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Policy Gap on Food Loss and Waste Reduction in Indonesia

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Abstrak: *Indonesia menghadapi krisis lingkungan yang semakin serius akibat tingginya food loss and waste (FLW) yang berkontribusi signifikan terhadap timbulan sampah, emisi gas rumah kaca, dan inefisiensi ekonomi. Meskipun terdapat komitmen global pembangunan berkelanjutan melalui Sustainable Development Goals (SDGs), respons kebijakan di Indonesia masih menunjukkan fragmentasi. Penelitian ini bertujuan untuk mengkaji policy gap dalam pengurangan FLW melalui analisis terhadap kerangka regulasi, pengaturan kelembagaan, dan tantangan implementasi. Penelitian menggunakan pendekatan kualitatif dengan desain deskriptif-normatif melalui studi literatur terhadap dokumen kebijakan, regulasi, serta laporan. Hasil penelitian menunjukkan adanya kesenjangan utama berupa fragmentasi regulasi, lemahnya integrasi kebijakan lintas-sektor, serta tantangan koordinasi kelembagaan. Kebijakan yang ada cenderung memposisikan FLW sebagai isu hilir dalam pengelolaan sampah, belum menjadi bagian sistem pangan secara menyeluruh. Penelitian ini menyimpulkan bahwa tanpa kerangka kebijakan yang komprehensif dan terintegrasi serta kepemimpinan institusional yang kuat, upaya pengurangan FLW di Indonesia tidak akan optimal. Penguatan policy coherence, koordinasi tata kelola, dan pendekatan sistem pangan yang holistik menjadi kunci dalam mendukung pembangunan berkelanjutan, ketahanan pangan, dan pengurangan tekanan lingkungan di Indonesia.*

Kata Kunci: *policy gap, susut dan sisa pangan, kebijakan publik, manajemen, Indonesia*

Abstract: Indonesia faces an increasingly serious environmental crisis due to high levels of food loss and waste (FLW), which significantly contribute to waste generation, greenhouse gas emissions, and economic inefficiency. Despite global commitments to sustainable development through the Sustainable Development Goals (SDGs), policy responses in Indonesia remain fragmented. This study aims to examine the policy gap in FLW reduction through an analysis of the regulatory framework, institutional arrangements, and implementation challenges. The study employed a qualitative approach with a descriptive-normative design through a literature review of policy documents, regulations, and reports. The results revealed key gaps in regulatory fragmentation, weak cross-sectoral policy integration, and institutional coordination challenges. Existing policies tend to position FLW as a downstream issue in waste management, not yet part of the overall food system. This study concludes that without a comprehensive and integrated policy framework and strong institutional leadership, FLW reduction efforts in Indonesia will not be optimal. Strengthening policy coherence, governance coordination, and a

holistic food system approach are key to supporting sustainable development, food security, and reducing environmental pressures in Indonesia.

Keyword: policy gap, food loss and waste, public policy, management, Indonesia

INTRODUCTION

The Earth has limited environmental capacity, including carrying capacity and assimilative capacity, which determine the extent to which ecosystems can absorb human pressure without experiencing significant degradation (Rockström et al., 2009). One of the major pressures on this capacity is the increasing volume of waste generated by human activities, particularly food waste. When ecological limits are exceeded, environmental degradation accelerates and threatens long-term sustainability (United Nations Environment Programme, 2013). Food loss and waste (FLW) have therefore emerged as a critical global issue due to its environmental, economic, and social consequences. Approximately one-third of food produced for human consumption is lost or wasted annually, resulting in substantial waste of water, land, and energy resources (FAO, 2013). Moreover, FLW contributes around 8–10% of global greenhouse gas emissions, mainly through methane emissions from landfills (IPCC, 2019; UNEP, 2021). These impacts demonstrate that FLW is not merely a consumption problem, but a systemic challenge linked to inefficiencies across the food supply chain, including production, distribution, and consumption processes.

The growing concern over FLW is closely connected to the broader sustainable development agenda. Sustainable development emphasizes the integration of economic growth, social equity, and environmental protection (Purvis et al., 2019). Within this framework, FLW reflects structural inefficiencies that affect food security, resource management, and economic productivity (Gustavsson et al., 2011). Global commitments to reduce FLW are reflected in the Sustainable Development Goals (SDGs), particularly Target 12.3, which calls for halving food waste at the retail and consumer levels and reducing food losses along production and supply chains by 2030 (United Nations, 2015). Achieving these targets requires policy coherence and cross-sectoral governance, as emphasized by Meuleman and Niestroy (2015), who argue that sustainable development depends on the integration of actors, sectors, and governance levels.

In Indonesia, FLW has become an increasingly urgent issue due to its scale and multidimensional impacts. Household food waste constitutes a major source of waste generation, driven by overconsumption, poor meal planning, and consumption behaviour (Kusumawardani et al., 2023). Beyond environmental impacts, FLW also generates substantial economic losses estimated at IDR 213–551 trillion annually, equivalent to around 4–5% of Indonesia's GDP (Leksono & He, 2025). Despite growing policy attention, governance of FLW in Indonesia remains fragmented across sectors and institutions. Existing regulations are dispersed among food security, waste management, environmental, and agricultural policies, often lacking coordination and clear implementation mechanisms. Previous studies have largely focused on the environmental, economic, or behavioural dimensions of FLW, while limited attention has been given to policy coherence and governance integration as underlying causes of ineffective FLW management in Indonesia.

This study argues that FLW in Indonesia is not merely a technical problem of waste management, but a manifestation of fragmented food system governance and weak policy integration. The novelty of this article lies in its approach to examining FLW through the lens of public policy coherence and good governance, rather than solely from environmental or behavioural perspectives. By critically analyzing policy gaps, institutional fragmentation, and coordination challenges, this article contributes to the growing discussion on sustainable food system governance and offers a governance-oriented perspective for strengthening FLW policy integration in Indonesia.

METHOD

This study uses a qualitative approach with a descriptive-normative research design to examine policy gaps in the management of food loss and waste (FLW) in Indonesia. A qualitative approach allows an in-depth understanding of phenomena, interpret meanings, and construct theoretical explanations for social events and public policies (Creswell & Poth, 2018; Denzin & Lincoln, 2018). The descriptive dimension of the study aims to systematically map existing FLW-related policies and institutional arrangements in Indonesia, whereas the normative dimension focuses on evaluating the consistency, coherence, and adequacy of regulatory frameworks in addressing FLW issues.

The study relies on secondary data collected through a structured literature review and document analysis. The selection of documents was conducted based on their relevance to FLW governance, food systems, and waste management policies in Indonesia. The reviewed materials include scientific journals, reports from international institutions, national policy documents, and regulations. To ensure analytical relevance and policy validity, documents were selected using three criteria: (1) direct relevance to FLW governance and food system policy, (2) publication credibility and institutional authority, and (3) substantive discussion related to FLW.

The analysis adopts a public policy and governance framework, particularly the concepts of policy coherence and policy integration, complemented by perspectives on governance and public management from Pollitt and Bouckaert (2017).

RESULTS AND DISCUSSION

Waste Emergency

Indonesia generates approximately 53 million tons of waste annually, with more than 60 percent remaining unmanaged. Waste accumulation at final disposal sites (TPA) is estimated to have reached 1.6 billion tons, creating increasingly complex environmental and management challenges. Only around 9–10 percent of waste is properly managed, indicating an urgent waste management situation (KLH, 2025). This condition places Indonesia among the largest food waste producers in Southeast Asia.

Other developing countries in Southeast Asia also face major waste management challenges. The Philippines produces approximately 14–16 million tons of waste annually, much of which ends up in open dumping sites or is inadequately managed, particularly in densely populated urban areas (Magalang et al., 2018). In Vietnam, rapid urbanization has significantly increased urban waste generation. Although collection rates are relatively high in major cities, limitations in processing and recycling infrastructure result in most waste being disposed of in landfills with minimal treatment (Nguyen et al., 2020). Thailand has relatively better waste collection capacity, but continues to face challenges in reducing organic waste and improving waste recovery rates (Mongkolnchaiarunya, 2005). Meanwhile, Singapore has implemented more advanced waste management systems through waste-to-energy incineration technology and controlled landfill systems such as Semakau Landfill (National Environment Agency, 2023). Nevertheless, Singapore still faces challenges related to food waste, particularly due to low food waste recycling rates and consumer behavior in the household and food service sectors (Tan et al., 2021; Thi et al., 2015).

Indonesia's waste emergency is closely linked to the contribution of food loss and waste (FLW), which consistently dominates national waste generation. Similar to many developing countries, Indonesia faces significant challenges related to organic waste, particularly food waste, which places additional pressure on urban waste management systems with limited capacity (Kaza & Yao, 2018). According to the Ministry of Environment and Forestry, more than half of Indonesia's waste consists of organic waste, with a substantial portion originating from food waste generated by households, traditional markets, and the food service sector (KLHK, 2023). A study by Bappenas (2021) further estimates that Indonesia wastes

approximately 115–184 kg of food per capita annually. If optimally utilized, this amount could potentially meet the food needs of around 29–47 percent of the national population. The estimated economic losses resulting from FLW between 2000 and 2019 reached IDR 213–551 trillion annually, equivalent to approximately 4–5 percent of Indonesia's gross domestic product (GDP).

One of the Indonesian government's current priorities, the Free Nutritious Meals (MBG) program, has been designated as a National Strategic Project (PSN) and included in the 2025–2029 National Medium-Term Development Plan (RPJMN). The program aims to improve human resource quality and address stunting and extreme poverty. However, the program also has important implications for large-scale food waste management. Mass food service systems are recognized as significant sources of food waste, particularly at the consumption stage due to uneaten food (Silvennoinen et al., 2015; Betz et al., 2015). Plate waste is estimated to range from 10–30 percent of food portions served (FAO, 2013; World Food Programme, 2017). With approximately 59.86 million beneficiaries, the MBG program is estimated to generate more than 1,496.5 tons of food waste per day (Bisnis.com, 2025). In addition, food loss may also occur at upstream stages, including procurement, distribution, and food processing activities within the Nutrition Fulfillment Service Units (SPPG). Such losses are often associated with logistical inefficiencies, quality standards, and operational limitations in large-scale food supply systems (Parfitt et al., 2010).

These conditions indicate that the problem is not only related to the volume of waste generated, but also to the gap between waste generation and waste management capacity. In many major Indonesian cities, sanitary landfill facilities have approached or exceeded their operational capacities (Nasril et al., 2019). This condition is further exacerbated by the dominance of organic waste, including FLW (Paramita et al., 2018). Consequently, FLW has become not only a food consumption issue, but also part of broader inefficiencies within the food system and a contributing factor to increasing emissions from the waste sector (Thyberg & Tonjes, 2016; Santeramo & Lamonaca, 2021).

FLW-related Policies in Indonesia

The urgency of policies aimed at reducing FLW in Indonesia continues to increase due to its multidimensional impacts on the environment, economy, and food security. The large volume of FLW generated in Indonesia has been identified as a source of significant economic losses and environmental pressures, while also reflecting inefficiencies in food system governance (Bappenas, 2021). Without integrated interventions, FLW may continue to hinder the achievement of sustainable development goals (Candel & Biesbroek, 2016; Santeramo & Lamonaca, 2021).

Indonesia's FLW reduction efforts are reflected in several policy instruments. Presidential Regulation Number 97 of 2017 concerning the National Policy and Strategy for the Management of Household Waste and Household-like Waste constitutes the primary national policy framework related to waste reduction and waste handling, including organic waste dominated by FLW. The regulation targets a 30 percent reduction in waste generation and 70 percent waste handling by 2025 as mandated by Law Number 18 of 2008 concerning Waste Management. The regulation includes provisions on waste reduction at source, waste management from upstream to downstream, coordination between central and regional governments, and the involvement of producers and communities.

Another strategic initiative was the preparation of the 2024–2045 Food Loss and Waste Management Roadmap initiated by the Ministry of National Development Planning/Bappenas. The roadmap aims to support food security and the vision of Indonesia Emas 2045 through a more efficient food supply chain approach from upstream to downstream. FLW management has also been incorporated into the 2025–2045 National Long-Term Development Plan (RPJPN) and the 2025–2029 RPJMN as part of the circular economy and food security agenda.

At the implementation level, the Regulation of the Minister of Environment and Forestry Number 75 of 2019 concerning the Roadmap for Waste Reduction by Producers operationalizes the extended producer responsibility (EPR) approach. This regulation requires producers to develop waste reduction roadmaps, reduce the use of difficult-to-recycle packaging materials, improve environmentally friendly product design, and develop take-back systems for post-consumer waste. Through this regulation, responsibility for waste management is shared among government, producers, and consumers.

Institutionally, Presidential Regulation Number 66 of 2021 established the National Food Agency (NFA) as a non-ministerial institution directly responsible to the President. The NFA is mandated to coordinate national food governance, including issues related to FLW. The agency has initiated programs such as the Food Safety Movement (GSP), which focuses on public awareness, food distribution efficiency, and optimization of excess food utilization. The NFA has also proposed the establishment of a specific Presidential Regulation on FLW governance to strengthen the legal framework for integrated FLW management.

In the downstream waste sector, the Indonesian government has also promoted waste-to-energy (WTE) development through Presidential Regulation Number 109 of 2025 concerning Urban Waste Management Through Waste Processing into Renewable Energy Based on Environmentally Friendly Technology. This regulation emphasizes integrated waste management approaches, flexible technology options, financing diversification, and environmental governance principles. The policy follows the earlier Presidential Regulation Number 35 of 2018, which focused on accelerating the development of waste-to-energy facilities in major cities. Through the Danantara Indonesia initiative, the government plans to develop 33 WTE facilities across Indonesia, with each facility designed to process approximately 1,000 tons of waste per day and generate 15–20 megawatts of electricity (CESGS, 2025).

Policy Gap

Despite the growing number of policies related to FLW and waste management, regulatory gaps remain evident. Indonesia does not yet have a specific and comprehensive legal framework that regulates FLW reduction throughout the food supply chain. Law Number 18 of 2008 concerning Waste Management primarily focuses on household and industrial waste in general and does not specifically regulate food waste as a strategic category. Similarly, Presidential Regulation Number 97 of 2017 mainly functions as an umbrella policy for waste management and does not comprehensively regulate FLW governance across production, distribution, consumption, and post-consumption stages.

The planned revision of Law Number 18 of 2012 concerning Food may provide an opportunity to strengthen the legal basis for FLW governance. Such regulation could include provisions related to prevention, redistribution, labeling, reporting mechanisms, incentives, sanctions, and stakeholder responsibilities across the food supply chain. Bappenas (2023) emphasizes the importance of policies that address FLW at all stages, strengthen infrastructure and food storage technology, improve public awareness, and encourage collaboration among government, private sector actors, communities, and international organizations. A comprehensive and sustainable policy framework is considered important for achieving Indonesia's FLW reduction target of 75 percent by 2045.

Several countries have implemented more specific FLW regulations. Italy introduced Law No. 166/2016 (Legge Gadda), which encourages food donation through incentive mechanisms and simplified administrative procedures. Japan has also implemented the Food Recycling Law since 2001 to promote food waste reduction and recycling through government support and technological development (Okayama & Watanabe, 2024).

In Indonesia, policy implementation related to FLW remains dispersed across sectors, including food policy, waste management, agriculture, trade, and environmental governance.

FLW is still largely addressed as part of downstream waste management rather than through an integrated food system approach. As a result, implementation standards, reduction targets, and coordination mechanisms across sectors remain limited. Furthermore, although the NFA is expected to strengthen coordination in food governance, the institution is relatively new and still faces institutional and coordination challenges.

At the implementation level, various FLW reduction programs, including food redistribution initiatives, public awareness campaigns, and food waste management programs, have not yet operated optimally. According to Bappenas (2021), major implementation constraints include limited cold-chain infrastructure, low business awareness, and minimal incentives for food donation. In addition, FLW governance involves multiple ministries and government agencies, including the Ministry of Agriculture, Ministry of Environment and Forestry, Ministry of Trade, and local governments, which creates coordination challenges in relation to data synchronization, programs, and policy targets. Differences in methodologies and data systems between institutions also complicate the development of evidence-based policies.

As a result of these policy and implementation gaps, the impact of FLW reduction efforts in Indonesia remains limited. FLW levels continue to be significant throughout the food supply chain, indicating ongoing challenges in achieving systematic and integrated FLW reduction efforts.

CONCLUSION

Indonesia faces a serious waste management challenge, with food loss and waste (FLW) constituting a major contributor to national waste generation. Although various policy instruments have been introduced, including Presidential Regulation No. 97 of 2017 and the establishment of the National Food Agency through Presidential Regulation No. 66 of 2021, FLW governance in Indonesia continues to face significant policy gaps. These gaps are reflected in regulatory fragmentation, weak cross-sectoral coordination, and the absence of a comprehensive legal framework that regulates FLW across the food supply chain.

In practice, FLW is still predominantly addressed as a downstream waste issue rather than as part of an integrated food system approach. As a result, policy implementation remains less effective, as indicated by program inefficiencies, overlapping interventions, and the limited reduction of FLW. These conditions continue to contribute to environmental pressures, economic losses, and food security challenges.

The findings of this study contribute to the discussion on FLW governance by highlighting the importance of policy integration and coordination in addressing FLW issues in Indonesia. The study shows that existing challenges are closely related to fragmented policy arrangements and institutional coordination across sectors involved in food and waste management. From a practical perspective, strengthening FLW governance requires more integrated policy coordination, clearer institutional arrangements, and a comprehensive regulatory framework that addresses FLW from upstream to downstream stages. Greater coordination among government institutions and stakeholders is important to improve policy implementation and support more effective FLW reduction efforts.

This study is limited by its reliance on secondary data and the absence of empirical analysis at regional or sector-specific levels. Further research is therefore needed to strengthen quantitative analysis of policy impacts, evaluate implementation at local levels, and examine collaborative approaches that connect food system governance and waste management policies.

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