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Walking Towards Wellness: Exploring Community Views on Urban Walkability for a Healthier Lifestyle in Semarang

Kirana Prasetya Azizah[1]✉, Bagus Hario Setiadji[2], Haryono Setiyo Huboyo[3]

[1]Doctoral Program of Environmental Science, Postgraduate School, Diponegoro University, Semarang, Indonesia
[2]Department of Civil Engineering, Diponegoro University, Semarang, Indonesia
[3]Department of Environmental Engineering, Diponegoro University, Semarang, Indonesia

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Abstract

Promoting active mobility, such as walking, is a key measure in creating a healthier urban environment. In support of Semarang City's Urban Mobility Plan, which prioritises low-carbon strategies, the local government has undertaken extensive development of pedestrian infrastructure since 2017. This study investigates public willingness to utilise pedestrian pathways, a critical component in ensuring the effectiveness of such interventions. Data were collected through a survey involving 254 respondents across 24 major roads in Semarang. Findings indicate that walking is predominantly undertaken for shopping and health-related activities, typically covering distances between 200 and 800 metres on weekends. Destinations most frequented include shops, markets, stalls, and shopping centres. The results highlight the importance of integrating user-centred design into pedestrian infrastructure and emphasize the function of pedestrian paths as a social interaction space for both physical exercise and building community cohesion, thereby maintaining the mental health of residents.

Introduction

Today's urban environments continue to experience a decline in liveability due to air pollution from high carbon emissions. Several Sustainable Development Goals (SDGs), especially those pertaining to environmental sustainability, sustainable cities and communities, are greatly aided by the incorporation of pedestrian routes into urban planning. Enhancing pedestrian pathways to improve urban walkability considerably aids urban adaptation to global threats such as climate change. Walkability denotes the suitability of urban areas for pedestrian activity, incorporating design, connection, and accessibility elements that render walking an appealing means of transportation. Enhancing pedestrian paths will have a positive impact on urban air quality.

Walkability has an impact on reducing greenhouse gas emissions (GHG). Urban areas that prioritize walking and cycling can reduce dependence on private vehicle usage and reduce air emissions, especially from the transportation sector. Improving urban walkability, according to research, is crucial to Net Zero Emissions, especially in densely populated cities. Creating liveable and resilient cities is the embodiment of the UK Sustainable Development Goals (Brand *et al*., 2021; Dovey & Pafka, 2019; Huang & Khalil, 2023). Walking as part of non-motorized transportation can reduce CO2 emissions so that the city's air is cleaner. The transportation sector is the largest contributor to GHGs, and real mitigation measures are needed. The government's steps with low-carbon policies, including increasing the mobility of non-motor vehicles, are considered the most appropriate

✉ Correspondence Address:
Doctoral Program of Environmental Science, Diponegoro University, Semarang, Indonesia
Email: kirana.p.azizah@gmail.com

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step (Karaşan *et al.*, 2024). The city of Semarang has implemented strategic steps to mitigate the impact of GHG due to transportation by building pedestrian paths. The city can achieve sustainability and environmentally sound development by expanding and enhancing pedestrian paths (Azizah *et al.*, 2025).

The construction of urban pedestrian paths is also associated with the reduction of Urban Heat Island (UHI), as it often involves green paths along its corridors. By providing an inclusive area that is safe for pedestrians, equipped with canopies, shading, and greening, pedestrian corridors can reduce heat stress and increase safety and comfort for their users (Necira *et al.*, 2024; Siqi *et al.*, 2023; Vartholomaios, 2023). Survey data from Singapore indicates that thermal comfort levels affect a user's ability to walk for extended periods. Those who said they felt at ease said they would be willing to travel farther if the weather was comparable (Subramanian *et al.*, 2024). Pedestrian paths that are integrated with green open spaces can reduce urban heat and improve urban air quality. The green paths on pedestrian paths provides comfort to pedestrians in summer and reduce the impact of harmful pollutants (Song *et al.*, 2023). Comprehensive urban planning is needed to create a microclimate that improves comfort and public health, without ruling out the fulfilment of pedestrian accessibility and natural surroundings (Badach *et al.*, 2022).

Semarang is one of the major cities located in the coastal area. The coastal areas experience unique problems, challenges, and opportunities that are different from other areas (Susilawati *et al.*, 2023). The deficiency of public open space in Semarang City is a significant concern for the municipal authorities. The emphasis on creating public places for the community is a developmental objective. One of the government's initiatives in this instance is the development of pedestrian pathways, which have been extensively constructed lately. The primary function of pedestrian pathways in today's urban development is evolving into public open spaces, which are also becoming essential for preserving citizens' physical and emotional well-being. Because of this, the fundamental layout of pedestrian pathways at least offers locals of all ages and physical abilities a safe main pedestrian route. Other functions must not interfere with this primary line. Furthermore, there is an area for complementary facilities such as sitting benches, hydrants, drainage systems, rubbish bins, statues or attractive installations, and green lanes (Joga *et al.*, 2022).

One revitalisation tactic to improve sustainability and liveability in cities and other urban areas is to encourage pedestrianisation. It enhances urban mobility and contributes to decreasing the negative effects of the trip on the environment (Soares & Tosato, 2024). Pedestrianization is a term used to describe regions where people primarily walk. It is especially appropriate for high-density, central locations along major retail corridors. Delivery traffic may be feasible during particular daily hours, and in certain instances, it is implemented with the sole supply of public transportation services. The goals of pedestrianization programs are to attract more people into the downtown on foot, foster a greater respect for the pedestrianized region, and increase public understanding of the city environment. To achieve these goals effectively, it is essential to engage the community actively in planning and implementation processes.

A key component of sustainable development is public involvement, which guarantees that the opinions of many stakeholders are heard and taken into account during the decision-making process. In order to effectively solve complex environmental and societal difficulties, it is imperative that sustainable development topics be incorporated into both traditional and interdisciplinary research. This involves public participation (Ermakov & Ermakov, 2020). Achieving sustainable development goals requires incorporating environmental adaptation into routine sector operations. Analysing pedestrian behaviour is crucial for enhancing public health, safety, and urban planning to create pedestrian-friendly areas and increase society's standard of living, generally in urban settings. Sustainable cities will become more significant from an environmental perspective if pedestrian safety is given top priority in urban development. Encouraging walking and other non-motorized forms of transportation in a safe pedestrian

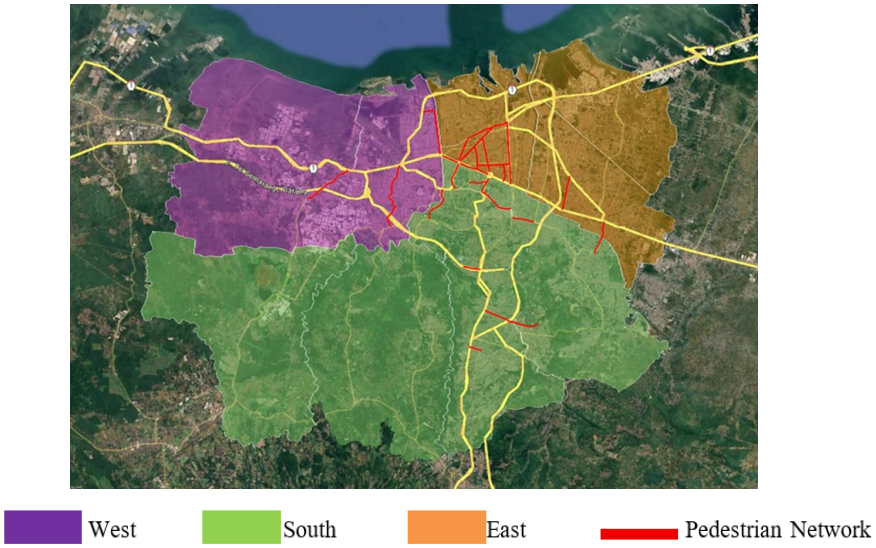

Figure 1. Survey Location (Primary Data, 2025)

environment lowers emissions and pollution from driving (Varsha *et al*., 2023).

Methods

This research was carried out in two stages; the first was analysing secondary data obtained from the Semarang City Public Works Department in 2023. The second stage was a survey with multi-purpose sampling with planned respondents of 254 people, with pedestrian path locations spread across 24 locations throughout Semarang city. The survey involved 254 respondents who use pedestrian paths in Semarang City, spread across 24 locations, and was carried out using the go-along interview method. The survey location is divided into three areas. The west, east, and south areas of Semarang City are shown on Figure 1.

The go-along interview method is often used in qualitative research techniques, especially in the social sciences related to public perception of infrastructure. The go-along interview results in an in-depth understanding. The involvement of interview participants to gain a direct in-depth experience about the surrounding environment that will be the focus of the study. The go-along interview method offers the advantage of direct interaction of participants with the environment. This method is to find out and measure how much impact local infrastructure has on people's social connectivity. This method makes it possible to describe the public view of the development carried out, as well as analyse the needs of the community that have been met and which parts need improvement (Berg *et al*., 2023; Reed & Ellis, 2018). Participants are invested in the go-along method's participation element, which gives them a sense of ownership in expressing their opinions about infrastructure (Muro *et al*., 2020).

The following is a formulation of questions developed into three categories to reveal the public's perception of pedestrian paths: a) What is your purpose for walking? (for shopping / work / using public transport / go for a walk / walking home / walk to parking area / doing sport / walk to public facility); b) What is your motivation while walking? (for enjoy the fresh air / using public transport / to be healthier / limited parking space); c) How far you walk? (less than 200 meters /200 – 800 meters / more than 800 meters). From the 254 data collected, a data analysis method was carried out using SPSS software to conduct a chi-square test, which is highly beneficial for testing the relationship between demographic categories and frequency of pedestrian use. In studies involving community participation, this analysis method is imperative (Sofiyah *et al*., 2025).

Result And Discussion

In Semarang, pedestrian walkway development started in 2017 and has continued

TABLE 1. Respondent Data and Chi-Square Analysis Result

		Age Range			
< 20 years		**21 - 50 years**	**> 50 years**		**Total**
Gender	Female	11	68	14	93
	Male	21	111	29	161
Total		32	179	43	254

	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	.520[a]	2	0,771
Likelihood Ratio	0,525	2	0,769
Linear-by-Linear Association	0,061	1	0,805
N of Valid Cases	254		

Source: Primary Data, 2025

until 2023, when it will have covered 20% of all municipal roads (Semarang Public Works Service, 2023). The massive construction of pedestrian paths certainly requires public perception of the built pedestrian paths as a measure of community participation to support the reduction of urban GHG. The goals of pedestrianization programmes are multifaceted and aim primarily to draw a greater number of people into the city centre on foot, thereby reducing dependence on private vehicles and contributing to the overall vibrancy and economic vitality of urban areas. In addition to encouraging foot traffic, these initiatives seek to foster a heightened respect and appreciation for the pedestrianized zones, promoting a sense of community ownership and enhancing the aesthetic and environmental quality of the urban landscape.

The development of pedestrian walkways in Semarang has generated different public acceptance at several levels (Semarang City Regional Planning and Development Agency (BAPPEDA), 2023). As a measure of development success, it is necessary to study the public perception that arises. The application of impact analysis to pedestrians is beneficial for ongoing community projects in communities affected worldwide by the construction of historic highways and the divestment of human-scale infrastructure (Sevtsuk *et al*., 2024). Data collection regarding public perceptions involved 254 pedestrian respondents in Semarang City on 24 roads. The collected respondent data is grouped by age and gender categories, as seen in Table 1.

From the results of the chi-square analysis, an insignificant relationship was obtained between the age range of pedestrians and gender, with a p value 0,771 > 0,10. It means that gender differences do not have a significant effect on the willingness to walk in various age categories. Respondents' purpose for walking on pedestrian facilities in the city of Semarang (Figure 2) consist of walking to work, walking to shops/stalls/shopping centres/markets for shopping, just for a walk, walking to the bus stop to use public transportation, walking to public facilities (schools, parks, hospitals, mosques, etc.), walking to homes, walking to parking lots, and for exercising. As many as 34% of the 254 respondents walked to shops/stalls/shopping centres/markets to shop. Pedestrian paths centred in Semarang City CBDs allow residents and tourists to reduce the number of motor vehicle trips, thereby reducing emissions from the transportation sector. Pedestrian paths can enable users to engage in physical activity and exercise as part of a healthy lifestyle.

The next largest pedestrian purpose is to go to public facilities such as city parks by 18% and take public transportation by 13%. The accessibility of public amenities is greatly impacted by the layout and interconnectivity

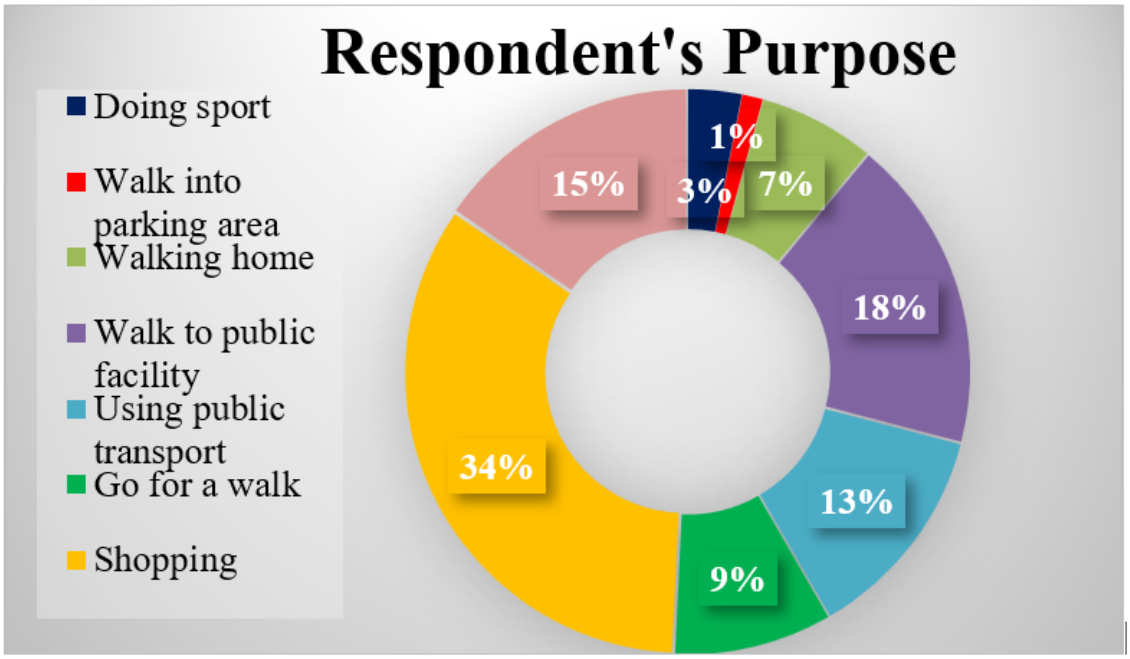

FIGURE 2. Respondents' Purpose for Walking (Primary Data, 2025)

of pedestrian walkways. According to research, places with a high land use density and a variety of public, commercial, and service facilities benefit from providing enough pedestrian routes, which in turn promotes greater use of sustainable transportation (Juanita *et al.*, 2023). How readily people may move across urban areas depends on a number of important elements, including the quality of pedestrian infrastructure and the spatial distribution of destinations (Alamoush & Kertesz, 2022).

Most of the respondents' motivations (seen in Figure 3) for walking using pedestrian facilities in Semarang City are to be healthier (43%), while the others are to enjoy the atmosphere (26%), to be able to use public transportation (20%), and limited parking space (11%). As many as 20% of respondents answered regarding the purpose and motivation for using pedestrian paths because they access public transportation. Pedestrian paths must have good connectivity to public transportation facilities such as bus stops or commuter train stations. It is, of course, in the context of

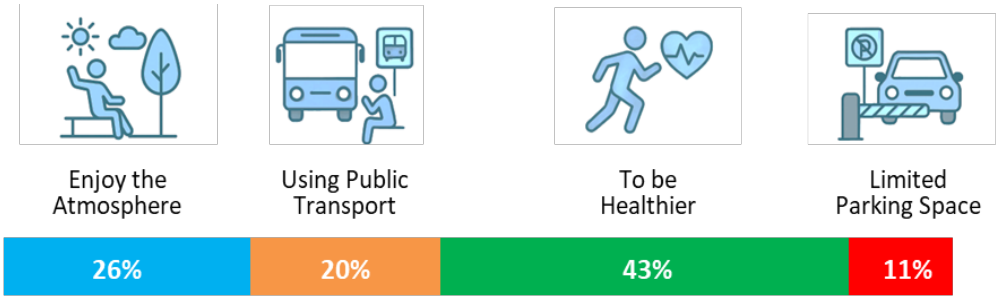

FIGURE 3. Respondents' Motivations for Walking (Primary Data, 2025)

realizing Low Carbon Mobility by encouraging urban communities to switch from using private vehicles to mass public transportation.

The level of awareness of urban communities regarding the importance of a healthy lifestyle is also something that cannot be ignored in designing public facilities. Occupying the largest portion, 43% of respondents stated the reasons for using pedestrian paths to live a healthier life by walking. Walking can improve the body's metabolic system and non-communicable illnesses, including heart disease, hypertension, diabetes, and obesity (Li *et al*., 2022; Prihanti *et al*., 2022). By getting used to walking, people get physical activity, which increases personal immunity and improves air quality by reducing carbon emissions. Additionally, creating pedestrian routes to encourage walkability can have a major positive impact on public health. An urban environment that creates walkability will encourage city dwellers to engage in physical activities and lead to a healthy lifestyle. Obesity rates can be lowered, and cities can save on costs for treatment. Good urban planning will create walkability and active commuting (Kim *et al*., 2020). Among the elderly, physical fitness and psychological well-being have a significant relationship to their quality of life. One of the most relevant indicators in maintaining fitness is walking for 6 minutes and steps for 2 minutes (Lufthiani *et al*., 2022; Prastyawan *et al*., 2024). Meanwhile, in adolescents, physical activities such as walking can improve physical fitness and lung capacity, especially in the context of a healthy lifestyle (Irawan *et al*., 2019). These activities are very possible to be done on pedestrian paths as public open spaces.

The survey results stated that 26% of respondents had the motivation to walk to 'enjoy the atmosphere'. In the routine of a complex urban society, public open spaces are needed to improve the feasibility and comfort of city living. A well-designed pedestrian path is one of the elements to meet the needs of public open space. Wide pedestrian walkways, usually equipped with plazas, provide interaction space for city dwellers. In addition to facilitating movement, these spaces can form social engagement and improve mental health, thus contributing to a liveable urban environment. The integration of pedestrian infrastructure into urban planning can not only increase mobility but also increase social cohesion, making cities more inclusive and more liveable. Pedestrian areas are increasingly in demand for social gatherings, trade, and entertainment. Therefore, understanding the elements that contribute to attracting pedestrians and creating a pleasant feeling while doing so is very important (Sun *et al*., 2023).

Pedestrian paths can not only contribute directly to the improvement of urban public open space, but also benefit from improving the mental health of citizens. The integration of pedestrian paths into urban planning encourages social interaction and community cohesion that are essential for mental well-being. A decent public open space will provide opportunities for socialization and community involvement, which can reduce feelings of loneliness and isolation (Uniaty, 2017). The design of the corridor that combines green space and seating areas can invite residents to spend time outdoors (Braubach *et al*., 2017). To support this concept, the quality of the pedestrian path that focuses on greenery and visual diversity will increase the attractiveness for residents, as well as provide a sense of belonging and togetherness (Villanueva *et al*., 2015).

Numerous standards for streetscape design have gained popularity and success in urban planning research. These guidelines evaluate how effectively streetscape design accomplishes walkability objectives by examining pedestrian satisfaction levels and operating volume after implementation (Chriqui *et al*., 2016; Giles-Corti *et al*., 2008; Hansen, 2014). The majority of these studies point to the benefits of design standards for improving pedestrian comfort, as measured by higher levels of running volume and pedestrian satisfaction. Therefore, it is still burdensome to create aesthetically pleasing streetscapes using design rules (Lee & Park, 2023). Beyond just providing access, pedestrian walkways in metropolitan areas also enhance the general liveability and appeal of cities. The city becomes beautiful and provides an attraction to locals and tourists alike with integrated pedestrian path planning. Especially in locations that

depend on tourism activities, pedestrian paths can give a positive impression that supports increased local income (Mahayani *et al*., 2023). The increase in walkability is influenced by the visual appearance (streetscape) and the character of the environment or local wisdom lifted from the pedestrian path. Research says that adding green lanes and landscaping arrangements to a corridor will increase the number of pedestrians (Wang & Van Ameijde, 2023). Pedestrian paths as part of usable public space that support the walking activities of city residents will increase the liveability dimension of the city (Baobeid *et al*., 2021).

The fulfilment of urban green spaces has a great impact on walkability (Figure 4). The study stated that aspects of environmental quality, including the quality of greening, affect walking behaviour (Kim *et al*., 2020). Some additional details, commonly called street furniture, consisting of benches, aesthetic elements such as decorative lights, and tree canopies, enhance the perception of a positive experience in pedestrians, as well as add value to the landscape (Kumalasari *et al*., 2022; Wu *et al*., 2024). Areas with high pedestrian indexes often show increased citizen engagement in the community, resulting in an increased need for open space that positively affects the mental health of urban residents and social connectivity (Hellberg *et al*., 2021).

In the United States, walkability is confirmed to be influenced by both aesthetics and traffic safety. The results of the testing indicated that the towns may increase neighbourhood walkability by extending their walkways and installing buffers between them (Bokharaei & Nasar, 2023). The desire to walk can increase along with improving sidewalk facilities, either by widening pedestrian paths or adding green open space. The survey results show that the distance travelled by most respondents in Semarang City, 61% of the 254 respondents, was 200-800 meters. 26% respondents walk less than 200 meters, while 13% of respondents walked on pedestrian facilities in Semarang City for more than 800 meters (Figure 5).

In Semarang City, the ideal distance travelled by pedestrians is 200m - 800m. It is in line with research in Bangkok, underlining the "accepted distance" for walking is 400m – 500m in the CBD area (Janpathompong *et al*., 2022). If the facility is within a walkable radius and is equipped with safe and supportive infrastructure, residents will prefer walking

FIGURE 4. Wide Pedestrian Lane and Greening at Pemuda Street (Author Collection, 2025)

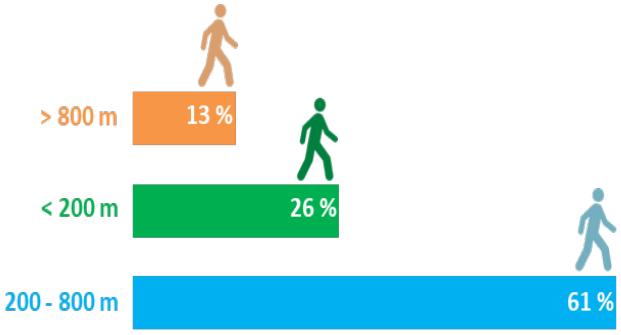

FIGURE 5. The Distance Travelled by Respondent (Primary Data, 2025)

more than using motor vehicles. Especially if the pedestrian path is supported by greening, sky, and flowers, the willingness to walk can increase by 60 – 70 meters (Basu & Sevtsuk, 2022). Semarang City is located in a coastal area. So it tends to have hot temperatures. The local government anticipates this by carrying out greening along pedestrian paths. Shaded pedestrian paths escalate the comfort of pedestrians, thereby attracting people to walk on the path. Therefore, attention needs to be paid to improving the walkability environment from an advanced perspective, environmental multifunctional appeal, and park green open spaces (Koster & Rouwendal, 2012). 13% of respondents who walked on pedestrian facilities in Semarang City for more than 800 meters to do sports activities.

Conclusions

The survey results suggest that public awareness of the need for a healthy lifestyle and active mobility by walking is quite high. Therefore, it is necessary to enhance pedestrian paths that can accommodate the community's needs. Most respondents answered that the walking distance was 200-800 meters. Pedestrian paths that are good in terms of function and integration and have high aesthetics by combining the concepts of landscaping and greening will improve the ability and willingness to walk and support the concept of urban low-carbon mobility. Shady and visually appealing pedestrian paths, proper lighting, and visually engaging urban design not only improve comfort but also increase the attractiveness of walking as a daily mode of transport. Pedestrian paths integrated with green infrastructure make a positive contribution to environmental quality and public health, both physically and mentally. Thus, the development of pedestrian paths is not only carried out in terms of the physical development aspect of the route, but also prioritizes aspects of social function and public health, by paying attention to local wisdom, public perception, and being inclusive for all levels of citizens.

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