO has partnered with 18 companies and 14 aggregators and recyclers in various regions, including East Java, Bali, Lombok, West Java, and Sorong-Papua. The initiative also includes raising public awareness about waste reduction and sorting. By 2023, IPRO had collected and recycled approximately 1,000 tons of packaging waste, including PET, HDPE, UBC, PP, and multilayer plastics.

Through periodic independent audits, IPRO ensures transparency and accountability in the collection and recycling of packaging waste. In 2022, IPRO expanded its program coverage in East Java, collaborating with local governments, the recycling industry, and funding institutions to establish TPS3R facilities and develop recycling activities. These efforts strengthened the collection and recycling processes for various types of packaging, contributing to improved waste management systems and the development of a circular economy in Indonesia.

Through active collaboration in the PRAISE and IPRO Programs, the company has demonstrated a strong commitment to addressing post-consumer waste issues in Indonesia. With a focus on developing holistic solutions, including the collection and recycling of used packaging, and through partnerships with various stakeholders, the company successfully managed and recycled approximately 1,000 tons of packaging waste, including various types of plastics. By ensuring transparency and accountability through independent audit processes and expanding program coverage across Indonesia, these initiatives not only strengthen waste management processes but also contribute to the development of a sustainable circular economy in the country.

B. Analysis of Environmental Management Through CSR by PT. Indofood Sukses Makmur Terbuka

The findings of this study reveal that PT. Indofood Sukses Makmur Terbuka has consistently implemented environmental management concepts through various CSR programs, aligning with existing literature on environmental stewardship and CSR [14]. These efforts demonstrate the company's ability to address environmental challenges stemming from both internal pressures and external environmental factors [15]. Within this context, CSR emerges as a dynamic tool that enables companies to mitigate environmental impacts while contributing to sustainable development. As emphasized by previous research, CSR programs not only provide reciprocal benefits to society but also play a significant role in enhancing corporate performance and attracting stakeholders [16], [17].

However, critical challenges in the implementation and effectiveness of these programs require deeper examination. The study's findings confirm that while the

company has taken substantial steps, systemic barriers hinder the transition to sustainable packaging solutions in the food and beverage sector. These findings align with [18], who argue that the slow adoption of sustainable packaging reflects structural inefficiencies and the need for radical innovations to improve corporate accountability. For example, although PT. Indofood Sukses Makmur Terbuka has successfully introduced environmentally friendly packaging designs and reduced raw material use, the scalability and market acceptance of such innovations remain limited. These challenges underline the importance of fostering partnerships and policy support to accelerate sustainable packaging adoption.

Post-consumer waste management, another critical focus area, highlights the company's progress in promoting a circular economy. The Waste Bank and Green Warmindo programs illustrate PT. Indofood Sukses Makmur Terbuka's commitment to engaging communities and building awareness about waste segregation and recycling. Similarly, the Drop Box Program, which was expanded to 11 locations by 2023, demonstrates the company's efforts to make waste sorting accessible to urban communities. By providing convenient waste collection points in Jakarta and Solo, the program encourages public participation and raises awareness about the importance of proper waste disposal. These efforts align with research by [7], which underscores the importance of community acceptance, awareness campaigns, and innovation program management for the sustainability of waste management initiatives. However, the study also identifies gaps in infrastructure and program reach, particularly in rural and underserved areas, which may limit the overall effectiveness of these programs. Collaborative efforts with PRAISE and IPRO represent a significant step toward addressing these gaps by integrating industry expertise and creating scalable recycling systems.

The comparative context provided by similar initiatives in other regions adds depth to the analysis. For instance, community-driven waste banks in Thailand and Germany's bottle recycling system demonstrate the potential for scalability and efficiency when waste management is integrated with local governance and regulatory frameworks [19], [20]. These examples highlight opportunities for PT. Indofood Sukses Makmur Terbuka to strengthen its programs by adopting best practices, such as leveraging advanced sorting technologies and enforcing stricter recycling regulations.

The broader implications of PT. Indofood Sukses Makmur Terbuka's achievements extend to environmental and economic sustainability. As [21] argue, a comprehensive approach is essential to fully realize the goals of a circular economy. PT. Indofood Sukses Makmur Terbuka's CSR programs, while impactful, must address systemic issues such as market readiness for recycled materials and consumer behaviour regarding waste segregation. Additionally, the company must balance its environmental goals with the economic feasibility of scaling its initiatives, particularly in regions with limited infrastructure.

Over the past three years, PT. Indofood Sukses Makmur Terbuka has demonstrated significant progress in its

CSR initiatives, consistently innovating in packaging design, expanding community-based programs, and strengthening partnerships. The addition of the Drop Box Program has further enhanced public engagement in waste management by making waste segregation accessible and convenient for urban populations. However, the study highlights the need for a more critical innovation of the challenges associated with program implementation, particularly in achieving scalability and addressing systemic barriers. By integrating lessons from existing literature and successful waste management models in other regions, PT. Indofood Sukses Makmur Terbuka can further refine its approach to create more impactful and sustainable programs.

Ultimately, the Waste Bank, Green Warmindo, and Drop Box programs reflect PT. Indofood Sukses Makmur Terbuka's ability to transform its CSR goals into actionable outcomes that address key environmental challenges. These initiatives contribute directly to SDG 12 and SDG 14 by promoting responsible consumption, reducing pollution, and protecting marine ecosystems. Moving forward, a deeper integration of theoretical frameworks and comparative insights will enhance the company's ability to drive systemic change and achieve its long-term environmental goals.

IV. CONCLUSIONS

This study highlights PT. Indofood Sukses Makmur Tbk's significant contributions to packaging waste management through CSR programs such as the Waste Bank, Green Warmindo, and Drop Box initiatives between 2021 and 2023. These efforts have not only reduced plastic waste but also raised public awareness about sorting and recycling practices. Over the three-year period, the company achieved a milestone by recycling 1,000 tons of plastic waste, aligning with global sustainability goals such as SDG 12 (Responsible Consumption and Production) and SDG 14 (Life Below Water). Despite these successes, challenges persist, including limited infrastructure in underserved areas and the need for advanced recycling technologies to improve efficiency. To address these challenges, policymakers are urged to strengthen regulatory frameworks that incentivize investment in sustainable packaging and recycling infrastructure, particularly in less developed regions. Partnerships between the private sector, communities, and environmental organizations could further enhance the reach and impact of community-based programs. For PT. Indofood, scaling up initiatives like Green Warmindo and integrating advanced sorting technologies are strategic steps to enhance its CSR efforts. Additionally, learning from successful waste management models in countries like Thailand and Germany could provide valuable insights for refining its approach. By embedding CSR at the core of its sustainability strategy and embracing collaborative and innovative solutions, PT. Indofood has the potential to lead transformative environmental efforts while delivering long-term societal and ecological benefits.

REFERENCES

- [1] S. Khoshnevis Yazdi and A. G. Dariani, "CO₂ emissions, urbanisation and economic growth: evidence from Asian countries," *Economic Research-Ekonomska Istraživanja*, vol. 32, no. 1, pp. 510–530, Jan. 2019, doi: 10.1080/1331677X.2018.1556107.
- [2] D. Dobler *et al.*, "On the Fate of Floating Marine Debris Carried to the Sea through the Main Rivers of Indonesia," *J Mar Sci Eng*, vol. 10, no. 8, p. 1009, Jul. 2022, doi: 10.3390/jmse10081009.
- [3] B. R. Kiran, H. Kopperi, and S. Venkata Mohan, "Micro/nano-plastics occurrence, identification, risk analysis and mitigation: challenges and perspectives," *Rev Environ Sci Biotechnol*, vol. 21, no. 1, pp. 169–203, Mar. 2022, doi: 10.1007/s11157-021-09609-6.
- [4] J. Rajvanshi *et al.*, "Perceiving biobased plastics as an alternative and innovative solution to combat plastic pollution for a circular economy," *Science of The Total Environment*, vol. 874, p. 162441, May 2023, doi: 10.1016/j.scitotenv.2023.162441.
- [5] E. A. Wicaksono, "Threats of Microplastic Pollution on Aquaculture Activities in Indonesia," *Torani Journal of Fisheries and Marine Science*, pp. 77–91, Jun. 2022, doi: 10.35911/torani.v5i2.20106.
- [6] P. W. Lestari, B. C. Septaria, and C. E. Putri, "Edukasi 'Minim Plastik' sebagai wujud cinta lingkungan di SDN Pejaten Timur 20 Pagi," *Transformasi: Jurnal Pengabdian Masyarakat*, vol. 16, no. 1, pp. 43–52, Jun. 2020, doi: 10.20414/transformasi.v16i1.2034.
- [7] A. M. S. Asih, F. Trapsilawati, B. M. Sopha, and N. M. E. Normasari, "Waste Bank Program for Households as A Means of Processing Inorganic Waste," *Jurnal Pengabdian kepada Masyarakat (Indonesian Journal of Community Engagement)*, vol. 8, no. 4, p. 177, Dec. 2022, doi: 10.22146/jpkkm.73409.
- [8] A. Istiyani and W. Handayani, "Embedding Community-Based Circular Economy Initiatives in a Polycentric Waste Governance System: A Case Study," *The Indonesian Journal of Planning and Development*, vol. 7, no. 2, pp. 51–59, Oct. 2022, doi: 10.14710/ijpd.7.2.51-59.
- [9] C. L. Cantu and A. Tunisini, "A circular innovation strategy in a supply network context: evidence from the packaging industry," *Journal of Business & Industrial Marketing*, vol. 38, no. 13, pp. 220–238, Dec. 2023, doi: 10.1108/JBIM-07-2021-0325.
- [10] I. D. Ibrahim *et al.*, "Recent Recycling Innovations to Facilitate Sustainable Packaging Materials: A Review," *Recycling*, vol. 8, no. 6, p. 88, Nov. 2023, doi: 10.3390/recycling8060088.
- [11] Sustainability Departement, "2022 Sustainability Report PT Indofood Sukses Makmur Terbuka," Jakarta, 2022.
- [12] Sustainability Departement, "2021 Sustainability Report PT Indofood Sukses Makmur Terbuka," Jakarta, 2021.
- [13] Sustainability Departement, "2023 Sustainability Report PT Indofood Sukses Makmur Terbuka," Jakarta, 2023.
- [14] S. A. Murtaza, A. Mahmood, S. Saleem, N. Ahmad, M. S. Sharif, and E. Molnár, "Proposing Stewardship Theory as an Alternate to Explain the Relationship between CSR and Employees' Pro-Environmental Behavior," *Sustainability*, vol. 13, no. 15, p. 8558, Jul. 2021, doi: 10.3390/su13158558.
- [15] H. Li, Y. K. Kuo, M. M. Mir, and M. Omar, "Corporate social responsibility and environmental sustainability: achieving firms sustainable performance supported by plant capability," *Economic Research-Ekonomska Istraživanja*, vol. 35, no. 1, pp. 4580–4602, Dec. 2022, doi: 10.1080/1331677X.2021.2015612.
- [16] S. A. R. Khan, Z. Yu, M. Panait, L. R. Janjua, and A. Shah, *Global Corporate Social Responsibility Initiatives for Reluctant Businesses*. IGI Global, 2021, doi: 10.4018/978-1-7998-3988-0.
- [17] C.-C. Chen, R. Y. Sujanto, T.-D. Bui, and M.-L. Tseng, "Sustainable recyclete packaging in Indonesian food and beverage industry: a hybrid decision-making analysis in consumption stages," *Qual Quant*, vol. 57, no. 3, pp. 2053–2089, Jun. 2023, doi: 10.1007/s11135-022-01458-x.
- [18] A. (Any) Phelan, K. Meissner, J. Humphrey, and H. Ross, "Plastic pollution and packaging: Corporate commitments and actions from the food and beverage sector," *J Clean Prod*, vol. 331, p. 129827, Jan. 2022, doi: 10.1016/j.jclepro.2021.129827.
- [19] C. Pharino, "Community-Based Waste Management in Thailand," 2017, pp. 49–62. doi: 10.1007/978-981-10-4631-5_4.
- [20] H. R. Mehdi, "Plastic Bottle Deposit Refund Schemes in Europe," University of Applied Sciences, 2020.
- [21] P. L. Filippone, Y. Hernandez Trejo, and S. S. Witte, "Demonstrating the Feasibility of an Economic Empowerment and Health Promotion Intervention among Low-Income Women Affected by HIV in New York City," *Int J Environ Res Public Health*, vol. 20, no. 8, Apr. 2023, doi: 10.3390/ijerph20085511.