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## **Analysis of Government Policies in Padang City in Food Waste Management at the Household Level**

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### **Abstract**

*The waste management issue in the city of Padang, particularly the increasing accumulation of household waste, with the predominant composition being food waste, is the primary focus of this research. The research aims to investigate the policies and strategies implemented by the Padang municipal government in managing household food waste. The research method employed is qualitative, involving data collection through interviews, observations, and direct documentation. The research results indicate that the management of household food waste is still integrated within the broader framework of urban waste management. The absence of specific governance for household food waste results in a significant increase in the amount of food waste being disposed of directly in the Final Disposal Site (TPA). The study concludes that: 1) the management of household food waste is intertwined with urban waste management; 2) Specifically, the Padang city government has not yet implemented a program for managing household food waste; 3) The absence of governance for household food waste leads to a high volume of food waste being directly disposed of in the TPA; 4) Specifically, there is currently no program related to food waste reduction.*

**Keywords:** Policy, Food waste management, household

### **Abstrak**

Permasalahan pengelolaan sampah di Kota Padang, khususnya peningkatan timbunan sampah rumah tangga dengan komposisi terbesar berupa sampah sisa makanan, merupakan fokus utama dalam penelitian ini. Tujuan penelitian adalah untuk menyelidiki kebijakan dan strategi yang diterapkan oleh pemerintah Kota Padang dalam mengelola sampah sisa makanan di tingkat rumah tangga. Metode penelitian yang digunakan adalah kualitatif dengan pengumpulan data melalui wawancara, observasi, dan dokumentasi secara langsung. Hasil penelitian mengindikasikan bahwa pengelolaan sampah sisa makanan rumah tangga masih terjalin dalam kerangka pengelolaan sampah perkotaan yang lebih luas. Ketidakadaan tata kelola khusus untuk sampah sisa makanan di tingkat rumah tangga menyebabkan jumlah sampah sisa makanan yang dibuang langsung ke Tempat Pembuangan Akhir (TPA) meningkat secara signifikan. Penelitian ini menyimpulkan bahwa 1) pengelolaan sampah sisa makanan

rumah tangga masih bercampur dengan pengelolaan sampah perkotaan; 2) Secara khusus pemerintah kota Padang belum melaksanakan program pengelolaan sampah sisa makanan.; 3) Belum adanya tata kelola sampah sisa makanan ditingkat rumah tangga ini mengakibatkan tingginya volume sampah sisa makanan yang dibuang langsung ke TPA; 4) Secara khusus belum ada program terkait pengurangan sampah sisa makanan.

**Kata kunci:** Kebijakan, Pengelolaan sampah sisa makanan, rumah tangga

## **Introduction**

Waste, an inescapable byproduct of our daily lives, is mounting at an alarming rate. The waste generated through our routine activities is continuously on the rise, and this surge is intricately connected to the population explosion (Bagherzadeh et al., 2015; Clair, 2019). As each day passes, we churn out waste in various forms, stemming from our consumption patterns and the products we use. The cumulative result of these activities paints a grim picture, primarily if waste continues to pile up in Final Disposal Sites (TPAs) without proper management. The consequences of mismanaged waste are far-reaching, manifesting in environmental issues that impact us on multiple fronts (Parizeau, 2015).

The very sites designated for waste disposal, if not meticulously managed, can give birth to unwelcome odors that infiltrate our daily lives. These unpleasant smells not only disrupt our senses but also contribute to air pollution, resulting in deteriorated air quality that has a direct effect on public health (Barker, 2018; Muresan, 2022). Furthermore, the improper handling of waste can sculpt landscapes that are nothing short of an eyesore. These unsightly vistas mar the natural beauty of regions, affecting the aesthetics of communities and, ultimately, the quality of life (Cicatiello et al., 2016).

However, the concerns stretch beyond these surface-level issues. Mismanaged waste in TPAs can have much graver consequences, including the triggering of flooding incidents (Baskoro, P. A., et al, 2021). When waste clogs drainage systems and obstructs the natural flow of water, it amplifies the risks of flooding during heavy rainfall. In such circumstances, the environment and human settlements suffer, underscoring the need for a comprehensive approach to waste management (Diaz-Ruiz, 2018; Gaiani et al., 2018).

Every day, humans engage in various activities that generate waste. These activities continue to increase over time, resulting in a growing waste accumulation. If this waste is continuously piled up in the Final Disposal Site (TPA) without proper management, various environmental issues will arise, including unpleasant odors, unsightly landscapes, and even flooding (Waqas et al., 2018). Each year, the amount of waste accumulation continues to grow, correlating with the increase in the population (Savelli, 2020; Scherhauser, 2018)

The issue of waste is not limited to the national level but also extends to the provincial and municipal levels, such as the case of Padang city. Padang city generates a daily waste pile of 643.76 tons, with the following composition: food waste 62.80%; leaves/wood 6.84%; paper 5.70%; plastic 12.40%; metal 0.19%; textiles 3.30%; rubber 1.50%; glass 2.40%; and other

types of waste 4.87%. The largest portion of this waste, primarily sourced from household activities, consists of food waste.

Households are one of the significant sources of food waste (Aktas et al., 2018). The results of surveys in developed countries often mention five primary causes of food waste at the household level: (1) poor purchase planning, leading to buying more than needed – impulsive or premature food purchases; (2) discarding food due to confusion about "best before" and "use by" dates; (3) inadequate storage or stock management at home; (4) preparing excessive portions that go uneaten; (5) poor food preparation techniques often result in less food being consumed or a loss of food quality and wastage due to cooking methods, or a lack of knowledge on how to use food leftovers more efficiently than discarding them (Janssens, 2019).

According to (Spang et al., 2019), there are four key drivers of household food waste: (a) household food management (such as provisioning, storage, and cooking), (b) personal factors (including demographics, knowledge, skills, attitudes, and lifestyle), (c) material factors (e.g., food attributes and packaging), and (d) social factors (e.g., technology, retail availability, regulations, and culture). (Canali, 2017) emphasizes that some of the more significant causes of waste are intrinsic food characteristics, social and economic factors, resistant individual behaviors, prioritization influenced by private and public stakeholders, diversification factors such as mismanagement and inefficient legislation, lack of awareness or information, and suboptimal use of available technology. Based on the explanations above, the objective of this research is to assess the extent of the policies of the Padang City government in managing food waste.

## **Research Method**

The research method to be used in this study is qualitative descriptive, aiming to provide an overview of various aspects that are the subject of investigation by exploring, examining, and revealing facts and issues. These findings are then presented through interpretation and analysis using a qualitative approach. Meanwhile, the qualitative approach is theory-oriented, where theory is constrained as systematic statements related to a set of propositions derived from tested data. The authors chose the qualitative descriptive research method because they intend to describe how the policies of the Padang City government regarding the management of household food waste are implemented (Sugiyono, 2020).

The subject of this research is the Head of the Environmental Department of Padang City. Meanwhile, the objects under investigation encompass secondary data and government policy documents related to the management of household food waste in Padang City. Interview guidelines serve as the primary instrument in this research. The applied method of analysis is a qualitative descriptive approach, where the occurring phenomena are narrated in detail and analyzed based on data collected from the field. After the data has been processed, the results are presented in the form of narratives, tables, and diagrams.

## Results and Discussion

Based on data from the Environmental Department (DLH) of Padang City, the total waste generated by Padang City in 2022 was 643.76 tons per day, with the following composition: food waste 62.80%; leaves/wood 6.84%; paper 5.70%; plastic 12.40%; metal 0.19%; textiles 3.30%; rubber 1.50%; glass 2.40%; and other types of waste 4.87%.

### a. Existing Condition of Technical Aspects of Waste Management

Waste in Padang City originates from households/settlements, offices, markets, business centers, public facilities, areas, and others. The volume of waste based on its source can be seen in the table below (Table 1).

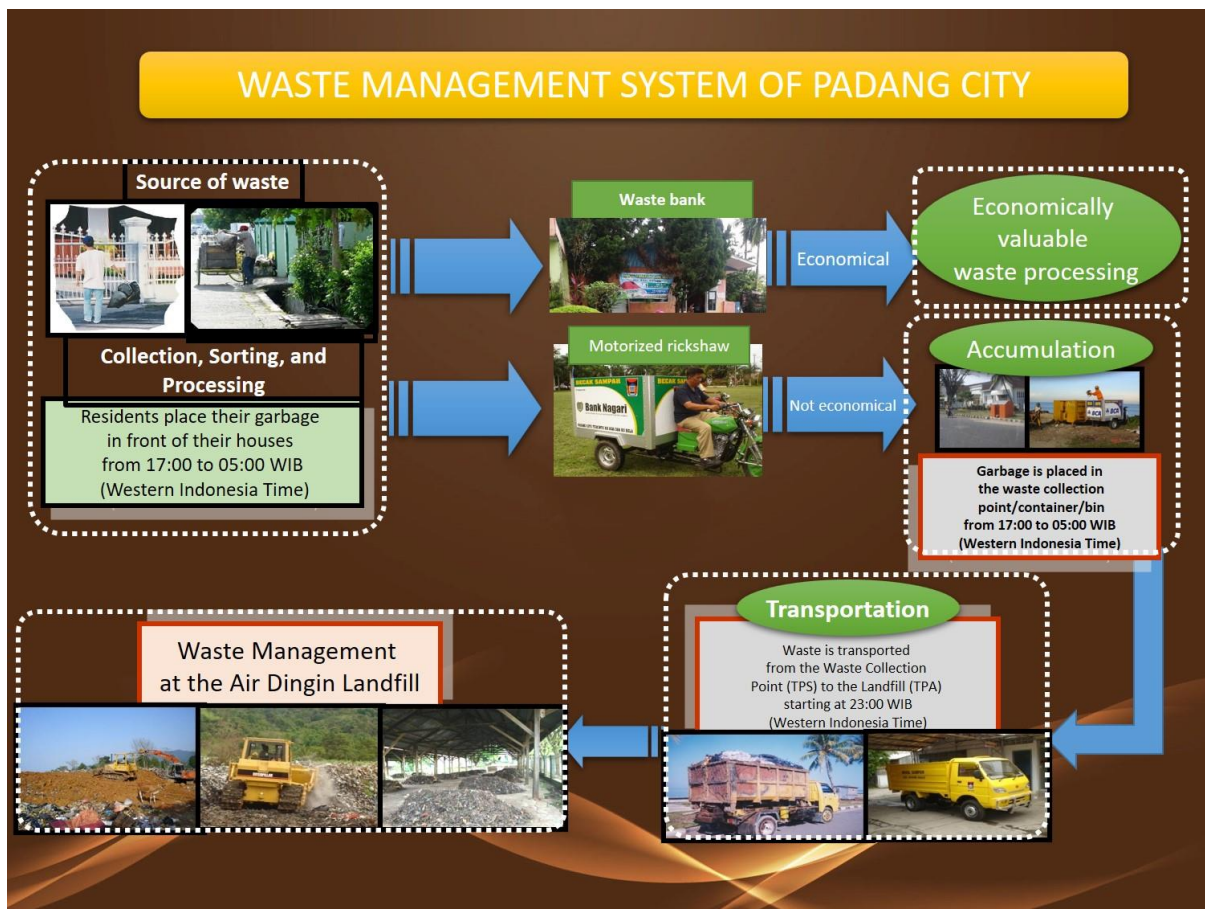
**Tabel 1. Volume of Waste by Source**

NO	Item	Unit	Years					
			2017	2018	2019	2020	2021	2022
1	Household	Ton	222,65	457,00	450,00	463,00	462,00	465,15
2	Office	Ton	22,26	16,26	14,94	14,94	14,00	14,10
3	Market	Ton	89,00	52,00	90,00	88,00	88,00	88,60
4	Commerce	Ton	45,50	45,50	21,24	21,24	20,00	20,13
5	Public Facilities	Ton	22,20	22,20	47,07	45,07	40,41	40,68
6	Area	Ton	22,00	16,80	8,00	8,00	7,00	7,05
7	Other	Ton	20,00	14,00	9,00	9,00	8,00	8,05

*Source: DLH Padang City, 2023*

The waste management system in Padang City generally adheres to the traditional paradigm of collection, transportation, and disposal. The waste management process commences with waste generation at the source, with some residents engaging in sorting and initial processing. Residents place their waste in front of their homes in containers provided, typically from 5:00 PM to 5:00 AM. Waste items with economic value are transferred to waste banks for processing or sale, while those without economic value are collected by motorized pedicabs and transported to waste collection points (TPS/containers/bins) from 5:00 PM to 5:00 AM. Subsequently, waste is transported from these collection points to the landfill (TPA) beginning at 3:00 AM using dump trucks and armroll trucks. The final stage of waste management involves handling at the Aie Dingin Final Processing Site.

**Figure 1. Waste Management System of Padang City**



**b. Existing Condition of Non-Technical Aspects of Waste Management in Padang City**

**1) Institutional Aspect**

The operational technical activities related to waste management in Padang City are carried out by the Environmental Department (DLH). This aligns with the Regulation of the Mayor of Padang Number 76 of 2016, regarding the Position, Organizational Structure, Duties, Functions, and Working Procedures of the Environmental Department. The Environmental Department is responsible for environmental matters, particularly in the planning, implementation, supervision, sweeping, collection, and transportation of waste management. Additionally, the DLH is accountable for the Aie Dingin Final Processing Site (TPA). (DLH, 2021)

**2) Regulatory Aspect**

- a. Law No. 18 of 2008 on Waste Management
- b. Regional Regulation No. 21 of 2012 on Waste Management
- c. Regional Regulation No. 8 of 2015 on Environmental Protection and Management
- d. Regional Regulation No. 3 of 2019 amending Regional Regulation No. 4 of 2012 on the Spatial Planning Plan for Padang City 2010-2030
- e. Mayor Regulation No. 24 of 2012 on the Clean and Healthy Padang Movement
- f. Mayor Regulation No. 36 of 2018 on the Control of Plastic Bag Use
- g. Mayor Regulation No. 44 of 2018 on the Policies and Strategies of Padang City in the Management of Household Waste and Similar Household Waste.

### 3) Financial Aspect

In accordance with Padang City Regional Regulation No. 11 of 2011 on Public Service Fees, fees for waste management/cleanliness services are collected for services provided by the Local Government. The subjects of the Waste Management/Cleanliness Service Fees are individuals or entities who receive waste management/cleanliness services from the Local Government. The principles and objectives in determining the structure and rates of the fees are based on the cost of providing waste management/cleanliness services, taking into account the community's ability, aspects of fairness, and the effectiveness of service control.

### 4) Community Participation

Under Padang City Regional Regulation No. 21 of 2012 on Waste Management, community participation includes: a. Maintaining environmental cleanliness; b. Active involvement in waste reduction, collection, sorting, transportation, and processing activities; c. Providing suggestions, considerations, and/or advice to the Local Government regarding waste management activities; d. Offering suggestions and opinions in the formulation of waste management policies and strategies; e. Enhancing community participation through socialization, mobilization, community work activities, and the provision of incentives. The community can also submit complaints regarding waste management to the relevant authorities, either verbally or in writing. (Regional Regulation No. 21 of 2012)

#### c. Management of Food Waste in Padang City

Regarding the data on the management of food waste in Padang City, the researcher conducted an interview with the Head of the Environmental Department of Padang City (Ir. H. Mairizon, M.Si) on May 29, 2023, at the Environmental Department's office in Padang City.

**Figure 2. Documentation of the Interview with the Head of the Environmental Department of Padang City**



*Source: Researcher, 2023*

In the interview, the researcher asked 20 questions related to the management of food waste in Padang City. The first question inquired about how the Padang City government is currently managing food waste. The Head of the Environmental Department responded that:

*"The management of food waste is currently not optimal because it is still integrated with urban waste management. There is no separation and sorting between city waste and food waste." (Mairizon, interview, May 29, 2023)*

The second question inquired about whether there is a model for food waste collection at the household level in Padang City. The Head of the Environmental Department stated that:

*"At present, there is no specific government-led management of food waste in Padang City, but among the community, there is now some management of food waste through maggot farming and maggot houses." (Mairizon, interview, May 29, 2023)*

The third question asked if there are policies in place to reduce food waste. The response was:

*"The Padang City government currently has a regional policy and strategy (JASTRADA) for household waste management and similar household waste, which is stipulated in Mayor Regulation No. 44 of 2018, which regulates waste reduction in the city." (Mairizon, interview, May 29, 2023)*

The fourth question inquired whether the Padang City government implements a system for separating food waste at the household level and how community participation is managed. The response was:

*"In the implementation of waste management in Padang City, the authority of the Padang City government, specifically the Environmental Department of Padang City, handles waste from temporary waste placement to transport to the final disposal site (TPA). Meanwhile, the management of waste from the source (households) to TPA is the responsibility of the Waste Management Institution (LPS) managed by the community under the guidance of the sub-district. Currently, waste separation at the household level is not optimal, as evidenced by mixed waste being transported to the TPA." (Mairizon, interview, May 29, 2023)*

The fifth question asked if there are facilities for processing food waste in Padang City and what type of technology is used. The response was:

*"Specifically, the Padang City government does not have facilities for processing food waste. The Padang City government only has facilities for processing urban waste located at the Air Dingin Landfill. At the Air Dingin Landfill, organic waste, especially vegetable waste from markets, undergoes final processing through composting." (Mairizon, interview, May 29, 2023)*

The sixth question inquired about how the Padang City government addresses the issue of collecting food waste in densely populated residential areas. The response was:

*"In terms of household waste collection in general and food waste, in particular, at the household level, it falls under the responsibility of the Waste Management Institution*



*(LPS), which is managed by the community and supervised by the sub-district." (Mairizon, interview, May 29, 2023)*

The seventh question asked about any specific programs or initiatives launched by the Padang City government to reduce the amount of food waste. The response was:

*"Specifically, there is no program related to reducing food waste. However, the Padang City government, through the Environmental Department, supports the formation of communities in the community, specifically maggot cultivation communities, as one of the solutions to reduce food waste from households." (Mairizon, interview, May 29, 2023)*

In the eighth question, the researcher inquired about how the Padang City government measures and monitors the impact of food waste management programs that have been implemented. The response was:

*"Specifically, there is no program related to reducing food waste. However, the Padang City government, through the Environmental Department, measures and monitors the city's waste management program through the evaluation of regional policies and strategies (JASTRADA) related to household waste and similar waste management." (Mairizon, interview, May 29, 2023)*

In the ninth question, the researcher asked about how the Padang City government involves the community in food waste management. The response was:

*"The involvement and awareness of the community in waste management are not optimal. Particularly in waste separation at the household level, it has not been optimally implemented. However, some people are already showing concern for their environment, as seen in their participation as clients of waste banks and Waste Management Institutions (LPS), either directly or indirectly. There are also initiatives such as maggot farming to address food waste." (Mairizon, interview, May 29, 2023)*

In the tenth question, the researcher inquired about efforts to educate the public about the importance of good food waste management. The response was:

*"Efforts made by the Padang City government, specifically the Environmental Department, regarding the importance of good food waste management are not yet in place, but the city government provides waste management education through public service advertisements, billboards, and utilizing available social media." (Mairizon, interview, May 29, 2023)*

In the eleventh question, the researcher asked whether the Padang City government collaborates with local communities in food waste management programs. The response was:

*"Specifically, the Padang City government has not yet implemented a food waste management program. However, local communities are involved in waste bank and Waste Management Institution (LPS) management." (Mairizon, interview, May 29, 2023)*



In the twelfth question, the researcher inquired about whether there are subsidies or incentives provided to households or businesses actively participating in food waste reduction and management. The response was:

*"Specifically, the Padang City government has not yet implemented a food waste management program. However, there are subsidies and incentives for residents in waste management, including the distribution of motorized pedicabs for waste management at the neighborhood level." (Mairizon, interview, May 29, 2023)*

In the thirteenth question, the researcher asked whether the Padang City government collaborates with the private sector in food waste management. The response was:

*"Specifically, the Padang City government has not yet cooperated with companies or businesses related to food waste management. However, there is a cooperative program for urban waste management with businesses such as PT. Semen Padang, PT. Pegadaian, Pelindo Bank Nagari, BRI, BNI, which includes the procurement of waste trap boats, park construction, and waste bank support." (Mairizon, interview, May 29, 2023)*

In the fourteenth question, the researcher asked whether there are incentives or awards given to individuals, communities, or businesses that succeed in food waste management. The response was:

*"Specifically, the Padang City government has not yet awarded individuals, communities, or businesses that have been successful in food waste management. However, awards are given on occasions such as Environment Day, Padang City Anniversary, and National Waste Awareness Day." (Mairizon, interview, May 29, 2023)*

In the fifteenth question, the researcher asked whether the Padang City government has set targets for reducing food waste. The response was:

*"Regarding food waste reduction targets, it is already included in the regional policies and strategies (JASTRADA) related to household waste and similar waste management, and it is evaluated annually." (Mairizon, interview, May 29, 2023)*

In the sixteenth question, the researcher inquired about whether the Padang City government has conducted campaigns or incentive programs to encourage sustainable lifestyles in food waste management, such as using applications or online platforms. The response was:

*"Currently, there are no specific programs related to promoting sustainable lifestyles in food waste management." (Mairizon, interview, May 29, 2023)*

In the seventeenth question, the researcher asked about how the Padang City government addresses challenges or obstacles in food waste management. The response was:

*"The Padang City government addresses challenges or obstacles in food waste management as part of urban waste management, as reflected in regional policies and strategies (JASTRADA) related to household waste and similar waste management." (Mairizon, interview, May 29, 2023)*

In the eighteenth question, the researcher inquired about the long-term plans for food waste management by the city government. The response was:

*"The Padang City government has plans for waste management through the construction of the integrated waste processing facility (TPST) for refuse-derived fuel (RDF) in Padang City and collaboration with PT. Semen Padang as an offtaker or buyer of waste raw materials produced from RDF processing." (Mairizon, interview, May 29, 2023)*

In the nineteenth question, the researcher asked whether the city government encourages the adoption of advanced technology or digital solutions in food waste management, such as the use of applications or online platforms. The response was:

*"The Padang City government continually encourages residents, communities, and businesses to collaborate in waste management. An example of technology adoption in waste management is the 'nabuang sarok' application managed by PT Semen Padang. Additionally, Pegadaian has launched the 'Pegadaian Peduli' application." (Mairizon, interview, May 29, 2023)*

## **Conclusion**

The policy of the Padang City government in household food waste management can be summarized as follows: 1) Household food waste management is still integrated with urban waste management. 2) The Padang City government has not yet implemented a food waste management program. 3) The absence of a governance structure for household food waste has resulted in a high volume of food waste being disposed of directly in the landfill. 4) Specifically, there is no program related to food waste reduction. However, the Padang City government, through the Environmental Department, supports the formation of communities, particularly maggot farming communities, as one solution to reduce household food waste. This research concludes that there is a need for proper governance to manage food waste at the household level, leading to a reduction in household food waste.

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