

# THE POLICIES OF JAMBI CITY GOVERNMENT IN WASTE MANAGEMENT AMID COVID-19 PANDEMIC

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## ABSTRACT

*The innovation of Jambi City government policy programs in waste management can be said to be successful. This can be seen from the acquisition of various awards at either national or international levels. Jambi City has even got the opportunity to get assistance from German government in the form of sanitary landfill technology with three other cities in Indonesia. However, amid this success, Covid-19 pandemic has been increasingly troubling and certainly has a direct impact on the sustainability of Jambi City government's policy programs. The research uses the qualitative research approach. Data are collected using in-depth interviews, observations, and literature study techniques. The results of the research reveal that the existence of Covid-19 pandemic has positive and negative impacts on the implementation of policy programs in waste management in Jambi City as well as other obstacles such as the readiness of society in undergoing the various policy program innovations by Jambi City government. A special approach is needed so that the society can accept and realize the importance of keeping their surrounding environment clean and healthy.*

**Keywords:** *local government policy programs, waste management, COVID-19 pandemic*

## 1. INTRODUCTION

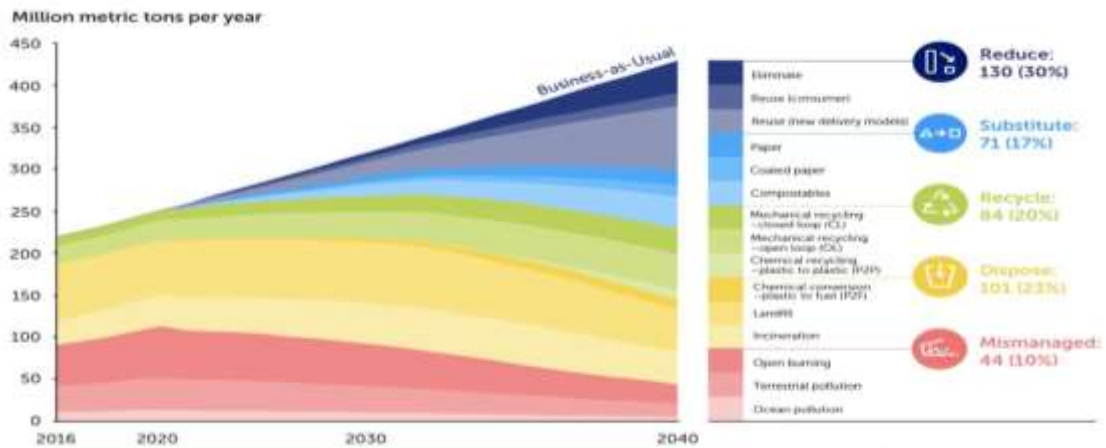
Waste is a crucial issue and must be handled immediately by the related government. There are so many adverse effects, caused by waste if it is not handled properly, such as floods, polluted environment of animals, plants, and humans, as well as various other environmental problems. Generally, waste is produced by 60-70% organic waste and 30-40% non-organic waste, while non-organic waste with the second-largest composition of waste at 14% is plastic waste. Most plastic waste is the

type of plastic bags or the type of plastic bags in addition to plastic packaging (Setyawati & Purnaweni, 2014).

Currently, the use of plastic has caused a lot of problems. It also has a huge impact on the environment. Plastic waste, originating from industrial or domestic activities, has increased in line with the increasing needs of home industries. As we know, plastic—starting to be used about 50 years ago—has now become an item that is difficult to separate from human life. It is estimated

that around 500 million to one billion plastic bags are used by the world's population in one year. This means that there are one million plastic bags per minute. It takes 12 million barrels of oil per year and fourteen million trees to be felled in order to produce that plastic. Overuse of plastics has resulted in a very large amount of plastic waste. Plastic is made from biological compounds. This makes plastic difficult to degrade. It is

health. So the use of plastic is risky, especially in today's modern era. In general, waste that comes from plastic bags does not reach landfills and only a small amount can be recycled, so that plastic bag waste is found in waterways, rivers, and finally reaches the sea surface. This causes abundant environmental problems because plastic bags need a very long time to decompose. The accumulation of plastic waste will



estimated that it needs 100 to 500 years for plastic to be decomposed properly (umumsetda.bulelengkab.go.id, 2021).

The use of exceedingly large plastics will certainly adversely affect

continue to increase from year to year, as shown in Figure 1.

Source: <https://phys.org.2021>

**Figure 1: The accumulation of plastic waste up to 2040**

Figure 1 shows that between 2016 and 2040, more than 1.3 billion tons of plastic will be dumped on land and sea. If direct and concerted efforts are made, 710 million tons of plastic waste will be dumped into the environment: 460 million tons on land, 250 million tons are in the waterways. According to reports, in addition to the eleven million tons that eventually flow into the ocean, about 30 million tons are dumped on land every year, and about 50 million tons are burned in open spaces. It is estimated that the degree of pollution is increasing year by year. By 2040, 133 million tons of waste will be incinerated, 77 million tons

will be dumped onshore, and 29 million tons will eventually flow into the ocean. This situation will happen even if governments keep their promises to reduce plastic pollution.

Therefore, governments around the world must take immediate actions to reduce plastic waste as quickly and effectively as possible. In 2040, coordinated global action is needed to prevent plastic piles from exceeding the estimated 710 million tons. Some things that can be done to reduce plastic consumption, increase plastic recycling rates, increase waste collection and recycling, and expand recycling systems.

Because plastic reduction strategies can be roughly divided into upstream actions, demand reductions, downstream actions, collection, and recycling as fast as possible (CNN Indonesia Friday, July 31). In Indonesia, plastic waste cans also one of the most annoying problems that the government must solve immediately. Even, Indonesia continues to rank second after China in terms of disposal of plastic waste in the world's oceans (see Fig. 2).

Figure 2 shows us that Indonesia is in second position after China in dumping plastic waste into the world's oceans. According to a study held by University of Georgia, it is estimated that 3.22 million tons of plastic waste are dumped in Indonesia every year, and other 8.82 million tons of Chinese plastic

waste are dumped to the ocean. The plastic waste crisis is not limited to the ocean, but also affects rivers in Indonesia. Data taken from Nature Communications shows that four rivers in Indonesia: Brantas, Solo, Serayu, and Progo are among the twenty most polluted rivers in the world. In Indonesia, plastic can be found everywhere. In addition to plastic bags, you can also find necessities like plastic tables and chairs. This may be due to the low production cost of plastic products in China. The ubiquity of plastic bags, coupled with a lack of awareness of how plastic waste damages the environment, which is one of the reasons Indonesia faces this difficulty.



*Figure 2: Indonesia's Plastic Waste Problem*

Research shows that the use and disposal of plastics can harm the environment. In Indonesia, such harms are getting higher as rivers and oceans are blocked by plastic debris, and this effect is becoming more and more obvious. A large amount of plastic waste will also have an impact on marine life because animals often become entangled in plastic waste and die. At the same time, plastic waste fills the body of rivers, causing local people lose food and

water. Blocked rivers also increase the likelihood of flooding, which will harm their surrounding communities. Most plastics are non-recyclable and non-biodegradable, meaning they usually end up in landfills. These landfills can be harmful to the environment because plastic waste also releases harmful chemicals into the atmosphere. Initially, landfills pollute groundwater as chemicals seep into the soil and eventually run into rivers and lakes.

Landfills also emit methane gas which is known to contribute to air pollution (Indonesia's plastic waste problem the ASEAN Post, Friday, July 6, 2018).

As a developing and growing city, Jambi has also such annoying problems related to waste management. As stated by the head of Jambi City Environmental Service, Ardi, "Jambi city produces 650 tons of waste every day, which plastic waste accounts for 30% to 40%. The amount of waste in a month reaches 19,500 tons. Most of the waste comes from traditional markets and shopping centres." The amount of waste can be determined by the intensity of the waste transport performed by the cleaning staff of Jambi City Environmental Service Centre every day. The dominant plastic waste in Jambi City is waste from plastic shopping bags. Therefore, it is highly necessary to adopt appropriate policies to manage waste in Jambi City.

Such various problems caused by the existence of plastic waste in Jambi City have become more and more disturbing. Indeed, Jambi City government has done various strategies to solve the problems. Jambi municipality has made strict efforts to implement several regulations that can suppress the use of plastic shopping bags that are well received by its public. Several series of regulations related to plastic waste management in Jambi City, such as Jambi City Regulation No. 4 of 2020 concerning Environmental Protection and Management, Jambi City Regulation No. 5 of 2020 concerning Waste Management, Jambi Mayor Regulation No. 54 of 2018 concerning Jambi City Policies and Strategies on Management of Household Waste and Types of Household Waste and two special regulations on plastic waste: Jambi Mayor Regulation No. 61 of 2018 concerning Restrictions on the Use of Plastic Shopping Bags, Jambi Mayor

Regulation No. 84 of 2018 concerning Procedures for Implementing Sanctions, and Jambi City Regulation No. 8 of 2013 concerning Waste Management.

Furthermore, the head of Jambi City Environmental Service states that in order to reduce waste, Jambi City Environmental Service implements the Mayoral Regulation No. 61 of 2018 concerning Restrictions on the Use of Shopping Plastic Bags in the City. One of the steps taken to reduce waste is the implementation of the regulation that has been agreed by business people who try not to use plastic bags anymore. Since the beginning of 2019, Jambi Municipality has socialized the Jambi Mayor Regulation and invited all modern business actors. Jambi City government has reached an agreement with these business actors for not using plastic shopping bags anymore as shopping bags. However, in terms of the implementations in the field, there are still many business actors who do not implement the policies issued by Jambi City government. Moreover, many people complain about changing the new habits by not using plastic shopping bags, especially in traditional markets.

Currently, Covid-19 pandemic has worsened the waste management problems of Jambi City. During Covid-19 pandemic, coloured by social restrictions and some other regulations on health and mobilizations, public are required to maintain a distance from one another, causing the presence of waste to increase. This is due to the increasing number of people who make online purchases, which are generally in the packaging of their ordered goods using plastic, such as the use of wrapping packaging, bubble wrap, and plastic bags when packaging the products purchased. Likewise with medical waste, such as disposable masks and used bottles of hand sanitizer, which have now become a society need in the current pandemic era.

Therefore, based on the problems presented above, it becomes an emphasis on the need for this research to be carried

out. This research focuses on Jambi City government policies in waste management amid Covid-19 pandemic.

## 2. LITERATURE REVIEW

### 2.1 Waste Management

The word 'waste' means unwanted materials or substances that are left after we have used something

(<https://www.ldoceonline.com/dictionary/waste>). It also means unwanted or unusable material, substances, or by-products

(<https://www.lexico.com/definition/waste>). According to the same source, the synonyms of the words are litter, debris, dross, junk, detritus, scrap and still many other. Meanwhile, 'management' means the control and organization of something

(<https://dictionary.cambridge.org/dictionary/english/management>).

Another definition (<https://www.merriam-webster.com/dictionary/management>) mentions that management is the act or art of managing or the conducting or supervising of something, such as a business. Management can also mean administration, care, charge, conduct, control, direction, governance, guidance, handling and supervision. Management also means the coordination and administration of tasks to achieve a goal (<https://www.indeed.com/career-advice/career-development/what-is-management>).

Waste management or waste disposal ([www.unstats.un.org](http://www.unstats.un.org). 2017) includes the processes and actions required to manage waste from its inception to its final disposal. Such processes and actions include the

collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process and waste-related laws, technologies, economic mechanisms.

According to <https://www.conserve-energy-future.com>, in the simplest terms, waste management can be defined as the collection, transportation, and disposal of garbage, sewage, and other waste products. The processes of waste management involve treating solid and liquid waste. During the treatment, they also offer a variety of solutions for recycling items that cannot be categorised as trash.

Waste itself can be solid, liquid, or gaseous and each type has different methods of disposal and management. Waste management deals with all types of waste, including industrial, biological, household, municipal, organic, biomedical, radioactive wastes. In some cases, waste can pose a threat to human health (Editorial Board, 2014). Health issues are associated throughout the entire process of waste management. Health issues can also arise indirectly (through the consumption of water, soil and food) or directly (through the handling of solid waste). Waste is produced by human activity, for example, the extraction and processing of raw materials (Giusti, 2009). Waste management is intended to reduce adverse effects of waste on human health, the environment, planetary resources and aesthetics ([www.unstats.un.org](http://www.unstats.un.org). 2017).

Waste management practices are not always the same among places, regions or even countries (developed and developing countries); regions (urban and rural areas), and residential and industrial sectors. They can all take different approaches (Davidson, 2017). A proper management of waste is important for building sustainable and liveable cities, but it remains a challenge for many developing countries and cities. A report found that an effective waste management is relatively expensive, usually comprising 20%–50% of municipal budgets. Operating this essential municipal service requires integrated systems that are efficient, sustainable, and socially supported (World Bank, 2020). A large portion of waste management practices deal with municipal solid waste (MSW) which is the bulk of the waste that is created by household, industrial, and commercial activity (2003). Measures of waste management include measures for integrated techno-economic mechanisms (Gollakota, 2021) of a circular economy, effective disposal facilities, export and import control (Elegba, 2021) and an optimal sustainable design of products that are produced.

## **2.2 Previous Research**

A research on policies in managing waste has been carried out by Aysiah (2019) in Langsa City. She studies the city government policy on waste management in fulfilling the principles of good environmental governance. The results of the research reveal that government policies in waste management should refer to three legal systems as the combination of three components: structure,

substance, and culture. One of legal systems is Langsa City Regulation in Qanun No. 3 of 2014 concerning Waste Management. Another research (Mulasari et al., 2014) highlights government policies in domestic waste management in Yogyakarta. The research reveals that there are similarities in five regencies or cities, which have not been stated in standard procedures but have fulfilled their responsibilities in accountability and transparency of public servants. Furthermore, the results of a study on a government policy in waste management, conducted by Kurniawan and Santoso (2021), showing that there are no local regulations governing waste management in Sepatan, Tangerang Regency and there is no selection process carried out by the society before being transported by trucks. The process is the same and it is not managed as long as the wastebasket arrives at the final management site to reduce waste transported to TPA (final waste dump) as well as the absence of personnel who specifically handles waste sorting at TPA location by the relevant offices.

The differences between this research and other research on government policies in waste management are in the core discussion of this study. The authors propose the innovations contained in Jambi City government policy setting in waste management and describe the detail of the components that exist in the waste management system, such as how the city government can increase the reduction and reduce waste processing, especially during Covid-19 pandemic. It is, indeed, a great challenge for Jambi City government to manage.

### 3. METHOD

The authors employ the qualitative approach. The qualitative research is an approach used to answer research problems related to data in the form of narratives taken from interviews, observations, multiplication, and documents (Wahidmurni, 2017). The qualitative research focuses on a variety of methods, including interpretive and naturalistic approaches to the subject of study. Qualitative researchers study things in their natural context, seeking to understand or interpret phenomena in terms of the meanings attached to them by humans (writers). The subject of qualitative research is a compilation of various data, case studies, personal experiences, introspection, life journeys, interviews, observations, history, interaction, and visual texts in the field, describing the moments and meanings of problems in life (White, 2011).

In qualitative research, the author is the key instrument (Sugiyono, 2016). Researchers go to the field, interact with informants, try to understand their languages and interpretations of the world around them, and make observations and explorations. That is what we call a qualitative research (Rahmat, 2009). The type of research approach in this study is the descriptive approach that can be understood as a series of procedures used in solving the problem being investigated by describing/painting the research object or research subject. This research is conducted from February to June 2020. In order to obtain data and information, the authors use the following data collection techniques:

- a. **In-depth Interviews**—they are conducted with a framework of questions. But, the presentation is not bound and not structured by the framework that has been prepared. This means that the authors can

deepen specific information that emerges from informants but it does appear in the interview guide. In-depth interviews conducted in this study are unstructured and in-depth interviews, meaning that the in-depth interviews used by the author in this research are to understand the behaviour of the informants. Informants are people who are in the research providing information about the situation and condition of the research background. Informants must have a lot of experience related to the research topic.

The purpose of using informants for the author is to be able to find relevant information from one informant to another. According to Sugianto, research informants are divided into (1) key informants—people who know and have various basic information needed in research; (2) main informants—people who are directly involved in the social interactions studied; and (3) additional informants—people who can provide information even though they are not directly involved in the social interactions being researched (<https://core.ac.uk>).

The authors employ the purposive sampling technique in determining the informants in this research. Purposive sampling means that in determining informants through personal considerations by the author's topic. For this reason, in this case, the authors determine the people who will be used as informants according to the criteria needed in this study. The criteria for people who will be selected as informants are people who have the authority and involvement in making decisions related to Jambi City government policy in waste management amid Covid-19 pandemic as follows:

- (1) Key informant is Firman Ariyanto. He is the head of waste handling section who previously served as the head of the waste reduction section. He is also acts as the main informant.
- (2) Additional informants are several employees of minimarkets, malls, and several residents of Jambi City. They are included for data triangulation. Data triangulation is meant here that there are additional informants as complementary data and to show credibility on previous data so the data obtained are valid.

b. **Observations**—it is a systematic observation and recording on the symptoms that appear on the object of a research. In this study, the authors conduct unstructured in-depth interviews with informants, and at the same time, the authors also observe matters related to the problems in this study. In this study, the authors conduct direct observations at Jambi City Environmental Service Office, several shopping centres located in Jambi City, and several areas in Jambi City. Meanwhile, in terms of documentation used by the authors in this study, namely documents related to the innovation of the Jambi City government policy on waste management amid Covid-19 pandemic, reports, photographs, and voice recordings of each informant that has been determined. Data collection tools in this study, in the form of interview guidelines, are field notes, mobile phones (such as a voice recorder, video, and camera), pens and paper.

In addition, data or information obtained from informants are analysed by the authors using Creswell model analysis technique as well as theories and

scientific opinions that support what is conveyed by the informants. Data analysis in this study is exploratory without ignoring the quantitative data. The research is based on statements compiled in interviews, observations, and existing documentation.

#### 4. RESULTS & DISCUSSIONS

Waste is one of problems of Indonesian government because it is produced every day. It goes without saying, the disposal of waste produced by society requires a good management. Similarly, such waste problems also occur in Jambi City. As the organizer of the city affairs, the local government is obliged to meet every society's need and solve any problems that occur in the society, especially in this case by establishing various kinds of public policy strategies regarding waste management in the city. Jambi City government is required to be able to innovate in various ways in overcoming the waste problems which are certainly very influential in people's lives through various public policies that must be implemented.

According to Nugroho (2008), public policy is something made by the state, especially the government as a strategy to realize the goals of the country concerned. Public policy becomes a strategy to lead the society in the early, transitional period, and towards the society aspires. Furthermore, Anderson (1998) states the implications of public policy as follows:

- a. It has always certain goal-oriented actions.
- b. It has actions or models that include government or official actions.
- c. It has something that government does do or mean.
- d. It has positive attitude, meaning as some forms of government's action regarding a particular problem as well



as negative attitude, meaning as the government's decision not to do something.

- e. It has the meaning that public policy at least in a positive sense is based on or always based on coercive laws and regulations (authoritative).

Based on the previous explanation, it can be concluded that public policy is a rule based on coercive foundations and regulations in solving every problem in society, in this case, the waste management in Jambi City. The head of Jambi City Environmental Service, Ardi explains that the production of waste in Jambi City reaches 650 tons per day, dominated by plastic waste up to 30 to 40 percent. And in a month, the waste reaches 19,500 tons, dominated by waste from traditional markets and shopping centres. The volume of waste is known from the intensity of waste transportation carried out by the cleaning staff of Jambi City Environmental Service every day. Based on the statement above, a special and innovative policy strategy is needed by Jambi City government to manage the waste properly. As we know, leaders play an important role in a policy because they are responsible for the effectiveness of the organization, they become a place of protection, and they are the core of institutional integrity. Leaders are at every stage, in policy formulation, policy implementation, policy evaluation, and policy performance (Nugroho, 2017).

So far, in order to improve the quality of waste management services in Jambi City, the municipality has issued policies on:

- a. improving the quality of access to waste services from 78% to 100%;
- b. establishing a decentralized management system in reducing the operational burden of transportation

to the landfills and achieving the 50% reduction target;

- c. increasing the financing of waste management by strengthening commitments in funding allocation and optimizing the absorption of waste retribution based on operational expenses to the TPA (final waste dump);
- d. strengthening regulations and optimizing institutions of waste processing actors in society (Final report on the preparation of Jambi City solid waste master plan, June 8, 2021).

Furthermore, regarding the implementation of policies, Jambi City government has carried out various efforts by innovating in each waste management study. The city government has also issued some special regulations that become the legal basis for the Jambi City government. They are Jambi City Regional Regulation Number 5 of 2020 concerning Waste Management, Jambi Mayor Regulation Number 54 of 2018 concerning Jambi City Policies and Strategies in the Management of Household Waste and Types of Household Waste, Jambi Mayor Regulation Number 84 of 2018 concerning Procedures for Applying Administrative Sanctions, and Jambi Mayor's Regulation Number 61 of 2018 concerning Restrictions on the use of Plastic Shopping Bags.

The Jambi City Regional Regulation Number 5 of 2020 concerning Waste Management states waste management is a systematic, comprehensive, and sustainable activity that includes waste reduction and handling. The implementation of waste management is the activity of planning, building, operating, and maintaining as well as monitoring and evaluating waste management.

#### 4.1 Waste Reduction

The accumulation of waste in a society is increasing day by day, especially in public places. The existence of waste that is not disposed of in its appropriate place destroys the beauty of the place and becomes a breeding ground for diseases if not managed properly. Government must take actions through policies, especially local governments of the place. As one of big cities in Indonesia, Jambi City government has tried to plan and implement various policies, especially in reducing waste in Jambi city. Jambi municipality has issued the latest policy to reduce plastic waste gradually due to the surge in plastic waste which is very disturbing. Initially, Jambi City government instructs modern shopping centre entrepreneurs to apply paid plastic shopping bags to buyers until finally trying to eradicate the circulation of plastic shopping bags in modern shopping centres through Jambi Mayor Regulation No. 61 of 2018 concerning Restrictions on the Use of Plastic Shopping bags. In this regulation, the government prohibits business actors in the city of Jambi from providing plastic bags and replacing them with other materials even though they are paid. This regulation applies to all business actors but for the beginning the government focuses on modern business actors. The government initially targets modern shopping centre first due to various considerations, such as each entrepreneur having their management so that it is easier to implement these rules among the society compared to traditional shopping centres. The activity was socialized in January 2019 to

modern entrepreneurs such as several malls in Jambi City, various Alfamart and Indomaret branches, boutiques, bakeries, and various other modern business places in Jambi City. At first, the owners of these businesses refused because there were still lots of plastic bags in stock and they were worried about the response of people who were used to using plastic shopping bags and without paying. However, the government assures that this innovation can work well if everyone can work together. Ardi, in an interview, reveals that in early 2020 the results of the socialization of Jambi city government through this regulation are then applied simultaneously by all modern business actors.

In the beginning, many people responded that they were not ready for the regulation, as evidenced by the results of the author's interviews with several people in Jambi City. Some of them admitted that they did not agree with the government's policy innovation at the beginning because it was considered burdensome to the society and profitable for business actors with pockets and paid shopping. However, one year later, the people of Jambi city strongly agreed with the policy because they were starting to feel the benefits considering that shopping bags that can be used repeatedly are not only used once so they can save money and it has also become a habit to carry bags and also environmentally friendly. In addition, Jambi City government is increasingly socializing the Jambi city society through various mass media about the dangers of plastic waste generation and the elimination of

plastic shopping bags so that Jambi City society supports the program.

Moreover, through the regulation of Jambi Mayor Regulation No. 54 of 2018 concerning Jambi City Policies and Strategies in the Management of Household Waste and Similar Household Waste, Jambi City government has targeted waste reduction. The policy strategy for implementing norms, standards, procedures, and criteria (NSPK) in reducing household waste and waste similar to household waste, through several programs as follows:

- a. Formulation and review of standards or criteria for best practicable technology in reducing household waste and similar household waste.
- b. Preparation and review of standard facilities and infrastructure for the reduction of household waste and similar household waste, including:
  - 1) Restriction on the accumulation of household waste and similar household waste.
  - 2) Recycling of household waste and similar household waste.
  - 3) Utilization of household waste and similar household waste.
- c. Preparation and review of standard operating procedures for reducing household waste and similar household waste, including:
  - 1) Restriction on the accumulation of household waste and similar household waste.
  - 2) Recycling of household waste and similar household waste.
- d. Establishment of a monitoring and evaluation system for reducing household waste and similar household waste, including:
  - 1) Restriction on the accumulation of household waste and similar household waste.
  - 2) Recycling of household waste and similar household waste.
  - 3) Utilization of household waste and similar household waste.
- e. Policy strategies for strengthening coordination and cooperation between the central government and local governments, in the form of Joint decision making, or cooperation in:
  - 1) Limitation of generation, recycling, and reuse of household waste and similar household waste.
  - 2) Budget for reducing household waste and similar household waste, which includes Restriction of generation, recycling, and reuse of waste.
- f. Policy strategies to strengthen the commitment of executive and legislative institutions at the centre and regions in providing budgets for reducing household waste and waste similar to household waste, in the form of strengthening executive and legislative communication in waste management at the central and regional levels and implementing communication forums at the central and regional levels area.

- g. Policy strategies to increase leadership, institutional, and human resource capacities to reduce household waste and similar household waste in the form of:
- 1) Advocacy for the reduction of household waste and similar household waste to Jambi City government, Jambi City DPRD (Regional People's Representative Council).
  - 2) Implementation of training of trainers to reduce household waste and waste similar to household waste through recycling activities, and reuse of household waste and waste similar to household waste in big cities.
  - 3) Establishment of a master waste bank in Jambi City.
  - 4) Policy strategy establishment of an information system for the national network development program for waste bank operational data and 3R TPS (temporary waste dump) which is integrated with the Environmental Information System (EIS) in Jambi City.
- h. Policy strategies for strengthening society involvement through Communication, Information, and Communication (IAC), in the form of:
- 1) Increasing household waste and similar household waste through IAC formally and informally.
  - 2) Development of activities for recycling and reusing household waste and similar household waste at household scale and society-based settlement scale.
- 3) Development of activities for recycling and reusing household waste and similar household waste on a household scale and area-based settlement scale.
  - 4) Education includes extracurricular education, running libraries, training for PKK (Program to educate women in all aspects of family well-being at the village level), curriculum, subjects, and educational parks.
- i. Policy strategy for implementing and developing incentive and disincentive systems in reducing household waste and waste similar to household waste:
- 1) Integration of waste banks into the environment.
  - 2) Establishment of an incentive system for producers who carry out their obligations in reducing household waste and waste similar to household waste
  - 3) The application of a disincentive system for producers who do not carry out their obligations in reducing household waste and waste similar to household waste.
  - 4) Implementation of an incentive system for efforts to reduce household waste and waste similar to household waste based on society activities through recycling and reuse of household waste and waste similar to household waste.
  - 5) Implementing a disincentive system for sub-districts that

do not reduce household waste and other types of society-based household waste.

- 6) Implementation of an incentive system for efforts to reduce household waste and waste similar to household waste based on the area through recycling and reuse of household waste and waste similar to household waste (beyond compliance).
- j. Policy strategy to strengthen the commitment of business actors through the implementation of producer obligations in reducing household waste and waste similar to household waste. Development and implementation of policies and producer obligations in waste reduction, including:
  - 1) Development and implementation of a tenth annual roadmap of producer obligations in waste reduction in the manufacturing sector.
  - 2) Development and implementation of the tenth annual roadmap and producer obligations in reducing waste in the retail sector.
  - 3) Development and implementation of a tenth annual roadmap and producer obligations in reducing waste in the food and beverage service industry.
  - 4) Development of a pilot project on producer obligations in waste reduction.

In overcoming the waste problem, Jambi City government does not only focus on reducing waste but also handling it as it is previously stated that Jambi City government strives in each of these rules and policies not only to reduce but also to increase reduction and decrease treatment. Through Jambi Mayor Regulation No. 54 of 2018 concerning Jambi City Policies and Strategies in the Management of Household Waste and Similar Household Waste in the appendix, the Jambi City government has targeted waste management as follows:

- a. Implement norms, standards, procedures, and criteria (NSPC) in handling household waste and similar household waste, in the form of:
  - 1) Preparation of laws and regulations regarding funding and compensation for the management of household waste and similar household waste (tipping fee).
  - 2) Preparation and review of cost standards for handling household waste and similar household waste, including sorting, collecting, transporting, processing, and final processing.
  - 3) Compilation of studies and standards for retribution services for handling household waste and waste similar to household waste, which includes transportation, processing, and final processing.
  - 4) Preparation and review of standards or criteria for the best available technology in the handling of household

## 4.2 Handling and Waste Processing

- waste and similar household waste, which includes: Sorting, collecting, transporting, processing, and final processing.
- 5) Preparation of procedures for handling and testing household waste and similar household waste contaminated with B3 waste in the context of law enforcement.
  - 6) Compilation and review of the standard of facilities and infrastructure for handling household waste and other types of household waste.
  - 7) Preparation and review of standard operating procedures for handling household waste and similar household waste.
  - 8) Compilation and review of competency standards for implementing activities for handling household waste and waste similar to household waste.
  - 9) Establishment of a monitoring and evaluation system for the handling of household waste and similar household waste, including collection, transportation, processing, and final processing, and the preparation of refuse guidelines.
  - 10) Strengthening coordination and cooperation between the central government and local governments.
  - 11) Preparation of joint decisions regarding coordination of waste handling in land provision, scavenger development, waste management budget covering sorting, collection, transportation, processing, and final processing, Waste handling technology includes sorting, collection, transportation, processing, and final processing.
  - 12) Construction and revitalization of TPA (final waste dump).
  - 13) Development of regional TPA (final waste dump) between districts/cities.
  - 14) Development of inter-provincial regional TPA or national strategic interests.
  - 15) Strengthening the commitment of executive and legislative institutions at the central and regional levels in providing a budget for waste management, in the form of strengthening executive and legislative communication in waste management at the central and regional levels as well as implementing waste management communication forums at the central and regional levels.
  - 16) Increasing the capacity of leadership, institutions, and human resources in handling waste, in the form of:
    - Advocacy for waste management includes sorting, collecting, transporting, processing, and final processing to Jambi City government and Jambi city DPRD (Regional People's Representative Council).
    - Implementation of training of trainers on waste handling which includes sorting,

- collecting, transporting, processing, and final processing in the city of Jambi.
- Establishment of an information system: Development of a national network of basic data on waste transportation systems, waste processing, and TPA (final waste dump) operations integrated with SILH in big cities.
- 17) Strengthening society involvement through IEC, namely:
- Improved waste handling including sorting, collecting, transporting, processing, and final processing.
  - Implementation of waste sorting in society.
  - Implementation of waste sorting in the area.
  - Development of a waste sorting model through the establishment of a waste bank unit in the society, TPS (temporary waste dump) 3R area.
  - Increasing the willingness to pay of the society to pay for waste management services.
  - Implementation and development of investment, operational, and maintenance schemes.
- 18) Government cooperation with business entities through:
- Increasing SOEs' capital participation in waste handling including sorting, transportation
- collection, and final processing.
- Implementation of incentive schemes or soft credits that invest in the construction and operation of landfills and intermediate treatment facilities (ITF).
  - Increasing the role of the business world through social and environmental responsibility for waste management.
- 19) Strengthening law enforcement:
- Increasing the capacity of law enforcement officials in handling waste, including civil servant investigators, environmental supervisory officers, civil service police units, police prosecutors, employees at the transportation service in the provinces and districts/cities, starting from transportation, processing, and the end of processing.
  - Supervision of compliance in the implementation of waste handling operations for transportation, processing, and final processing activities.
- 20) Strengthening the involvement of the business world: Integrating the management of waste handling permits in waste handling through partnerships with the central government or local governments. The program is to put waste into a one-

stop integrated licensing agency which includes the activities of selecting transportation collection, processing, and final processing in all districts/cities.

21) Application of environmentally friendly and effective waste management technology, in the form of:

- Implementing dissemination of information on appropriate waste handling technology including sorting, collection, transportation, processing, and final processing.
- Research and development of appropriate waste management technology including sorting, collection, transportation, processing, and final processing. Such as the Construction of waste-based power plants through thermal technology, capture and utilization of methane gas as a source of electrical energy in landfills, and utilization of waste as a substitute fuel for the cement industry or RDF.
- Application of environmentally friendly sorting, collection processing, and final processing technology into renewable energy.

22) Implementation and development of incentive and disincentive systems in waste management, in the form of:

- Establishment of incentives and disincentive mechanisms and systems for waste handling including sorting, collection, transportation, processing, and final processing.
- Establishment and implementation of an incentive system for society-based waste management.
- Establishment and implementation of a disincentive system for sub-districts that do not carry out society-based waste management.
- Establishment and implementation of an incentive system for Zone-based waste management through selection, collection, and transportation activities.
- Establishment and implementation of a disincentive system for area managers who do not perform area-based waste management through sorting, collection, and transportation activities.

Based on the policy strategy through the programs implemented by Jambi City government above, it is clear the focus that distinguishes waste processing from reduction, in the form of restriction, utilization, and recycling, while handling,



focuses on sorting, collecting, transporting, processing and final processing. The results of the author's interview with the head of waste management who previously also served as the head of the waste reduction coincided with Jambi City government's policy innovation stating that by the policy rule, this is not only reducing but increasing reduction and decreasing handling. Thus, the target in 2025 is 100% reduction and 70% treatment. If the handling in the city of Jambi in 2018 and 2019 is already high, it means that it exceeds the national minimum target. The national minimum target is 70%, even we have 74% and 75%.

In terms of waste transportation, every house of Jambi City residents is required to have a trash can container, it can be economical, such as a paint drum or paint bucket. This is in line with the results of the author's interviews with several people of Jambi City who also stated this matter. So that from year to year waste management becomes more effective. In addition, with the existence of several policy strategies for reducing and handling waste in Jambi City, Jambi City government has become one of the cities selected to receive assistance from Germany, namely the Sanitary Landfill. Sanitary Landfill is a waste management system by disposing and piling waste into a sunken location, compacting the waste, then covering it with soil. Previously, the waste management process in Jambi City was only by an open dumping process, which is an open system method where waste is simply dumped in a landfill without any treatment.

Based on the results of the author's interview with one of the officials of Jambi City

Environmental Service, it is revealed that there are several criteria and a fairly long process that causes Jambi City government to be able to get assistance with sanitary landfill technology from Germany since the Mayor of Jambi who previously served, Bambang as the lead of APEKSI (Association of Municipal Governments Concerned for Sanitation) which is highly influential in the assessment of other countries. All commitments made by Bambang are continued well under the current Mayor, Fasha. One example of that commitment is that Jambi City government is required to reduce waste at the source level. And it is in line with the ongoing policy program innovation in Jambi City and has succeeded in reducing waste in Jambi City according to the target.

In Indonesia, there are only four cities that have received the technological assistance from Germany. Jambi City completed the system for the first time and has been operating it since early 2021. The following is a description of sanitary landfill management obtained by the author from interviews with previous informants, namely: the waste is weighed, the waste that has entered here has been separated between organic and inorganic, organic is brought to the facility. Composting: to make compost, inorganic: taken to the sorting facility. The rest of the residue from the two is transported to the landfill to be stockpiled, thereby reducing quite a lot of waste. Landfill in the form of the soil has been given a layer of bio-membrane (a layer that is not impermeable to water) so the leachate does not enter the ground but has been layered because there is a basin underneath

and under the basin, a stuck pipe is put. According to the theory, it will not go into the ground because there is a bio-membrane layer and then spread coral over it. Next, on it is a place to throw trash, which in this case theoretically does not affect the quality of groundwater.

Cooperation between the government and the society is needed ineffective waste management in Jambi City. For that reason, in addition to the several policy programs described above, there are several other programs which are, of course, environmentally sound whose existence can also be said to be successful and greatly affect the environment of Jambi City, especially in overcoming the waste problem in Jambi City, as follows:

a. *Bangkit Berdaya* (Intensively Building Village Based on Self-reliance)—This program is also one of the activities based on cooperation among society which involves the entire society of Jambi City in infrastructure development in their respective areas. Each neighbourhood (RT) receives materials, such as sand, stones, and semen. Then they work together to build infrastructures they need. In addition to saving local government budgets, residents who participate can participate in maintaining it. This program has not only received national awards but it has also received international awards. Jambi mayor, Syarif Fasha has been awarded the IOPD Awards Recognition 2017 Awakening Innovation Program at the IOPD 17th Conference held in Montreal Quebec Canada, June

16 to June 19, 2017. Jambi City is previously selected as the top 30 best cities out of 7000 regencies/cities in the world that have inspiring social innovations, which prioritize society participation and participation in that innovation. Jambi Mayor says that *Bangkit Berdaya* policy program is considered a unique and interesting innovation in the eyes of the international society because its implementation activities involved the participation of all levels of local society in helping the government accelerate development in the area/region, and that is extremely rare in this world. (<https://jambikota.go.id/>)

b. *Kampung Bantar* (Clean, Safe, and Smart)—This program is an innovative program of Jambi City government which aims to make the smallest villages to neighbourhoods (RT) have an insight into a clean, healthy, and safe environment in Jambi City. This program aims to accelerate government and society development in Jambi City, which aims to reduce development inequality between regions, improve the quality of welfare and improve the quality of the society's economy, especially in *Kampung Bantar* location. This program can provide change to the society by mobilizing the values of local wisdom or cooperation between communities to compete to improve the family environment and the surrounding environment to become the best environment among other environments. To stimulate society participation in this program, the Jambi City

government provides rewards to people whose environment is by the concept of *Kampung Bantar* program.

There are three connotations in *Kampung Bantar* program according to Afrianto's narrative in an interview with the author: clean means environment, behaviour, faith, and piety; safe means not only about the absence of criminal acts in *Kampung Bantar* area but also in matters such as people traveling to feel safe, comfortable and peaceful, food sufficiency, and many more; smart means the society is smart in creating economic independence, such as using the land, with anything and can even produce rupiah at least for their own household needs, can grow vegetables, chilies and so on. This program, based on the author's observations, has attracted public interest and participation which is a lot, plus there is a reward of money for residents who win the best management of *Kampung Bantar*.

These two programs are the flagship programs of Jambi City government which have been recognized by Indonesian people and even worldwide, as non-technological innovations that have succeeded in bringing about change in the City of Jambi (an interview with Afrianto). Even, the development of current technology, Jambi City government also utilizes information and communication technology through the innovation of several special applications that are useful in waste management in

Jambi City to make it easier. It is called *Track Solid*.

### 4.3 Impacts of Covid-19 Pandemic

Amid the alertness of Jambi City government to carry out all policy programs in terms of waste management in Jambi City, precisely in March 2020, the Covid-19 pandemic hit Indonesia, which continued to spread to every region in Indonesia. Based on the results of several interviews and direct observations in Jambi City area, there are several positive and negative impacts on the innovation of Jambi City government policies in waste management in Jambi City, especially in the New Normal era as follows:

#### a. Positive impact

Almost all people in Jambi City use social media. They rarely get information from television. Before the Covid-19 outbreak, Jambi City government was able to carry out socialization by meeting face to face with the society through certain events, seminars, or broadcast through Jambi local television and radio. Due to the pandemic, all activities are limited and prioritized through online technology. For this reason, this has a positive impact on the government so that it can socialize and campaign for policy programs so that the people of Jambi City can participate. Participate in waste management in Jambi City through webinars and dissemination through social media so that the reach is wider and of course cheaper and easier. Such as the campaign to using shopping bags instead of plastic is better and faster because on

average everyone is already using the internet.

**b. Negative impact**

The negative impact of Jambi City government's policy program in waste management in Jambi City, specifically in the latest policy program, namely in reducing plastic waste in Jambi City which the author has previously described above that the Jambi City government in its policy rules have not had a study and socialization of the use of shopping bags instead of plastics against online business actors. Meanwhile, during the Covid-19 pandemic, people generally prefer to shop for whatever they need online. This causes more plastic bags and packages, especially at the beginning of the implementation of the new normal. Some types of materials that stand out are plastic, styro-foam, and bubble wrap. In addition, the use of disposable masks is not only dangerous if disposed of carelessly but also becomes waste, as well as used the bottles of hand sanitizer which have now become a necessity for society, which has skyrocketed during the Covid-19 pandemic. Even, from the results of the author's interview with the previous informant, the above temporarily only affects the volume, the weight is not much if the tonnage does not affect. In waste management, it does not add paths, does not add rotations, everything is still normal. However, it is feared the pace of its development in the future. So, it seems that modern business actors have reduced their use, but these new online modern business actors (who do not have a special

business entity) since the Covid-19 pandemic have not been touched by Jambi City government because they are scattered and even invisible, so it is difficult to hold meetings in waste reduction framework. Except for people who have rejected the use of plastic and others so that policy rules become strong because of social support.

**5. CONCLUSIONS AND IMPLICATIONS**

**5.1 Conclusions**

- a. Jambi City government has made every effort to create policy innovations. in handling waste and can be said to be successful because it has been recognized in the national and international.
- b. Covid-19 pandemic has affected positively and negatively the ongoing policy programs related to waste management in Jambi City.

**5.2 Recommendations**

- a. Jambi City government and related agencies must be more aggressive in socializing the policies that apply clearly so that public can understand well the benefits of policy innovations that have been made.
- b. Jambi City government must adjust its ongoing policy programs with the Covid-19 pandemic in order to get maximum results.

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