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Transforming Urban Mobility: Policy Strategies of Surabaya City Toward Environmentally Sustainable Urban Public Transport

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A B S T R A C T

The purpose of this study is to look at government policies in realizing environmentally friendly public transportation, especially public transportation that is integrated with waste management. The research method uses a qualitative method with a case study approach on public transportation in the city of Surabaya. Based on the results of the study, to realize a sustainable city and reduce congestion and waste in the city of Surabaya, the government has made a policy of paying for public transportation using plastic bottle waste. The use of payments with plastic bottles greatly helps the government in breaking down existing waste and encouraging people to use public transportation in the city of Surabaya, especially for the Suroboyo Bus. In addition, to support and strengthen environmentally friendly public transportation, the Surabaya City Government has begun to replace the fleet with electric public transportation. The change in transportation modes from fossil fuels to electricity is also government support in realizing sustainable public transportation in Indonesia. The conclusion of this study is that the government has a policy to reduce waste and congestion problems, one of which is by paying for public transportation using waste. To strengthen this policy, the government also integrates all urban transportation in Surabaya, with the GoBis application. The integration of public transportation management is the seriousness of the Surabaya City Government in overcoming urban problems.

INTRODUCTION

Environmental issues are currently one of the focuses for both central and regional governments. Where this issue is a very crucial issue because of climate change that is occurring in the world. Currently, many countries are facing environmental problems, especially the emission crisis (Singh, 2021). One of the countries facing the environmental crisis is Indonesia, especially in big cities that face many urban problems, both emission gases, congestion and other city problems. According to the 2022 Environmental Performance Index (EPI), Indonesia is ranked 164 out of 180 countries related to environmental problems, especially the emission crisis (Wolf et al., 2022). In addition, data from the Ministry of Environment and Forestry (KLHK) states that Indonesia is experiencing a temperature increase trend of 0.03 degrees Celsius every year (Purwoko, 2023). This temperature increase is the impact of the spikes in greenhouse gases (GHG) which reach 4.3 percent every year (Purwoko, 2023). In addition, the increase in the emission crisis in Indonesia is also caused by land transportation emissions, the majority of which still use petroleum. Based on research by Hendratmoko, land transportation modes based on petroleum emit a lot of CO2s by 74%, while in urban areas transportation activities can contribute 23 percent of greenhouse gases (Hendratmoko & Dewantoro, 2018).

The high greenhouse gas will have a negative impact on public health and can even be fatal to death (Gavurova et al., 2021). Of course, this is not a good thing for people in urban areas. With the high emissions released by transportation and the high greenhouse gases, it can worsen the condition of the environment and the surrounding ecosystem (Aminzadegan et al., 2022). Cities in Indonesia are developing cities which still have quite a lot of classic urban problems. One of them is Surabaya, a developing city with urban problems such as traffic jams, suboptimal public transportation infrastructure, and waste and environmental management. (Badan Pusat Statistik, 2025; IQAir, 2024; Setiawan et al., 2020; Viranda et al., 2024). The city of Surabaya is a city that is included in the high-risk category for death rates, where the percentage of deaths in the city of Surabaya was 3.3 percent in 2015 (Anenberg et al., 2019). The increase in the risk of death in urban areas is due to the high flow of urbanization in urban areas. According to Lv and Liu, increasing urbanization can encourage increased use of transportation and increased ownership of transportation in urban areas (Liu et al., 2019). If we look at it, the number of transportation ownership in the city of Surabaya is still quite high, of course this is also a problem for the government because there is no integrated and environmentally friendly public transportation in the city of Surabaya and its surroundings.

Table 1. Increase in the Number of Vehicles in Surabaya (2018-2020)

Vehicle Type	Number of Motor Vehicles in Surabaya		
	2018	2019	2020
Passenger car	469.276	495.596	503.066
Bus	3.620	3.888	3.965
Truck	142.771	149.670	153.102
Motorcyle	2.342.887	2.517.449	2.599.332
Total	**2.958.554**	**3.166.603**	**3.259.465**

Source: (jatim.bps.go.id, 2021)

Based on the table data above, it shows that the number of vehicles in the city of Surabaya increases every year. The increase

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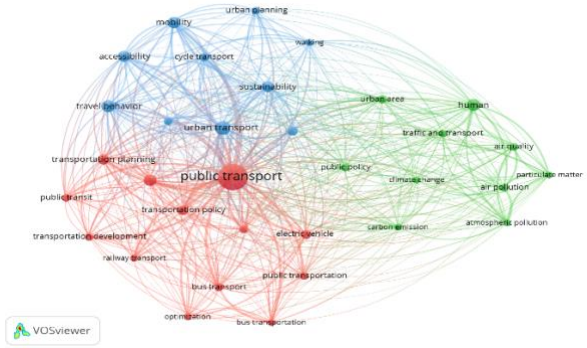
in the number of vehicles in the city of Surabaya is certainly also related to the high number of urbanization and the level of mobility of urban communities. In addition, the increase in the number of vehicles is also due to the lack of public transportation that reaches areas in the city of Surabaya. The high mobility of the community will trigger an increase in the need for flexible and private public transportation (Karim et al., 2023). There are several factors that cause the high need for private transportation compared to public transportation, including the inability of public transportation to accommodate the mobility needs of the community in terms of quality, quantity and comfort (Suryati, 2023). In addition, the high need for public transportation in the city of Surabaya because the ease of vehicle ownership or private transportation is considered a stimulant for the country's economy (Umah, 2022).

The high intensity of community mobility and the lack of vehicles or public transportation are one of the problems for the Surabaya City Government. In addition to the high level of urbanization entering Surabaya and high community mobility, there are other problems that must be overcome, namely related to waste management. Plastic waste in the city of Surabaya is still a classic problem, based on the Head of the ITS Surabaya Sustainable Infrastructure Research Center that waste production in the city of Surabaya reaches 1,800 tons every day, in 2019 plastic waste in the city of Surabaya was 14%, while in 2020 the use of plastic waste increased to 22% (Supingah, 2022). The high use of plastic waste and the increasing need for public transportation in the city of Surabaya, the government is trying to integrate or combine by realizing sustainable or environmentally friendly public transportation. Sustainable transport is a low-carbon solution with a focus on electromobility, micromobility and intermodal transport (Reis et al., 2023).

Sustainable urban mobility policies in Indonesia demonstrate a paradigm shift from a sectoral approach to integrative and poverty-based transport governance. A study by Fisu et al. (2025) emphasized the importance of understanding the dynamics of young generation (Gen-Z) mobility in shaping new social spaces in urban areas, which demands adaptive transport policies based on space and time. Another study by Yulianto and Manar (2025) revealed that the construction of the Jakarta MRT faced coordination challenges between institutions, emphasizing the need for harmonization between central and regional policies. In this context, the vehicle electrification approach also strengthens the direction of carbon emission reduction policies in urban areas, as explained by Meylinda et al. (2025), who showed that electric vehicle policies directly impact reducing emissions in the DKI Jakarta area. In addition, a systematic approach to private motor vehicle emissions, as studied by Gani et al. (2025), provides a strong basis for forming evidence-based policies in organizing clean and efficient urban mobility. These findings emphasize that transport policy strategies must simultaneously consider social, spatial, and ecological integration.

Local context and infrastructure dynamics play a crucial role in realizing a fair and sustainable public transportation system in urban areas in Indonesia. Febrianto et al. (2025), through a case study of pedicab drivers in Surabaya, highlighted how transportation modernization, if not balanced with an inclusive social approach, perpetuates structural inequality. This aligns with the findings of Arifai and Arsyad (2025), who showed the importance of integrating climate resilience strategies in transportation planning to deal with urban expansion and disaster vulnerability. From a fiscal perspective, Handayani and Febriaty (2023) examined the economic potential of parking management in Surabaya as one of the regional autonomous funding strategies that can strengthen public transportation's sustainability without being entirely dependent on the APBD. Furthermore, studies by Holqi (2025) and Kim et al. (2025) expanded the analytical framework by including parking policy governance and electric vehicle production capacity in the mobility chain of the Southeast Asian region. The relationship between institutional, spatial, and ecological aspects shows that the success of urban mobility transformation depends not solely on technology but also on the adaptive capacity of local institutions and the sensitivity of policies to socio-geographic conditions.

Figure 1. Bibliometric Analysis with the keyword Public Transport



Source: Researcher's processing using VosViewer software (2025)

Based on the results of the researcher's analysis of 2,807 scientific articles conducted bibliometric analysis using VosViewer, it was found that previous research based on the network of co-occurrence of high-frequency keywords tends to emphasize aspects of urban transport, transportation planning, electric vehicles, and accessibility. Then, the concept of public transportation is also related to the concept of sustainability and climate change which emphasizes that public transportation must be sustainable and environmentally friendly. Therefore, the state of the art or novelty of this research lies in the management of environmentally friendly public transportation by emphasizing the use of plastic waste as an alternative payment for public transportation, which is still very little discussed by other researchers. And Surabaya is one of the big cities that has a high population growth intensity, and the number of traffic jams and transportation emissions is also very high which has an impact on environmental sustainability conditions.

Departing from the problem of public transportation and waste management in the city of Surabaya which has an impact on long-term environmental sustainability. So, we take the formulation of this research problem 'How is the policy of the Surabaya City Government in realizing environmentally friendly and sustainable public transportation?'.

METHOD

This study uses a qualitative method with a case study approach. The selection of qualitative methods is adjusted to the purpose of the study, namely to analyze in depth the research object based on field data obtained from data sources (Aspers & Corte, 2019). Qualitative research as a method that represents information from participants is then poured into the analysis

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and final results of the study (Bazeley, 2009). In-depth analysis in qualitative research requires researchers to collect data systematically through collecting data systematically through in-depth interviews, focus group discussions, and notes (Smith, 2018). The data collection techniques used in this study included in-depth interviews, group discussion forums, and documentation. The data analysis used the interactive model developed by Miles and Huberman, which consists of data reduction, data visualization, and conclusion drawing (Miles et al., 2018).

Figure 2. Data Analysis Process
Source: Authors (2024)

The image above explains that data reduction is the stage of grouping data according to research variables. The data reduction process was carried out using the Nvivo12 Plus tool to facilitate data clustering through nodes and codes, with the aim of grouping and visualizing research results for easier reader understanding. One of the visualization features used in this study is Word Cloud. The final stage is drawing conclusions as a stage in describing the visual data presented. In addition to using tools, this study also conducted direct interviews with key research informants, such as the Regional Development Planning Agency, City Research and Development, the Surabaya City Transportation Agency, the Surabaya City Environmental Agency, the Suroboyo Bus UPTD and passengers or public transportation users. Researchers conducted interviews and group discussions with the aim of deepening and encouraging open discussions between researchers and informants. In addition, researchers also extracted interview results by analyzing them in depth, reinforced by secondary data. Extracting the results of interviews and group discussions is expected to produce valid research conclusions and can contribute to the development of science.

RESULTS AND DISCUSSION

Public transportation is one of the most important elements in community mobility, especially in urban areas. Currently, many big cities in Indonesia have started planning to realize public transportation, of course with this public transportation will support community mobility in urban areas. Considering that currently the level of congestion in big cities in Indonesia is also increasing, it is appropriate that there are renewals and improvements in the provision of public services in the field of transportation.

If we look at almost all big cities in Indonesia experiencing public transportation problems, especially related to congestion. This problem occurs because almost all governments in urban areas are not ready to provide public services in the transportation sector. There are many reasons related to the provision of public transportation in Indonesia or big cities are not ready, one of which is the ease of having private vehicles, competition with online transportation which is increasingly massive and many examples of the quality of public transportation services that are still poor (Hendrawan, 2025). The poor management of public transportation certainly has a negative impact on the community every day, including congestion, pollution or air pollution, even to health.

When viewed from various cities in Indonesia, one of the cities that has public transportation management is the city of Surabaya. The emergence of public transportation in the city of Surabaya, one of which is environmental pollution through increasingly massive and uncontrolled waste and congestion. Based on a survey from Inrix 2021 Traffic Scorecard, the city of Surabaya is ranked first as the most congested city in Indonesia (Detik.com, 2022). Meanwhile, according to the tomtom traffic index in 2024, the city of Surabaya is ranked 4th as the most congested city in Indonesia (Cipto, 2025). Based on this data, it shows that the city of Surabaya is one of the cities that must be considered, especially in providing public services in the transportation sector. This special attention needs to be given because Surabaya is one of the metropolitan cities in Indonesia as well as an industrial city. Therefore, the existence of public transportation in the city of Surabaya is very important, especially to facilitate community mobility and reduce congestion.

The existence of public transportation in addition to facilitating community mobility can also be an indicator in realizing a sustainable city. Surabaya as a metropolitan city has received awards in the sustainable city category in 2011 and 2014 (Antono, 2023), but the awards obtained could not be achieved consistently due to various factors. The main factor to show a sustainable city is the existence of public transportation. In 2018, to support Surabaya as a sustainable city, the government is working on sustainable public transportation. The existence of sustainable transportation such as electric vehicles and electric charging will be very important to reduce dependence on fossil fuels and as part of promoting renewable energy (John & George, 2018). Therefore, to realize sustainable transportation, the Surabaya City Government integrates waste management with transportation. Of course, the integration of waste management with public transportation is one of the government's innovations in realizing sustainable transportation. One of the reasons for the formation of this innovation is because apart from congestion and air pollution, the City of Surabaya also has problems in terms of waste management.

Public transportation formed by the Surabaya City Government not only solves problems such as traffic jams, air pollution and waste problems, but will also have an impact on society, especially in terms of mobility. Based on this, to see or measure the provision of sustainable public transportation using the theory (Brotodewo, 2010) with 3 indicators including those seen from economic, social and environmental aspects. Where for the economic aspect it will talk about accessibility and efficiency of the transportation system, for the social aspect it will discuss institutions in the management of sustainable transportation, and for the environmental aspect it will discuss the impact of transportation on environmental pollution or environmental sustainability.

Accessibility and Efficiency of Transportation Systems

Public transportation in Indonesia is a dream that rarely comes true, considering that many cities in Indonesia do not have adequate public transportation. To support the realization of good and proper public transportation, concrete steps are needed by the government, especially in improving the performance of public transportation. The public has not maximized the use of public transportation because there are many problems that occur with public transportation itself, one of which is the poor performance of public transportation such as punctuality,

accessibility to public transportation points and others. This is also supported by the results of research (Hanif et al., 2021) that the performance of public transportation in Jakarta and Yogyakarta in terms of quantity has not met the mobility needs of the community, one of which is related to the delay in public transportation, while for Yogyakarta it is more about the area or reach of public transportation not to all strategic areas (Atmojo, Darumurti, et al., 2024). Meanwhile, transportation in the city of Semarang is well developed, this can be seen from the ease of the community in reaching transportation, efficient and inclusive (Atmojo, Hanif, et al., 2024).

The existence of problems that occur in several cities, especially regarding public transportation, is an important point for each region. Where if we look at the current public transportation is one of the modes of transportation needed by the community to support mobility. Surabaya as one of the big cities in Indonesia also has the same problem, especially in the management of public transportation. Considering that the city of Surabaya in 2024 based on the Tomtom Index survey is one of the most congested cities in Indonesia (Cipto, 2025). Based on the results of the Tomtom Index survey, it shows that public transportation in Surabaya is still very much needed to support the realization of a sustainable city.

To realize sustainable transportation in the city of Surabaya, the management and provision of public transportation must continue to run well. In addition to adequate public transportation, there must also be accessibility that supports both infrastructure and superstructure. If we look at the existence of public transportation in the city of Surabaya, it is already very good, especially in the provision of fleet infrastructure, bus stops and corridors. In addition to the infrastructure that has been provided, the government also provides applications that make it easier for the public to utilize and use public transportation. Of course, these two things are very supportive considering that there are so many people who use public transportation in the city of Surabaya, if we look at the number of urban public transportation provided by the government, there are three types of transportation modes, including Suroboyo Bus, Trans Semanggi, Wira-Wiri.

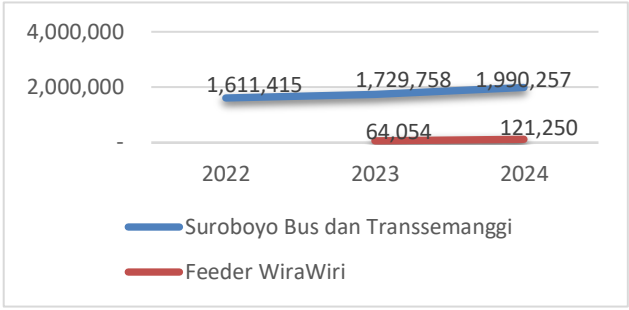
Table 2. Number of Urban Transportation in Surabaya City

No	Vehicle Name	Total
1	Suroboyo Bus	28
2	Trans Semanggi	31
3	Wira Wiri	102

Source: processed by researchers, 2024

Based on the data above, it shows the seriousness of the government in realizing services in the transportation sector, the distribution of the total number of transportations in the city of Surabaya consists of 28 Suroboyo Bus fleets, 31 Trans Semanggi fleets divided into Electric Trans Semanggi and regular Trans Semanggi and 102 WiraWiri Feeder fleets. These three fleets are fleets that are often used or utilized by the community as mobility access. Of course, with the existence of this fleet, the community feels helped, especially in daily activities and mobility. If seen in the last three years, the use of public transportation in the city of Surabaya has increased significantly, both from Suroboyo buses and Trans Semanggi and from Wirawiri feeders.

Graph 1. Increase in the Number of Urban Transportation Passengers



Source: processed by researchers from Koloway (2025)

If we look at the data above, it shows that there has been an increase in the number of passengers for both bus and feeder transportation. This certainly shows that the government is serious about realizing good and sustainable public transportation, besides that it also shows that there is a change in people's behavior, especially in the use of public transportation. Based on the data above, we can analyze that the increase in the number of passengers for Suroboyo Bus and Trans Semanggi is approximately 100,000 passengers each year, while for the WiraWiri Feeder which has just started operating in March 2023, there has been a two-fold increase in the number of passengers. This shows that the increase in the number of passengers is not due to public transportation but also due to easy access, complete facilities, good and integrated services.

The convenience of the public in using public transportation is also supported by the existence of an application called GoBis (Golek Bis). Where this application makes it very easy for the public, especially to help the public in tracking the location of vehicles and directions to the nearest bus stops. The benefits besides tracking vehicles, the GoBis application can also be used as a payment method for both Suroboyo Bus and Feeder WiraWiri. Where this application can also detect how many stops and the location of stops in the city of Surabaya are as one of the central points of accessibility. In addition, with this GoBis application, passengers can monitor in real time the location of public transportation in the city of Surabaya.

Figure 3. GoBis Application

Source: GoBis Application (2025)

The ease of accessibility that has been provided to support sustainable public transportation in the city of Surabaya is very good. Where accessibility can be seen from two aspects, namely the ease of the community to get vehicles and connectivity between modes, especially Buses and Feeders. GoBis, as one of the applications that makes it easier for people to get mobility, is also equipped with public transportation route features in the city of

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Surabaya. In addition, the transportation integration content of the GoBis application has also been integrated with all transportation in the city of Surabaya such as Suroboyo Bus, Trans Semanggi Surabaya, Trans Jatim and Feeder WiraWiri. Of course, with the integration in this application, it will make it easier for people in their daily mobility in the city of Surabaya.

The weaknesses in accessibility include the lack of connectivity to public transportation facilities such as stations and airports. In fact, connectivity between transportation modes is very important to support public accessibility in mobility. In addition, there is no integration of Suroboyo Bus, Trans Semanggi or Feeder WiraWiri with Surabaya's satellite cities and the airport. In fact, according to (Alvarez-Risco et al., 2020) that public transportation in urban areas will be much more effective if they have connections between transportation modes so that they can be one indicator of success in providing public transportation. Therefore, the lack of connectivity can be a special concern for the government so that in the future it can develop transportation modes that are integrated with all transportation sectors in the city of Surabaya and in satellite cities.

Institutions in Public Transportation Management

Surabaya has a modern urban transportation mode, as a metropolitan city and has various problems, public transportation is very necessary. The existence of this public transportation is one of the solutions to solve problems, especially congestion. Considering that Surabaya is one of the cities that is categorized as the most congested city in Indonesia. Therefore, the existence of public transportation in this city is very necessary, and the government has begun to initiate the realization of environmentally friendly public transportation since 2018. Because environmentally friendly public transportation can increase public mobility and reduce traffic congestion (Mrad & Mraïhi, 2023).

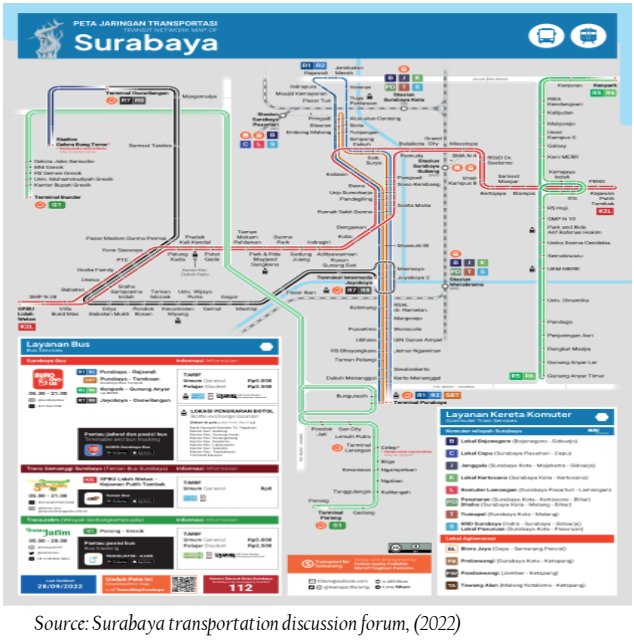
Currently, the city of Surabaya has a BRT transportation mode consisting of Suroboyo Bus and Trans Semanggi Surabaya and Feeder WiraWiri. The existence of this transportation mode will greatly facilitate the people of Surabaya to carry out daily activities or mobility in the Surabaya City area. If you look at the transportation modes in the city of Surabaya, they have been providing services since 2018 until now, where in 2018 the public transportation that operates is the Suroboyo Bus which is managed by the Surabaya City Government. Meanwhile, Trans Semanggi Surabaya started operating at the end of 2021 which is controlled by the Ministry of Transportation. Meanwhile, the management of Feeder WiraWiri started operating in 2023 and is managed by the Surabaya City Government through the Transportation Agency. Trans Jatim as a new BRT transportation mode in East Java and the city of Surabaya is also an alternative where operations began to be carried out by the East Java Government in 2022. Of the various types of public transportation that exist, it can be used as a reinforcement between transportation modes, especially for the integration of public transportation.

This difference in transportation management can make Surabaya one of the pilot cities, especially in the integration of public transportation. The many choices of transportation operated by various parties can be used as a reinforcement to realize integrated public transportation. Surabaya is one of them that has started to integrate public transportation starting from Suroboyo Bus, Trans Semanggi Surabaya, Feeder WiraWiri and Trans Jatim. In realizing integrated public transportation, public transportation operators divide routes, where Suroboyo Bus, Trans Semanggi Surabaya and Feeder WiraWiri serve routes in Surabaya City while Trans Jatim serves the buffer cities of Surabaya.

The existence of this route division will make it easier for people to do activities and mobility in the city of Surabaya, because it has many transportation options. In addition, in the institutional context of public transportation management in the city of Surabaya since 2023 has been taken over by the City Government, both Suroboyo Bus, Trans Semanggi Surabaya, Feeder WiraWiri, while Trans Jatim is managed by the East Java Provincial Government. The existence of this management rotation will make it easier for the government in transportation management, especially for the integration of public transportation both in management and transportation routes in the city of Surabaya. Of course, this division of transportation routes will be very good for providing services to the community, especially in access to public transportation mobility.

Institutionally, the management of public transportation in the city of Surabaya is divided into two institutions, namely the Surabaya City Government and the Provincial Government. With this division of management, it will make it easier for the public to choose the available modes of transportation, in addition, it will also provide convenience for the public for activities and mobility both within the city and outside the city. Considering that Surabaya is one of the metropolitan cities and a city that has a very high level of congestion. Therefore, it is necessary to have integrated and collaborative transportation management. Until now, transportation management in the city of Surabaya has been carried out well, especially in the collaboration of providing public transportation between the City Government and the Provincial Government. This can be seen from the existence of public transportation that runs according to the corridor or rules of both transportations managed by the City Government and the Provincial Government. Of course, this collaborative and integrated management will make the city of Surabaya one example of a city in good public transportation management, especially transportation managed by two institutions.

Figure 4. Map of Transportation Network in Surabaya City



Source: Surabaya transportation discussion forum, (2022)

Based on the map above, it shows that the management of public transportation is divided according to its corridor. Where the map illustrates 4 modes of urban transportation in Surabaya, including Suroboyo Bus, Trans Semanggi Surabaya, WiraWiri, and Trans Jatim. The coordination carried out by both the city and provincial governments shows that the government is serious about solving urban problems, especially congestion in the city of Surabaya. In addition to solving congestion, the management of public transportation in Surabaya also addresses the problem of waste, especially plastic bottles that can be used as a payment method on the Suroboyo Bus. This is emphasized by the existence of special stops or buses equipped with special tools to exchange plastic bottles as an alternative payment. Where until now there are nine plastic bottle exchange points spread across the city of Surabaya.

This bottle exchange point is one of the government's commitments in realizing sustainable transportation and cities. This certainly also refers to the vision and mission of the city government which wants to realize sustainable transportation in the city of Surabaya. The realization of sustainable transportation is also supported by other regional government agencies or organizations, where in the process of implementing payments using plastic bottles, the Surabaya City Transportation Agency coordinates with the Environmental Agency, especially managing bottle waste. The waste generated from this payment method will be reused to support the beauty of the city such as making flowerpots, or others. Of course, institutionally this is very good because there is coordination carried out by related agencies, both from transportation managers and from other agencies in waste management.

Environmental Sustainability

Waste is one of the problems in every urban area, where waste is always the cause of other problems such as flooding, bad odors and air pollution. Surabaya as one of the metropolitan cities also has quite classic urban problems, including traffic jams and waste. Where if we look at the population in the city of Surabaya reaching 3,009,389 million people (Rosyadi et al., 2024). Based on these data, the city of Surabaya is also a city with a fairly high population. This high population can create urban problems, especially in increasing the volume of waste. If you look at the volume of waste in the city of Surabaya every day it reaches 1,800 tons, based on a statement from the Head of the Surabaya City Environmental Service, each person produces an average of 0.6 kilograms of waste per day (Herawati, 2024). Therefore, based on existing experience, the Surabaya City Government is trying to reduce waste with various methods, including as a power plant and payment for public transportation in the city of Surabaya.

The increase in the volume of waste was responded to by the government through Mayor Regulation Number 67 of 2018 concerning the Contribution of Waste in the Use of Surabaya Bus Services, the government integrated public transportation payments in Surabaya with bottle waste. With this regulation, it becomes an alternative for the Surabaya City government to reduce the waste problem. The implementation of public transportation payments through waste has been carried out by the Surabaya City Government since 2018, with the spirit of providing convenience for the community to access mobility while the government solves the waste problem. This method of paying for public transportation through waste is one of the new solutions or innovations, considering that not all public transportation in urban areas in Indonesia is paid using waste.

Figure 5. Public Transportation Payment Model with Waste

Source: Processed by researchers, 2025

This innovation of payment using waste is a new environmentally friendly innovation, with this innovation becoming one of the alternatives of the Surabaya City government in reducing waste. Where this public transportation method can only be done with plastic bottle waste, where every 5 bottles are valued with one public transportation ticket in the city of Surabaya. The bottle waste generated from public transportation payments is managed in the Rungkut Asri compost house. Payment using this waste is part of the vision and mission of the City of Surabaya to support and realize it as a sustainable city. In addition, this payment method using waste can also support the realization of sustainable transportation in Indonesia, considering that until now there has been very little public transportation that uses non-fossil fuels. So as one step to realize and support sustainable transportation and the environment, it can be done with the waste reduction method.

Government support in realizing sustainable transportation in the city of Surabaya has been very good, but there are still several obstacles, including the ineffective management of waste generated from paying for Suroboyo Bus tickets. That the ineffectiveness of this program is due to the accumulation of waste in the Rungkut Asri compost house and the long auction period for plastic bottle waste (Agus et al., 2021). In addition, the Surabaya City Government also collaborates with other stakeholders such as the Waste Bank in the City of Surabaya. However, with the high amount of waste generated from this payment mechanism, not all of it can be used for crafts, considering that there are limited resources in managing the waste. With these limitations, the government needs to pay attention and evaluate the public transportation payment program using waste. If we look at it, this mechanism is indeed a good mechanism, especially to support the realization of sustainable transportation and cities, but it also needs to be supported by good infrastructure to facilitate the program.

CONCLUSION

The policy of providing public transportation is indeed important for urban areas, especially to support community activities and mobility. Surabaya is one of the cities that is a pioneer in realizing easy community mobility, one of which is public transportation that can be used by the wider community. In addition, the Surabaya City Government is also the only city that implements public transportation payments with waste, of course this is an innovation in Indonesia, especially in the provision of public transportation. Based on the results of our research in realizing sustainable transportation, the City of Surabaya has entered the ready category, this can be seen from the existence of the Mayor's Regulation regarding the use of public

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transportation and the payment mechanism using plastic bottle waste. However, if we look at it, there are several things that still need to be improved. For example, at the stage of the payment mechanism using plastic bottle waste, where this mechanism or innovation needs to be evaluated considering that there is ineffectiveness in this program due to a lack of resources and the increasing accumulation of bottle waste in partner locations. In addition, the provision of urban transportation in Surabaya has also moved towards sustainable transportation with several public transportation fleets having switched to electric-based transportation.

Meanwhile, for accessibility and systems, public transportation in Surabaya City is very good with the GoBis application which makes it easier for people to do their daily activities or mobility. The ease of using this technology has a positive impact on the community, especially in daily mobility. Where people who use public transportation can make payment mechanisms with applications or track the transportation they will take. This is one aspect of ease in the process of accessibility and utilization of technology. In addition, the institutional factor of public transportation in Surabaya has been integrated with other public transportation modes. Considering that in Surabaya City there are 4 public transportations, including Suroboyo Bus, Trans Semanggi Surabaya, Trans Jatim and Feeder WiraWiri Surabaya. Of the four transportations, they have been integrated, especially on the transportation routes or routes in the Surabaya City area, making it easier for people to move around. The integration between transportation modes shows that the management or institutionalization of public transportation in Surabaya City has been well integrated, but there needs to be an evaluation to expand the reach or transportation routes to public facilities or reach to buffer areas. It is hoped that this route expansion will help the city of Surabaya to reduce traffic congestion and become an alternative for the people of Surabaya and buffer cities in mobility in urban areas.

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