VOL. 9 , NO 1, 2021 (1-14)

JURNAL NATAPRAJA:
Kajian Ilmu Administrasi Negara

2406-9515 (p) / 2528-441X (e) https://journal.uny.ac.id/index.php/natapraja

Sprawling and Urban Transportation System: Impact in Yogyakarta, Indonesia

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ARTICLE INFO

Article history:
Received 20 April 2020
Received in revised form 27 February 2021
Accepted 29 March 2021

Keyword:
Sprawling, Urban Transportation, and Governance

ABSTRACT

This article examines the sprawling and urban transportation system in Yogyakarta City. The development and the population increasing affecting the tendency of the community in using private vehicles. Methodologically, this article uses qualitative research with utilizes library research for data gathering. This research presents a comprehensive analysis regarding the urban transportation system in dealing with the Sprawling phenomenon. The result of research has found that public participation, multi-criteria in decision making could attract more stakeholders to make systematic ideas to achieve a good transportation system that fulfills community needs. This paper contributes to giving insight and knowledge for the government in the urban area. In terms of sustainability, and Sprawling.

INTRODUCTION

The status of the Yogyakarta city as a student city and a tourist city becomes its attraction (Wijayanti, 2019), which causes an increasing number of populations in the city of Yogyakarta every year (Andoko et al., 2021). Therefore, the need for transportation capital also becomes an important requirement to mobilizing the community in carrying out its activities (Purnomo et al., 2020). In this research, the role of urban transportation, the impacts it has, and the government's performance in providing convenient and effective transportation capital for urban communities. According to research (Aminah, 2018) "The transportation system is a basic element of infrastructure that influences the pattern of urban development. The development of transportation and land use plays an important role in government policies and programs (Agustiyara et al., 2021; Ramdani et al., 2021)." The effect of urbanization and population density

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https://doi.org/10.21831/jnp.v9i1.31410

affects the role of government in making policies and providing transportation facilities. The government acts as a provider which provides the needs of society for urban development itself.

Considering the Planetary Boundaries concept, that everything on Earth has limits, if the phenomenon of sprawling and urban transportation systems are not addressed or worn, then the negative impact on the environment varies, for example, the most visible is air pollution caused by the use of private vehicles (Purnomo et al., 2020; Atmaji et al., 2021). The transportation sector has a high dependency on energy sources, most motorcycle vehicle products used in the transportation sector use fuel as an energy source (Febrian Maulana, 2016). (Hassan and Lee, 2014) argues that the concepts of sustainability and sustainable development are not static or limited processes, but can be changed and complex, and involve sustainable processes to meet changes in the form of production processes and ecological systems (Hiban et al., 2020).

With the increase of immigrants and students each year, the Yogyakarta city government needs urban transportation that is useful to provide connectivity between the city center and the sub-urban, so that the community can be met in their daily activities (Irawan et al., 2021; Setiawana et al., 2021). Poor service and facilities, as well as poorly maintained hygiene, make the majority of the people of Yogyakarta tend to choose to use a motorcycle because it is considered more practical, easy to get a parking space in the middle of the city, and more efficient (Ismaili, 2017). The data from 2016 Transportation Agency (DISHUB) report (Dishub, 2016) stated that the reason why public transportation was still not optimal was due to the high use of private vehicles, many buses that were in poor condition and lack of maintenance, and a small number of bus fleets with limited lines operated. These three conditions cause the use of buses as public transportation to be still less desirable so that the target number of daily passengers cannot be met. Therefore, (Oktaviastuti and Wijaya, 2017) stated that a lack of control over the number of motorized vehicles has been detrimental to various parties. These losses are very complex, both in economic and non-economic terms, such as health, time, environment, and high levels of human depression (Purnomo et al., 2021). The effect of the increasing number of private vehicles owned individually is traffic jams; the number of roads available in urban areas cannot accommodate the growing number of vehicles (Boru, 2017). Based on research done by (Saragi, 2015) argued that Urban air pollution is dominated by motorized vehicles, so a more effective effort to reduce air pollution in urban areas is to reduce exhaust emissions from motorized vehicles. How the government provides an urban transportation system that will have a positive effect on urban air quality and people's habits to switch to public transportation.

Furthermore, the research done by (Nugroho and Malkhamah, 2018) argued in conducting a good transportation management system, human resources needed to have the competence to support program implications, and the need for a legal umbrella to support urban transportation management programs would be better. In Addition, Yogyakarta Governor Regulation No. 16 of 2017 regulates and becomes the legal basis for urban transportation in Yogyakarta city, which is Trans Jogja. Meanwhile (Hayati and Al-Hamdi, 2019) have found that in terms of service, Trans Jogja employees still do not show hospitable service, and passengers worry in terms of safety. Although, the level of service and punctuality of the Trans Jogja bus still cannot yet meet the expectations of urban

communities, However, by using public transportation. the chance of an accident occurring is smaller than using a motorcycle vehicle. The data from (Dishub DIY, 2019) showed that bus transportation in Yogyakarta city amounted to 2 incidents, while motorbikes amounted to 503 accidents.

(Dishub DIY, 2019) states that in 2018, the number of Trans Jogja passengers reached 5,880,610 passengers. However, in 2017 it was stated that the number of passengers was higher at 5,999,335. The tendency of the number of passengers is decreasing from 2015 to 2018, the influence of the people moving from outside the region to the Yogyakarta city has not yet had a significant impact on the use of public transportation, which is Trans Jogja.

METHODS

This article uses qualitative methods, qualitative method according to (Vignali, Hallier, and Stanton, 2015) is a process of the description, classification, and interconnection of phenomena with the researcher's concepts with analytical descriptive techniques. Data collection techniques are through literature study by finding written sources. The main sources are literature books, scientific papers, national/international scientific journals, documents, and reports relating to the research focus.

The descriptive analysis approach can be interpreted as a problem-solving procedure that is investigated by displaying pictures of the state of the subject or object of research such as individuals, institutions, groups, and society at this time based on written facts, looks, and so on (Nawawi, 2015; Yuanjaya, 2015; Phan et al., 2021). The focus of this research is to see how the description of urban transportation occurs in the city of Yogyakarta which causes negative effects on the environment such as a decrease in air quality and how the implications of the government in dealing with this phenomenon.

This research was conducted in Yogyakarta city where's people growth increasing significantly. Therefore, along with population growth, the community needs convenient and effective urban transportation to carry out their daily activities, Yogyakarta as a student and tourist city must make better transportation access that reaches all of Yogyakarta city area until reach sub-urban. Therefore, this study will explore the performance of the city government in providing a convenient transportation service system for the community as well as how the government's implications in addressing the impact on urban air quality.

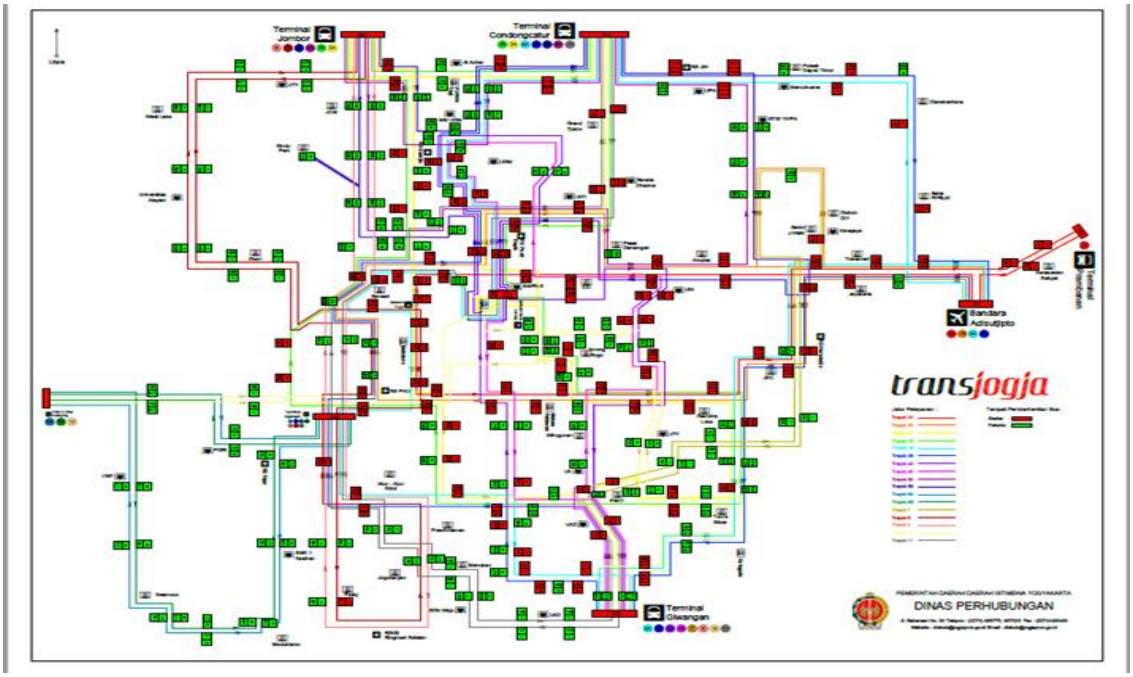
RESULT AND DISCUSSIONS

The Performance of Urban Transportation System in Yogyakarta

The community needed good public transportation, to fulfill that the Yogyakarta government in collaboration with the Department of Transportation (DISHUB) provides public transportation services in the form of Trans Jogja, which later Trans Jogja will serve the people of the city of Yogyakarta as the main public transportation, the Trans Jogja system itself is managed by the Department of Transportation and PT Jogja Tugu Trans and in collaboration with six cooperatives managing urban and rural public transportation in Yogyakarta such as Koperasi Pemuda Sleman, Kopata, Aspada, Kobutri, Puskopkar, and Perum DAMRI. These six cooperatives are private transport service providers in which the Yogyakarta city government cooperates with them to work together as operators of the Trans Jogja bus on several service routes. Moreover, (Lesmana, 2013) found that the provision of city transportation facilities in the form of city buses requires large funds and the Yogyakarta

government feels unable to organize themselves, the program is implemented jointly with the private sector.

Figure 1. Services Routes of Trans Jogja



Source: Dishub Yogyakarta

The fig.1 shows the Trans Jogja route which has 11 routes that cover all areas of the city of Yogyakarta from the suburbs to the city center. From this picture, it can be concluded that the Yogyakarta city government has tried to guarantee a convenient and effective urban transportation system by placing several shelters that are portable at several stops. But with the 11 Trans Jogja routes it is still not enough to reach the suburban area, a need for additional routes and fleets to ensure Trans Jogja services that will later meet the needs and satisfaction of the community for urban transportation throughout Yogyakarta. based on research from (Transistari, 2017) has found that some services still do not meet the level of community satisfaction which are: readiness to provide help on the problem found, punctual arrival and departure, and suitable hours. These factors make people less interested in choosing Trans Jogja as the main transportation in urban areas, There are 7 out of a total of 54 shelters that are considered to be inadequate due to hygiene problems as well as shelter facilities that are not very supportive (Prakoso, 2019). Services that are still not optimal and inefficient make urban transportation in Yogyakarta have less demand and still cannot be considered as an urban transportation solution.

Public transportation in Yogyakarta city consists of online public transportation and conservation public transportation. About 80% of people prefer to use online public transportation, arguing that it is more efficient, faster, easier to obtain, safer, and more comfortable than conventional modes of public transportation (Nurkukuh & Kurniawati, 2020). The price of other conventional transportation besides Trans Jogja is indeed more expensive in terms of prices for traveling long distances. However, Trans Jogja is priced at Rp. 3,500 can reach all destinations with free transit costs, this is inversely proportional to the price of online transportation which is around Rp. 8,000 - 10,000 for the closest distance.

In terms of easier to obtain, it is true that public transportation must be reached on foot first to the nearest bus stop, while for online transportation, people can reach

it anywhere. This convenience is what causes people to switch to using online transportation. However, based on research (Hidayah, 2020) It was found that the facilities for bus stops have been provided by the Government, passengers can be reached the bus stop because the distance is not too far from places needed by the community and the facilities that have been provided only need to be improved in terms of adding roofs at several bus stops, so that the society is comfortable, protecting from rain and heat while waiting for the bus.

The performance of public transportation services in Yogyakarta is assessed from the performance of Trans Jogja as urban transportation. Currently, Trans Jogja has served in 22 sub-districts out of a total of 25 sub-districts in the urban area of Yogyakarta, which already covers 88% of the agglomeration areas already served by Trans Jogja, still lacking three sub-districts which are Godean, Ngaglik, and Ngemplak. With coverage that has reached 88%, Trans Jogja should fill most of the community effectively and efficiently. The city of Yogyakarta considers urban transportation like Trans Jogja to be second-class transportation which makes the dependency on private vehicles even higher. The need for socialization to the community from all economic groups to be able to change culture or dependence on the use of private vehicles can be replaced by using urban transportation, followed by the addition of routes, fleets, and increased services to customers.

Based on the performance report from (Dishub, 2019) found that in 2019, 1 indicator had met the target set or reached more than 100 percent, with an indicator achievement rate of 45.27% of the target of 44.92%, or exceeded by 100.78 percent. Where the government's performance in providing urban transportation services is quite successful but constrained by the small number of public transport passengers. (Prakoso, 2019) stated that most Trans Jogja passengers worked as housewives (IRT) (36%) and students (32%). The lack of interest from workers makes trans-Jogja not yet a solution to overcome the sprawling phenomenon in the city of Yogyakarta, (Purnomo, Anand, and Choi, 2018) One of the crucial problems in local institutions is participation in the decision making processes. Therefore, the Dishub needs to improve public engagement, increase human capital and make a collaborative governance approach.

Table 1. Dishub Performance in 2019

No.	Target Indicator	Target (%)	Realization (%)
1.	Performance in Providing Public Transport Services and Road Service Levels	44,92	45,27%

Source: (Dishub, 2019)

The Problem in The Urban Transportation System

Arranging a transportation system that is convenient, effective, and efficient requires structured handling and cooperation with the community to achieve the target passengers, satisfaction, and trust of the community. The problem in handling the urban transportation system lies in the increase in the number of vehicles which has caused congestion, the price of private vehicles such as motorcycles and cars are relatively affordable for all economic groups of society, this makes that Trans Jogja urban transportation becomes quiet of passengers and despite the increasing number of vehicles, the government should be able to overcome this by improving facilities, infrastructure, and practical transportation services. Urban congestion is related to school hours and office hours, where the volume of vehicles tends to be high in the morning and evening when people use private vehicles to move from the suburban to the city center, especially on the roads that are connected to the sub-region of Sleman, Bantul, etc.

Based on research (Ramadhan, 2019) assume that the ring road which was built in 1994 which aims to unravel congestion in the city of Yogyakarta is now the most often experiencing congestion. Due to the activities of urban communities who mostly live in rural areas and attend school or work in the city center, according to (Suharyanto, 2018) The high volume of traffic, especially motor vehicles that resulted in high traffic delays at ring roads intersections. The density of traffic at the ring roads intersection is also inseparable from the development system because at this intersection is the road that leads to the campus and tourist attractions.

To overcome the problem of urban transportation in the border area of the city of Yogyakarta, which is opposite the Bantul and Sleman districts, the Yogyakarta government is cooperating with the district government through a Joint Secretary of Kartamantul. Later this meeting discussed issues related to the transportation system in Yogyakarta, especially in border areas, this meeting is held so that the program of the city government in fixing the urban transportation system can be maximized and in harmony with the local regional government because to build a good transportation system, it is necessary to harmonize regulations and revamping actions.

Meidiani, Malkhamah, and Muthohar, (2018) found the conclusion "that related to urban transportation Trans Jogja, the discussion was limited to discussion/sharing among stakeholders in the Joint Secretariat of Kartamantul to obtain information and input for the development of Trans Jogja in general" besides that in the Kartamantul meeting it discussed traffic engineering, road expansion, and repair of roads. Therefore, the coordination meeting between the City and District governments still has not provided the outcomes which are needed to improve services, and the effectiveness of Trans Jogja in serving the community, public transportation could be the choice of the community who live in suburban areas, the carbon footprint will continue to grow along with the increasing of motorized vehicles, it has resulted in public transportation services becoming less interested, and not reaching all elements of society in changing behavior to using Trans Jogja

(Fevriera, Groot, Mulder, & Groot, 2020) argued that “The strong dominance of motorcycles as the preferred mode of transport also makes it clear that it will be very difficult to motivate people to switch to bus services” Governor Regulation No. 16 of 2017 in Article 6 Paragraph 2 states that the Head of the Departement is responsible for the operation, supervision, control, and evaluation of the bus route network. With the dominance of strong private vehicles and weak in terms of organizing and

monitoring the performance of Trans Jogja buses, it makes it difficult for society to use Trans Jogja. Therefore, collaboration with online transportation is needed to attract the public's interest in using public transportation through innovative program ideas.

"Traffic congestion and lack of parking spaces are also increasingly being seen as major transportation problems affecting the quality of life of those living in urban settlements" (Othman dan Ali, (2020). These two things are the cause of the decline in the quality of life of people in urban areas because high levels of congestion have effects on health, accident rates, and noise in urban residential areas. Therefore, poor public services will have an impact on the balance of the community's economy due to the time wasted on the road due to the heavy traffic flow during peak hours, and the health of the community which inhaled the pollution every day.

The imbalance between the use of private vehicles and the use of transportation makes the need for transportation in urban areas to be even greater because it is followed by an increase in the number of residents in urban areas. (Rachman, 2015) In his research, he concluded that "the most dominant thing to increase demand for public transport passengers is service improvement, this is reflected in the value of travel time, then increasing travel time speed, and decreasing fares.

According to fig.2 shows that increasing sales of two-wheeled vehicles, people choose two-wheeled vehicles because they are efficient and effective in terms of service. Bus fleet of trans Jogja can be said to be sufficient to meet the needs of most people in urban areas, the problem is how the Yogyakarta city government encourages people to use Yogyakarta transportation in their daily activities. The relationship between the government and the community needs to be done regularly and systematically. A systematic approach can provide enlightenment to the community's ability to think wisely in choosing transportation. The role of the government should be as a stakeholder who becomes a bridge and harmonizes the needs of the community for public transportation, so that the process of transitioning the use of private vehicles

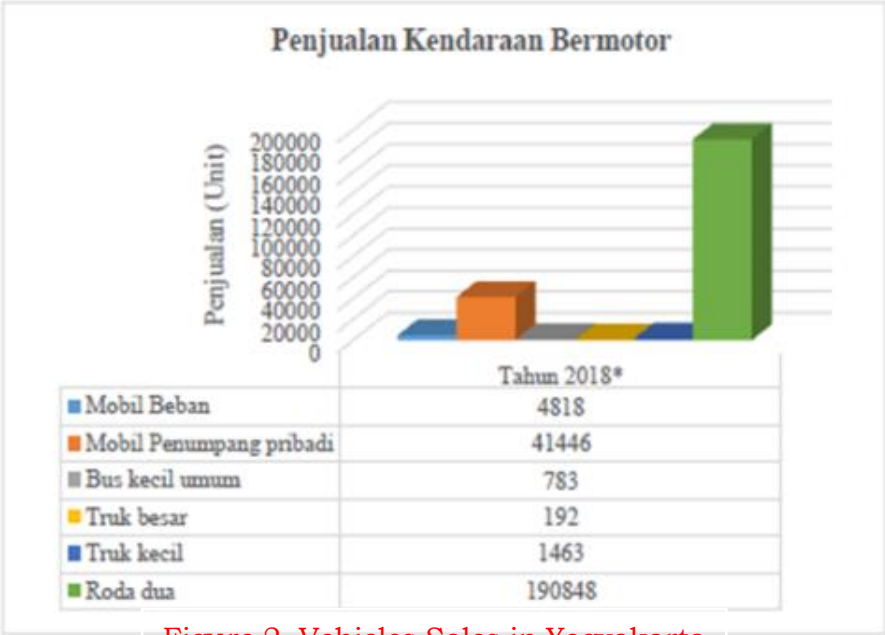


Figure 2. Vehicles Sales in Yogyakarta
Source: (DLH Kota Yogyakarta, 2018)

to public transportation will emerge through the integration of policies that prioritize the improvement of public transportation services, providing the parking lots is not a solution, regarding the area limitation in Yogyakarta city. Instead of building a new parking lot, it is better to prioritize planning on improving public transportation services and infrastructure to meet the needs of sustainable urban development

According to the Expert Team for the Center for Transportation and Logistics Studies (UGM PUSTRAL) Dr. Muhammad Zudhy Irawan, (Gusti, 2020) stated that "Trans Jogja, which so far has been lacking in the improvement of facilities and infrastructure because funding allocations are still very minimal", an allocation of funds amounting to Rp. 7.2 billion still cannot meet the need for additional trans-Jogja infrastructure. Based on the researcher observes in the area of Yogyakarta city, the convenience of the bus stop facilities and the unclear arrival time of the Trans Jogja bus whereas facilities such as LCD are not installed to show the bus arrival schedule. The accuracy and clarity of the bus arrival time is something that has not yet been fulfilled in the Trans Jogja service, thus making people wait longer without any clear arrival if no system regulates when the bus arrives at one stop and leaves for the next stop. This systematic bus schedule is important in providing service satisfaction to the use of public transportation.

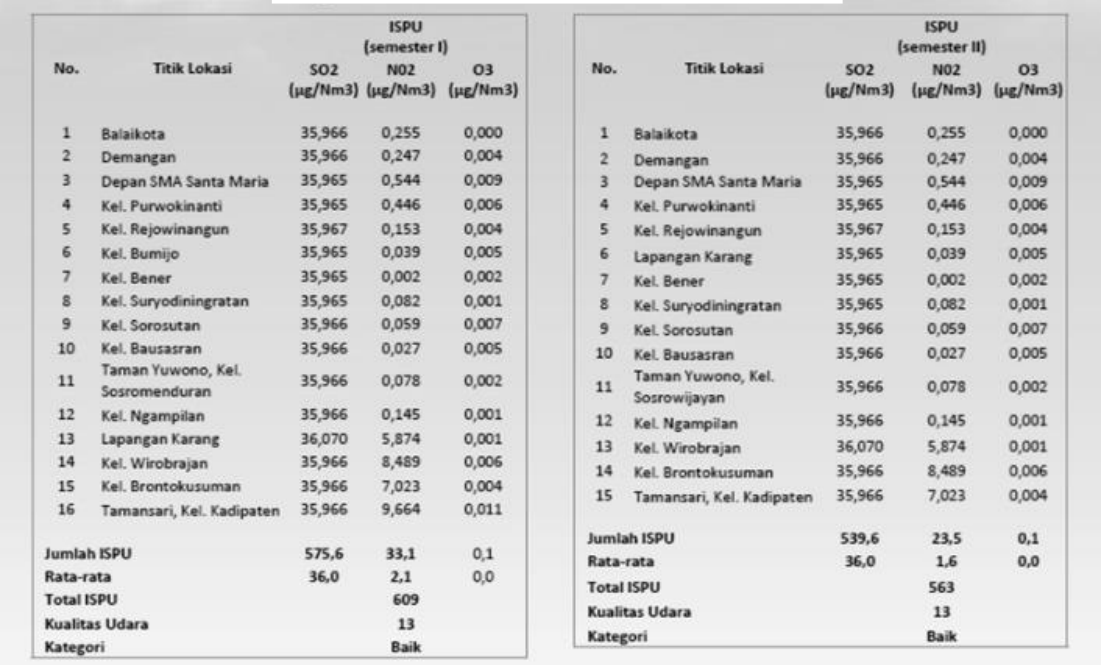
Currently, there are only 128 buses, the city of Yogyakarta needs at least 500 buses with optimized route lines. The possibility of the addition of the bus fleet will be useless, likely waste the budget, and increase the burden of air emissions in cities. It will happen if the government failed to implement a development strategy and in strategy formulation, it is needed participation from the community and the private sectors, to achieve people's desires.

Impact on Air Quality

To be able to know the air quality in the city of Yogyakarta, the government uses the criteria for ambient air quality status, Air Pollution Standard Index (ISPU) Air Pollution Standard Index (ISPU) is an analysis using the index determination method (range of numbers) to categorize the levels of air pollution based on the value of ambient air testing (DLH Kota Yogyakarta, 2018). Along with the increase in population and industry, it will affect air pollution through the emission of immovable sources originating from the use of fuel oil, gas, and other fuels. As we know, air pollution and climate change are linked in many areas of science and policy, these two environmental challenges are viewed as separate issues, while they are highly connected (Schneidemesser et al., 2015). Therefore, (Ramdani, 2018) states "There are two alternatives on dealing with the issue of climate change which is mitigation and adaptation." Mitigation and adaptation are key to how the government deals with environmental issues through regulation, reducing the amount of air pollution, and making the direction of urban development sustainable.

Adaptation is very important to be implemented by the community because urban environmental conditions are influenced by dependence on the use of private vehicles, and economic growth in the Urban area of Yogyakarta. (Pratama, 2020) revealed that the fact is that the pattern of wasteful energy consumption and the dependence of the Indonesian population on fossil energy in carrying out economic activities are increasingly

Figure 3. Air Quality in Urban Areas



No.	Titik Lokasi	ISPU (semester I) SO2 (µg/Nm3)	N02 (µg/Nm3)	O3 (µg/Nm3)
1	Balaikota	35,966	0,255	0,000
2	Demangan	35,966	0,247	0,004
3	Depan SMA Santa Maria	35,965	0,544	0,009
4	Kel. Purwokinanti	35,965	0,446	0,006
5	Kel. Rejowinangun	35,967	0,153	0,004
6	Kel. Bumijo	35,965	0,039	0,005
7	Kel. Bener	35,965	0,002	0,002
8	Kel. Suryodiningratan	35,965	0,082	0,001
9	Kel. Sorosutan	35,966	0,059	0,007
10	Kel. Bausasran	35,966	0,027	0,005
11	Taman Yuwono, Kel. Sosromenduran	35,966	0,078	0,002
12	Kel. Ngampilan	35,966	0,145	0,001
13	Lapangan Karang	36,070	5,874	0,001
14	Kel. Wirobrajan	35,966	8,489	0,006
15	Kel. Brontokusuman	35,966	7,023	0,004
16	Tamansari, Kel. Kadipaten	35,966	9,664	0,011
Jumlah ISPU		575,6	33,1	0,1
Rata-rata		36,0	2,1	0,0
Total ISPU			609	
Kualitas Udara			13	
Kategori			Baik	

No.	Titik Lokasi	ISPU (semester II) SO2 (µg/Nm3)	N02 (µg/Nm3)	O3 (µg/Nm3)
1	Balaikota	35,966	0,255	0,000
2	Demangan	35,966	0,247	0,004
3	Depan SMA Santa Maria	35,965	0,544	0,009
4	Kel. Purwokinanti	35,965	0,446	0,006
5	Kel. Rejowinangun	35,967	0,153	0,004
6	Lapangan Karang	35,965	0,039	0,005
7	Kel. Bener	35,965	0,002	0,002
8	Kel. Suryodiningratan	35,965	0,082	0,001
9	Kel. Sorosutan	35,966	0,059	0,007
10	Kel. Bausasran	35,966	0,027	0,005
11	Taman Yuwono, Kel. Sosrowijayan	35,966	0,078	0,002
12	Kel. Ngampilan	35,966	0,145	0,001
13	Kel. Wirobrajan	36,070	5,874	0,001
14	Kel. Brontokusuman	35,966	8,489	0,006
15	Tamansari, Kel. Kadipaten	35,966	7,023	0,004
Jumlah ISPU		539,6	23,5	0,1
Rata-rata		36,0	1,6	0,0
Total ISPU			563	
Kualitas Udara			13	
Kategori			Baik	

Source: DLH Yogyakarta

triggering an increase in CO2 emissions. The researcher concludes that energy waste from the use of private vehicles is caused by a lack of education about the importance of sustainable development and the role of everyone in environmental conditions caused by economic activity and community households.

The fig.3 shows that the air quality in the city of Yogyakarta is still classified in the good category but this result is likely to increase every year if the use of fuel and private vehicles continues to rise every year due to the dependency on private vehicles in the city of Yogyakarta. Therefore, the city government of Yogyakarta has programs to address environmental issues, i.e.:

1. Periodically monitoring air pollution potential, monitoring implications, and evaluation of the Yogyakarta city government which regularly checks air quality in residential areas and highways. collecting data on air quality but the lack of public transportation development and infrastructure makes monitoring is unreliable if without specifical design to using the obtained monitoring data as an objective to implementing spatial analysis in the urban environment.

Increased development across all sectors, particularly tourism, has heavily affected the pollution levels in Yogyakarta City (Nuryadin, Saleh, Hardi, & Pangaribowo, 2019). The increase in the economic development of Yogyakarta City. Especially, in the tourism sector and is supported by a high level of interest from people outside the region to continue their education in Yogyakarta City. These two factors influence the development of facilities that support the economy of urban areas such as hotels, offices, tourism sites, and educational facilities.

The higher the number of populations increases in urban areas, the need for transportation capital is needed to support the economic activities of Yogyakarta City, and the community. However, if the government is too focused on developing the economic sector, and lacks innovation in terms of prevention related to air pollution levels, there will be an imbalance in implementing sustainable development, this has become a negative impact on

pollution levels from the influence of the development in the urban area.

The research was done by (Khairina et al., (2020) explained that "Development will bring impacts and risks to the ecosystem. Therefore, development activities must be environmentally friendly for sustainable development." The influence on the environment cannot be separated from the development in the urban area. Therefore, development must require various considerations and input from the community. The data collected can be taken into consideration for the policy formulation process regarding the resulting impacts, and in particular, policies that focus on preventing or reducing negative impacts on the environment resulting from the development process in the City of Yogyakarta.

2. Implementation of the Climate Village Program (PROKLIM) together with the community and awarding the best climate villages based on the evaluation results of the PROKLIM Village. PROKLIM Village aims to educate the public in dealing with the phenomenon of urban sprawl and minimize the amount of household waste utilizing waste management through waste banks, teaching the community to innovate more in recycling waste that can later be an additional income such as eco-bricks or other crafts. However, the government is experiencing difficulties in the implications of this program due to the lack of collaboration and communication between the government and the community which makes this program still not a reliable program in creating an environmentally conscious environment.

The private sector and the NGOs which currently working together also have influence but their interest and participation are remaining low (Maula, 2020). The problem in implementing the PROKLIM program is that the level of community participation is still considered low, and the government with high power is still not active in conducting regular supervision, and still relies on information from the Urban Villages related to the village's evaluation. Thus, the essential values of knowledge obtained from empowerment, socialization are not well conveyed or enlightening the knowledge of the community, and people are only competing to win the competition without spreading it to the other people. Practicing the knowledge in terms of adaptation and mitigation in everyday activities. Therefore, the community movements resulting from this program are still on a small scale and are not spread evenly in every Urban village in Yogyakarta city.

3. Adding Trees and Planting Areas to Public Green Open Spaces and Roadships (RTHP). Trees in green open spaces have a function as pollution absorbers and oxygen producers. In 2018, there was an increase in the area of green space by 822 m2 of Public Green Open Space in Yogyakarta City with details of 172 m2 in Pringgokusuman Village, 250 m2 in Kadipaten II Village, and 400 m2 in Brontokusuman II Village. The limited area is a challenge for the addition of green open space both from the private sector and from the Yogyakarta City government which focuses on the program design for the next 5 years. If the researcher looked at the data from (DLH Kota Yogyakarta, 2019) the area of public green open space and private green open space in the city of Yogyakarta in 2019 was 5.867% and 12.933% respectively so that the total area of green open space in the city of Yogyakarta was 18.80% of the total area.

Although the number of RTHP almost reaches the target that must be achieved, namely 20% of the total area. In the case of the implementation of the Yogyakarta, the government still has not yet succeeded to create green open space which aims to reduce the level of air pollution and the lack of the role of stakeholders makes the making of green open space obstructed and

takes a long time, without the awareness of the government and community participation will make the environmental threat is higher than from The need for green space to filter chemical pollution in the air.

Green Spaces (GS) projects have been implemented as adaptation strategies in response to climate change from Europe to Asia (Maghrabi, Alyamani, & Addas, 2021) The development of GS in the city of Yogyakarta certainly requires collaboration between stakeholders from the local government and the private sector. To achieves the development of GS to be well-coordinated, prioritizing the participation, and the quality of green open space development that provides an adaptation process to the community prioritizes to make more sustainable urban development process, Because the area of Yogyakarta City is relatively small, the green open space development process cannot directly focus on quantity because the limited land available makes the Yogyakarta city government have to find innovative solutions for a better development direction.

(Pratiwi and Purnomo, (2021) argue "providing green open space cannot be done simply by directly targeting the quantity because it will only burden the city of Yogyakarta budget" Integration of public policies that are in line with the interests of adaptation and mitigation in facing climate change in the Yogyakarta City area which every year faces opportunities to decreasing in terms of air quality if there is no alignment and vigilance from stakeholders. Therefore, development targets need to be targeted at community organizations, which later from the empowerment process, the socialization will have an influence on the community to slowly adapt, and change bad habits that can damage the environment of the Yogyakarta city

CONCLUSION

In this research the role of urban transportation in Yogyakarta is a crucial issue that the government needs to put more attention to, Yogyakarta's inadequate transportation service system has an impact on the density of traffic in some urban sections to the suburban area. The urban community tends to choose private vehicles because it is more practical and affordable prices resulting in transportation facilities in Yogyakarta such as Trans Jogja that have decreased the number of passengers.

Related to the lack of government implications in maintaining air quality in the city of Yogyakarta has the potential for air quality degradation in the next few years if the government does not implement optimal prevention and implication strategies. The government's performance in providing convenient and effective transportation services through collaboration with other stakeholders and improvement of facilities in Trans Jogja, including the addition of several lines to improving access for urban communities has been running quite optimal. The problem rests on how the Yogyakarta city government is encouraging and empowering the community to switch to urban transportation as their main transportation, to increase the number of trans Jogja passengers in the future.

The phenomenon of sprawling in the city of Yogyakarta causes the lifestyle of the urban community to be energy-intensive, and too dependent on private vehicles as the main vehicle for the community. The implications of Mitigation and Adaptation are still not optimal due to the relatively small area of the city of Yogyakarta, and the lack of awareness from public officials in conducting regular monitoring and community evaluation to ensure that the

implementation of programs is implemented based on standards, these things could lead the community to have better awareness and enabling better knowledge in sustainability.

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