

**POLLING REPORT:
RESIDENTS' THOUGHTS AND
PERCEPTIONS ON AIR QUALITY**

DEFINING A CLEAN AIR ZONE FOR JOHANNESBURG





Breathe Cities

Breathe Cities is a first-of-its-kind initiative delivered by the Clean Air Fund, C40 Cities and Bloomberg Philanthropies to clean our air, cut carbon emissions and enhance public health in cities around the world.

We bring together air quality data, communities and city leaders in our mission to reduce air pollution and planet-warming emissions by 30% across participating cities by 2030. Breathe Cities programmes are running in 14 cities worldwide, from Bogotá to Bangkok and Jakarta to Johannesburg.

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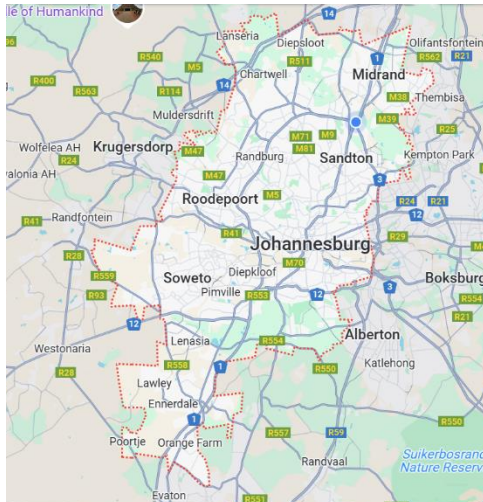
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1

EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY



In response to a call by the Breathe Cities and the City of Johannesburg, the Seriti Institute developed and submitted a proposal to conduct a polling survey aimed at gathering collective intelligence on air quality perceptions and concerns across the Johannesburg Metropolitan area. The purpose of the survey was to inform the development of a Clean Air Zone (CAZ) policy tailored to Johannesburg's unique environmental and socio-economic challenges.

This initiative focused on capturing diverse perspectives from a representative sample of approximately **3,000 respondents**, reflecting the city's demographic and geographic diversity.

Through this project, Seriti, in collaboration with strategic partners, sought to provide critical data and insights into residents' experiences of air pollution, their perceived impacts, and their expectations for change. These outputs contribute to the broader Breathe Johannesburg strategy, enabling evidence-based decision-making and creating collaboration between residents, stakeholders, and policymakers.



The findings also address a pressing need for targeted interventions to mitigate air pollution while advancing equitable and sustainable urban development.

In addition to the polling survey, a series of focus group discussions and a stakeholder workshop were conducted to enrich the findings with qualitative insights and multi-sectoral perspectives. These engagements provided a platform for city officials, community members, and other stakeholders to collaboratively explore air quality solutions, share knowledge, and identify the key priorities

[1] a global initiative by C40 Cities, the Clean Air Fund, and Bloomberg Philanthropies

KEY QUANTITATIVE FINDINGS

- **DEMOGRAPHIC TRENDS:** The age group **30–35 years** displayed the highest level of concern for air quality issues. Gender representation revealed a slight imbalance, with males being marginally more represented, though concerns about air pollution were consistently significant across both genders and educational backgrounds.
- **REGIONAL DIFFERENCES:** Southern suburb residents reported greater exposure to waste burning and its associated pollution, while residents in the northern regions identified vehicle emissions and industrial activities as their primary concerns.
- **SEASONALITY AND TIME-OF-DAY EFFECTS:** Pollution was perceived to peak during winter, due to the increased use of heating, and in the evenings, when traffic congestion was at its highest. Industrial emissions during midday were also noted as a significant concern.
- **PRIMARY SOURCES OF POLLUTION:** The survey confirmed fossil fuel combustion, vehicle emissions, and waste burning as the primary contributors to poor air quality across all demographic groups.



KEY QUALITATIVE THEMES

- **HEALTH IMPACTS:** Participants consistently associated air pollution with respiratory illnesses, cardiovascular diseases, and other health issues, particularly affecting vulnerable populations such as children and the elderly.
- **ENVIRONMENTAL CONCERNS:** Respondents voiced alarm over the long-term ecological damage caused by pollution, including biodiversity loss and water resource degradation.
- **SOCIAL INEQUALITIES:** Vulnerable communities, especially those in low-income areas, were identified as disproportionately affected by pollution, highlighting the intersection of environmental and social justice.
- **ECONOMIC IMPACTS:** Participants pointed to air pollution's adverse effects on local economic growth, noting reduced appeal for new businesses.

KEY INSIGHTS FROM STAKEHOLDER ENGAGEMENT AND FOCUS GROUPS

- **THE ROLE OF GREEN SPACES:** Stakeholders emphasized the importance of creating and expanding green spaces to improve air quality while advancing urban liveability.
- **MULTI-SECTORAL COLLABORATION:** Focus group discussions highlighted the need for coordinated efforts across transport, waste management, energy, and health sectors to achieve meaningful change in air quality.
- **ECONOMIC OPPORTUNITIES:** Stakeholders identified the potential for CAZ initiatives to drive green economic growth, create jobs, and attract investment in clean energy and sustainable transport.
- **PUBLIC AWARENESS AND COMMUNITY ENGAGEMENT:** A critical need was identified to educate the public about the health impacts of air pollution and build awareness of CAZ benefits. Residents also stressed the importance of involving vulnerable communities in policy development to ensure inclusivity and equity.

NEXT STEPS

The data and evidence gathered from this project will underpin the development of a Clean Air Zone policy that reflects Johannesburg's diverse needs and realities. The findings will serve as a baseline for guiding future interventions. Key recommendations include targeted awareness campaigns, stricter enforcement of air quality regulations, and investments in sustainable infrastructure, renewable energy, and green economic initiatives.



An aerial photograph of a city, likely Toronto, with a blue overlay. The CN Tower is prominent on the left. White geometric shapes, including a large '2' and several circles, are overlaid on the image. The word 'INTRODUCTION' is written in white capital letters across the middle.

2

INTRODUCTION

2. INTRODUCTION

The Seriti Institute, in collaboration with Breathe Cities and the City of Johannesburg conducted a comprehensive polling survey to gather collective intelligence on air quality perspectives and perceptions from communities across the City of Johannesburg Metropolitan area. This initiative aimed to capture Johannesburg residents' diverse experiences and views regarding air quality and related interventions, with a sample size of approximately 3,000+ respondents, ensuring a representative cross-section of the city's demographic and geographic diversity.



The overarching purpose of this survey was to provide essential data and evidence to inform the development of a Clean Air Zone policy tailored to Johannesburg's residents' specific needs, interests, and concerns. By focusing on the unique challenges faced by different communities within the city, the project sought to ensure that the proposed solutions are both relevant and effective.

The survey's geographical focus was strategically divided into two significant groups: the northern and southern suburbs of Johannesburg, with the Central Business District (CBD) serving as the midpoint. This division reflects the city's socio-economic and urban development patterns, with the northern suburbs, such as Sandton, Rosebank, and Randburg, known for their affluence and modern commercial developments, and the southern suburbs, including Soweto, Mulbarton, and Braamfontein, historically characterised as working-class areas.

The insights gathered from this study are crucial for advancing the Breathe Johannesburg strategy. They will enable the co-development of a comprehensive survey tool designed to gather detailed information from residents about their perceptions and experiences related to air pollution. Ultimately, the data collected will play a pivotal role in shaping policies and interventions to improve air quality and address the city's environmental challenges.

3

METHODOLOGY



3. METHODOLOGY



3.1 SURVEY DESIGN

The design of the survey followed a meticulous, iterative process to ensure its alignment with the project's core objectives while incorporating feedback from experts, stakeholders, and community representatives. This approach prioritized relevance and scientific rigor, ensuring the survey's effectiveness in capturing quantitative and qualitative data.

The initial draft of the questionnaire was developed based on the project's research objectives, focusing on air quality perceptions, experiences, and attitudes toward CAZ policies. The draft underwent multiple rounds of review and refinement, incorporating insights from the Breathe Johannesburg air quality experts, policy specialists, and community stakeholders. This process was crucial in tailoring the survey to address Johannesburg's unique environmental and socio-economic context.

3.2 SURVEY STRUCTURE

The finalized survey was designed to facilitate a balanced blend of quantitative and qualitative analysis, capturing measurable data while allowing respondents to provide deeper insights. To achieve this, various question formats were employed:

- **STRUCTURED FORMATS:** Multiple-choice questions, rating scales, and ranking preferences provided standardized responses for analysis.

- **QUALITATIVE QUESTIONS:** Limited but strategically placed open-ended questions allowed respondents to express detailed perspectives, particularly regarding personal experiences and policy recommendations.

The survey was systematically divided into distinct sections, ensuring clarity and focus for respondents:

1. **INTRODUCTORY BACKGROUND:** Explaining the purpose of the study, its context, and the significance of community input in shaping Clean Air Zone policies.
2. **DEMOGRAPHIC INFORMATION:** Collecting details on age, gender, education level, and geographic location to analyse trends and correlations across different population segments.
3. **PERCEPTIONS OF AIR POLLUTION:** Exploring awareness levels, concerns, and the direct impacts of air pollution on respondents' health, environment, and daily lives.
4. **ATTITUDES TOWARDS CLEAN AIR ZONE POLICIES:** Gauging opinions on proposed interventions and seeking recommendations for effective implementation.

3.3 TECHNOLOGY INTEGRATION FOR DATA INTEGRITY

To maximize data accuracy and reliability, the survey was conducted using a mobile application equipped with advanced features:

- **SKIP LOGIC:** This feature guided respondents through relevant questions based on their previous answers, improving flow and avoiding unnecessary repetitions.
- **VALIDATION RULES:** Built-in mechanisms ensured responses were complete and consistent, minimizing errors during data collection.
- **MANDATORY QUESTIONS AND REAL-TIME PROMPTS:** Essential questions required completion before proceeding, while live prompts encouraged thoughtful and accurate inputs.

Field agents were trained extensively to leverage mobile technology, enabling efficient and error-free data collection across Johannesburg's diverse communities. This method proved effective in enhancing response rates while maintaining the integrity of the data.

3.3.1 REFINEMENTS AND STAKEHOLDER COLLABORATION

The survey design was not a static process but a dynamic one - Stakeholder input and expert reviews shaped key aspects of the questionnaire, ensuring it addressed critical themes, including demographic information, pollution sources, regional disparities, and attitudes toward policy measures. Feedback loops allowed for continuous improvement, ensuring the survey was both inclusive and scientifically sound.

3.4 SURVEY ROLLOUT

3.4.1 RECRUITMENT AND SELECTION OF FIELD AGENTS

To ensure the successful execution of the survey and build trust within the target communities, Seriti Institute adopted a community-centred approach to recruit field agents. A public call for applications was issued, prioritizing local participants from within the target areas to strengthen community engagement and representation.

The recruitment campaign was widely disseminated through multiple channels, including Seriti Institute's social media platforms, partner organizations, and local community networks across Johannesburg. This effort resulted in an overwhelming response, with 1,900 applications received—demonstrating high levels of community interest and commitment to the initiative.

Given the substantial number of applicants, a robust and systematic selection process was implemented to identify the most suitable candidates. Selection criteria included:

- **PRIOR EXPERIENCE:** Candidates were assessed on their previous experience in data collection, community engagement, or related fields.
- **KNOWLEDGE OF AIR QUALITY ISSUES:** A basic understanding of air quality concerns and their impacts was considered advantageous.
- **COMMUNICATION SKILLS:** Telephonic interviews were conducted to evaluate candidates' ability to engage effectively with respondents and articulate survey objectives.
- **CULTURAL COMPETENCE:** A focus was placed on selecting individuals who demonstrated sensitivity and understanding of the diverse communities within Johannesburg.

3.5 TRAINING OF FIELD AGENTS

Following the selection process, all field agents participated in comprehensive training to equip them with the skills and knowledge required for accurate, consistent, and ethical data collection. Training modules covered several critical areas:

1. **SURVEY METHODOLOGY:** Detailed guidance on the survey's structure, objectives, and protocols to ensure standardized data collection across all agents.
2. **ETHICAL CONSIDERATIONS:** Emphasis on the principles of informed consent, confidentiality, and respect for respondent rights. Agents were trained to handle sensitive questions with care and professionalism.

- 3. MOBILE DATA COLLECTION TOOLS:** Practical, hands-on sessions introduced agents to the mobile survey application, focusing on features such as skip logic, data validation, and troubleshooting.
- 4. RESPONDENT ENGAGEMENT STRATEGIES:** Role-playing exercises prepared agents to address common challenges, such as overcoming respondent scepticism or reluctance.
- 5. DATA QUALITY ASSURANCE:** Instructions on real-time data validation processes to minimize errors and ensure the integrity of collected responses.

Through this thorough training program, Seriti Institute ensured that field agents were not only technically proficient but also confident in creating positive interactions with respondents.

3.6 COMMUNITY-CENTRED APPROACH AND INCENTIVE MODEL

Seriti Institute's commitment to community empowerment was reflected in its incentive model, which emphasized both engagement and fairness. Field agents were compensated on a per-survey basis, incentivizing efficiency and accuracy in data collection. This model encouraged agents to remain motivated while maintaining a high standard of quality.

Additionally, by recruiting and employing members from the target communities, the initiative provided temporary earning opportunities, creating a direct socio-economic benefit. This approach leveraged the agents' local knowledge and cultural familiarity, enabling them to build trust and rapport with respondents more effectively.

The incentive model also aligned with Seriti Institute's broader philosophy of community-centered development, ensuring that the project's implementation process itself contributed to the empowerment of local residents. By combining fair compensation with rigorous training and a collaborative recruitment approach, Seriti successfully created a sense of shared purpose and collective ownership among the field agents and the communities they represented.

3.6.1 IMPACT OF THE SURVEY ROLLOUT

The careful planning, training, and implementation of the survey rollout allowed Seriti Institute to create a robust foundation for data collection. The involvement of local agents not only enhanced the accuracy and reliability of the survey but also reinforced trust and credibility within the communities. This grassroots-driven approach ensured that the voices and experiences of Johannesburg's residents were authentically captured, paving the way for actionable insights to inform Clean Air Zone policy development.

3.7 DATA COLLECTION

3.7.1 TARGETING A DIVERSE AND REPRESENTATIVE SAMPLE

The survey aimed to capture a broad spectrum of perspectives across Johannesburg, targeting urban, peri-urban, and rural areas to reflect the city's demographic and geographic diversity. To achieve this, data collectors strategically focused on key locations:

- **RESIDENTIAL AREAS:** Both formal and informal settlements were prioritized to understand the unique air quality experiences faced by communities in varying living conditions.
- **EDUCATIONAL INSTITUTIONS:** Schools and universities provided valuable input from younger populations, enabling the survey to capture youth perspectives on air pollution and its impacts.
- **COMMERCIAL AND TRANSPORT HUBS:** Malls, office parks, and public transport hubs were included to engage the working population and commuters, ensuring insights from individuals with diverse daily routines.

3.7.2 IMPLEMENTATION AND DATA QUALITY CONTROL

Data collection was conducted through face-to-face interviews using mobile devices equipped with a tailored survey application. This technology enhanced efficiency, reduced manual errors, and ensured real-time data entry and validation.

To maintain high standards of data quality and integrity, the following measures were implemented:

- **REAL-TIME MONITORING:** Progress was closely tracked using the survey application, allowing supervisors to review completion rates, respondent demographics, and interview consistency.
- **PERIODIC SITE VISITS AND SPOT CHECKS:** The community program lead conducted regular visits to field locations and performed spot checks to ensure adherence to protocols and the accuracy of collected responses.
- **CENTRALIZED DATA REVIEW:** A dedicated team reviewed incoming data daily, identifying discrepancies or gaps in responses and implementing corrective actions where necessary.
- **VALIDATION PROCESS:** Once data collection concluded, a meticulous validation process was undertaken to confirm data accuracy and reliability before commencing analysis.

Through these measures, the survey achieved robust data collection standards, providing a solid foundation for subsequent analysis.

3.8 CHALLENGES FACED DURING DATA COLLECTION

Despite successfully gathering 3,000 responses, the data collection process encountered several challenges, both operational and field-level. These obstacles required adaptability and coordination to address effectively.

3.8.1 OPERATIONAL CHALLENGES

- 1. MISCOMMUNICATION AND SLOWER-THAN-EXPECTED PROGRESS:** Some field agents struggled to meet the target of 100 surveys per community, which was not promptly reported to the monitoring team, leading to delays in overall survey completion. Enhanced communication systems were implemented to address this issue.
- 2. REDEPLOYMENT AND TRANSPORT LOGISTICS:** Certain data collectors had to be relocated to new areas to maintain survey representation. This process faced delays due to logistical hurdles such as securing transport approvals and obtaining quotes.
- 3. RETRAINING NEEDS:** Instances of survey quality concerns led to the retraining of some field agents, which required additional time and resources to ensure future accuracy.

3.8.2 FIELD-LEVEL CHALLENGES

- 1. RESTRICTED ACCESS TO GATED COMMUNITIES AND ESTATES:** Gaining entry into gated neighborhoods required prior authorization from estate owners, causing delays in these specific areas. A proactive engagement approach was later implemented to expedite access.
- 2. PRESENCE OF GANGSTERISM AND SAFETY CONCERNS:** In certain neighbourhoods, safety concerns stemming from local gang activity limited the field agents' ability to collect data. Fear among community members further compounded participation challenges in these areas.
- 3. THREATS AND INTIMIDATION:** Some local stakeholders or community leaders expressed suspicion toward the survey initiative, requiring field agents to spend additional time building trust and creating collaboration to overcome resistance.
- 4. RELUCTANCE TO SHARE INFORMATION:** In certain cases, respondents were hesitant to provide information, distrusting individuals perceived as outsiders. Field agents employed relationship-building strategies, such as leveraging local networks, to address this issue.
- 5. SURVEY FATIGUE:** Extended questioning in some sessions led to participant disengagement. Field agents adapted by incorporating shorter interviews and more engaging techniques to retain respondent attention.

3.8.3 OVERCOMING CHALLENGES

Despite these hurdles, Seriti Institute demonstrated strong field coordination, flexibility, and an adaptive approach to ensure successful survey completion. Enhanced communication systems, proactive logistical planning, and community engagement strategies proved critical in overcoming barriers and sustaining momentum throughout the process.

3.9 DATA ANALYSIS

3.9.1 QUANTITATIVE ANALYSIS

The dataset underwent cleaning and verification before analysis. Key quantitative methods included:

- Descriptive statistics to analyse demographic trends, pollution awareness levels, and regional variations.
- Cross-tabulations and correlation analysis to identify relationships between air pollution perceptions and demographic factors.
- Trend identification to highlight common patterns in public opinion regarding air quality.

3.9.2 QUALITATIVE ANALYSIS

Open-ended survey responses and focus group discussions were analysed using thematic analysis.

- Recurring themes (e.g., health concerns, environmental impacts, and economic consequences) were identified.
- Illustrative quotes were extracted to contextualize and humanize the data findings.

3.10 ETHICAL CONSIDERATIONS

Ethical integrity was prioritized throughout the research process, in compliance with the Protection of Personal Information Act (POPIA).

- Informed consent was obtained from all participants, with clear explanations of the study's purpose, risks, and benefits.
- Data anonymization and secure storage protocols were implemented to protect participants' confidentiality.
- Strict quality assurance measures (including audits and response validation) were applied to ensure data accuracy and reliability.

3.11 ADDRESSING STUDY LIMITATIONS

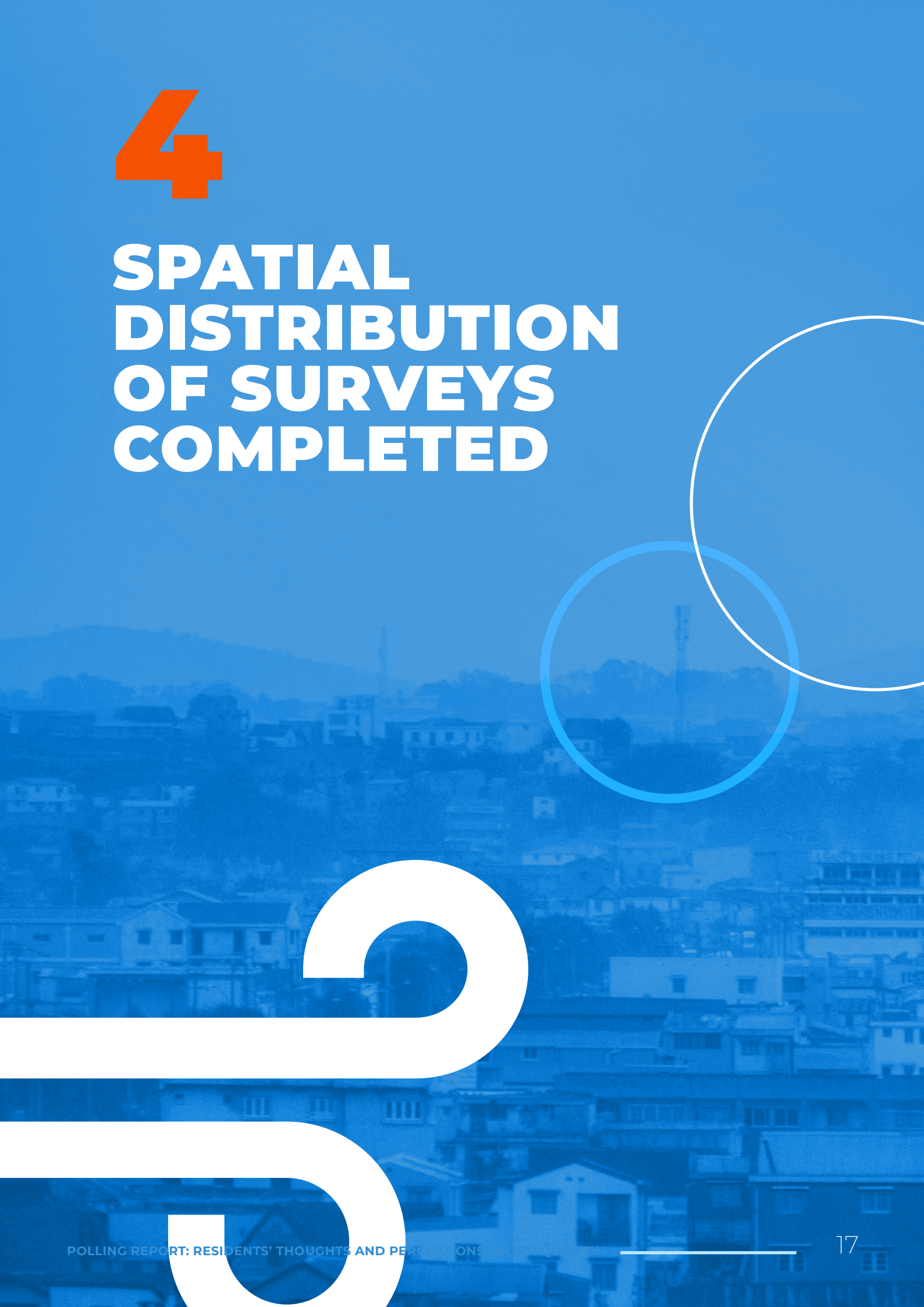
While this study provides valuable insights, it acknowledges several limitations:

- Sampling bias in hard-to-reach communities due to access restrictions.
- Short-term snapshot of air quality perceptions, requiring follow-up studies for long-term trends.

To mitigate these limitations, additional qualitative research methods, such as follow-up focus groups and a city officials stakeholder workshop was held to validate and expand on these findings. This will be expanded on in upcoming chapters.







4

SPATIAL DISTRIBUTION OF SURVEYS COMPLETED

4. SPATIAL DISTRIBUTION OF SURVEYS COMPLETED

To ensure a diverse range of viewpoints and perspectives, the survey sample included a wide array of communities from each survey area. This approach was crucial in mitigating the risk of bias that could arise from surveying a single community, as the unique characteristics of any one community might disproportionately influence the findings. By incorporating multiple communities into the survey, the team aimed to achieve more balanced and accurate data.

A larger and more diverse sample size also enhances the reliability of the survey results. It acknowledges that even within small geographic areas, there can be significant variations in awareness and experiences related to air quality. This diversity in the sample helps capture a comprehensive picture of the community's perceptions and experiences.

Data collectors successfully gathered responses from a broad distribution of areas. Since the start of November, 30 different areas have been covered, resulting in a total of 3,000 surveys completed. This widespread participation underscores the survey's extensive reach throughout the City of Johannesburg, ensuring that the collected data reflects the city's demographic and geographic diversity (Figure 1).

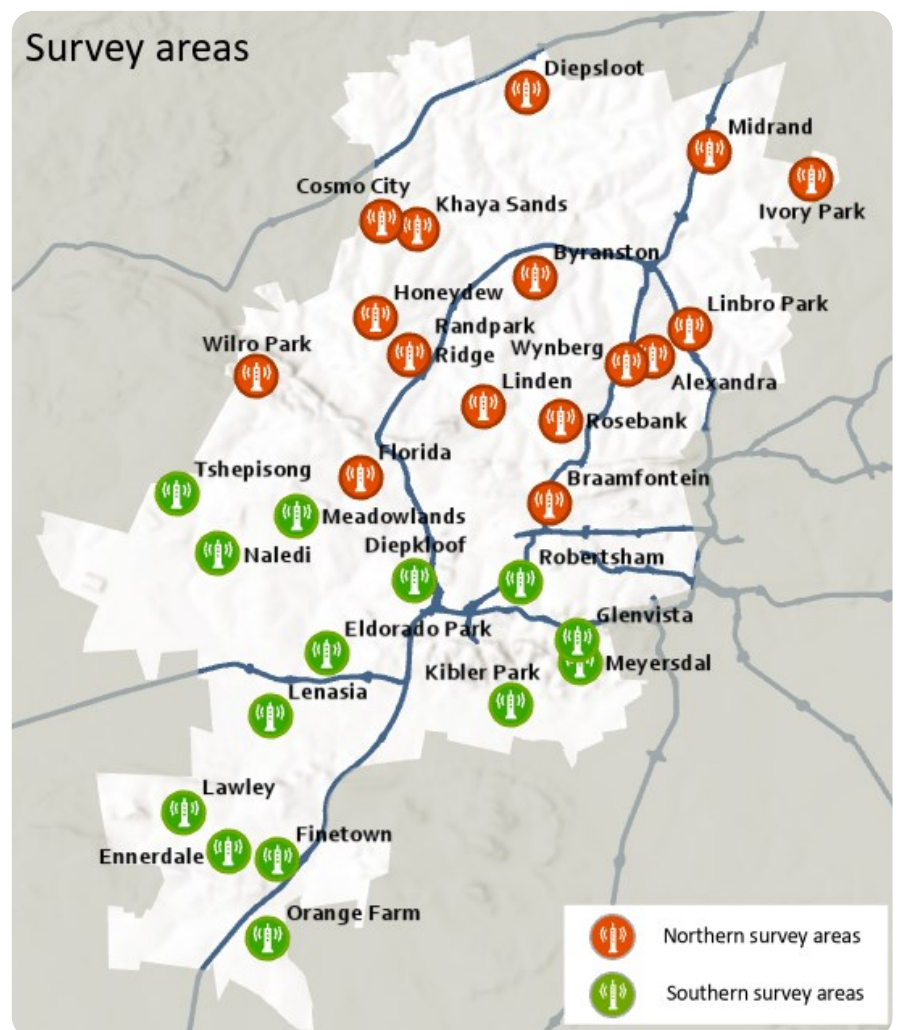


Figure 1:
Geographic representation of the spread of data across the City of Johannesburg



The ability of data collectors to operate within their local areas significantly enhances the efficiency of the data collection process. By working in familiar environments, data collectors can navigate their communities more effectively, build trust with respondents, and gather data more swiftly. This localised approach ensures that a broad spectrum of communities is represented in the study, as illustrated in Figure 2. This diversity in the survey sample is essential for capturing a comprehensive and accurate picture of air quality across different parts of the city.

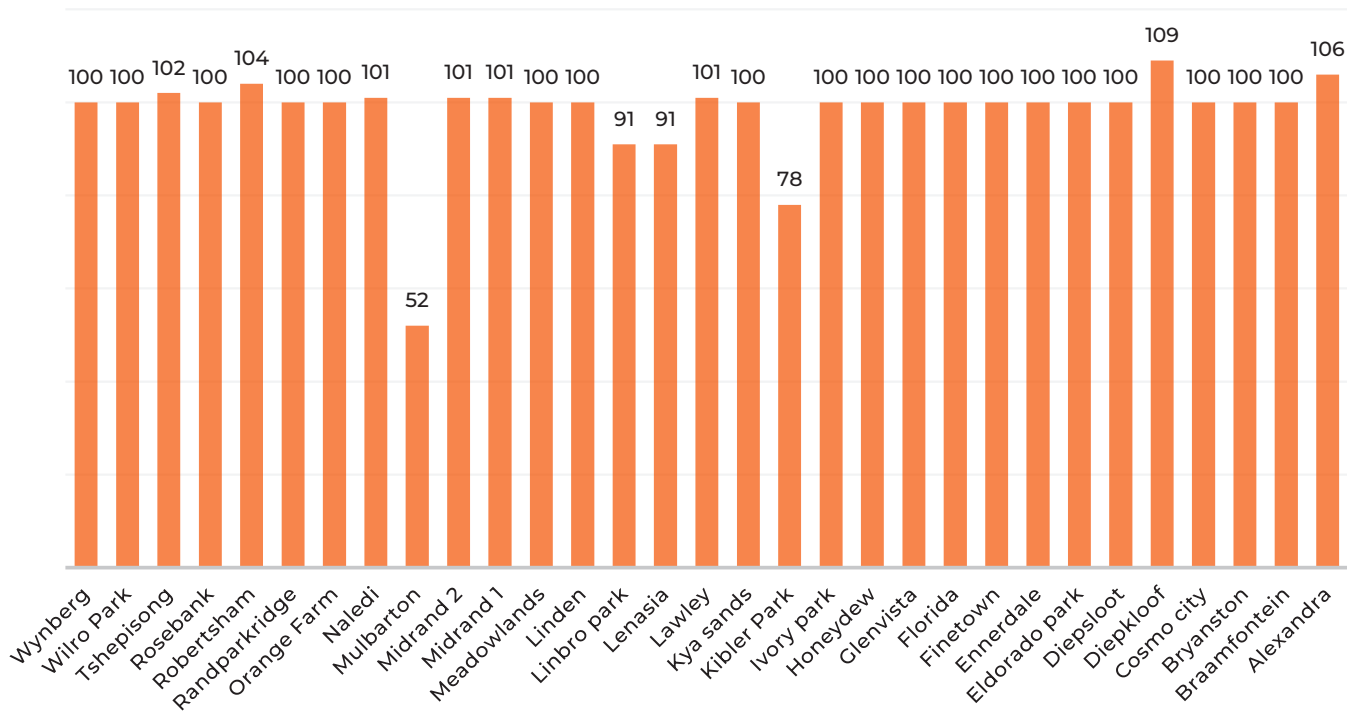


Figure 2:
Count of communities surveyed in the City of Johannesburg.

5

DEMOGRAPHIC INFORMATION

5. DEMOGRAPHIC INFORMATION

5.1. AGE

The survey revealed a diverse age distribution among the respondents, with the majority falling within the 30-35 age range, accounting for 21% of the total participants (Figure 3). This group was closely followed by those aged 25-29, who made up 19% of the respondents. Together, these two age categories represent a significant portion of the survey population, highlighting the active engagement of young to middle-aged adults in the study.

In contrast, the smallest representation came from participants aged 60 and above, who constituted only 5% of the respondents. This lower participation rate among older adults may reflect various factors, such as differing levels of concern about air quality issues, accessibility challenges, or varying degrees of engagement with community surveys.

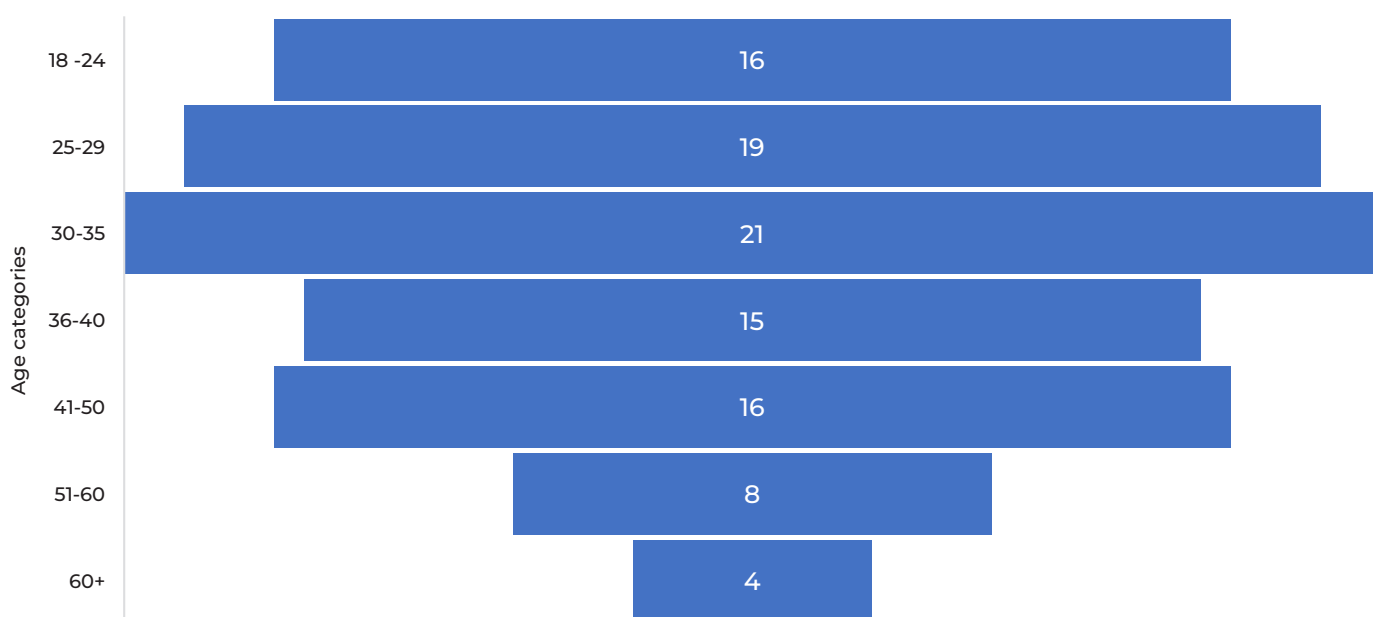


Figure 3: Percentage of age categories of the respondents in the City of Johannesburg

5.2. GENDER

To ensure an accurate and representative depiction of the population, Seriti Institute set a goal of achieving a 50% gender split in the survey responses. Recognising the importance of gender parity, the team emphasised this objective to our data collectors, encouraging them to make a concerted effort to engage more female participants in their surveys. This approach was intended to balance gender representation and ensure that the perspectives of both men and women were equally reflected in the findings.

Despite these efforts, the data collected indicates a slight gender imbalance, with male respondents constituting 55% of the total participants compared to 45% of female respondents (Figure 4). This discrepancy highlights the ongoing challenge of achieving perfect gender parity in community surveys.

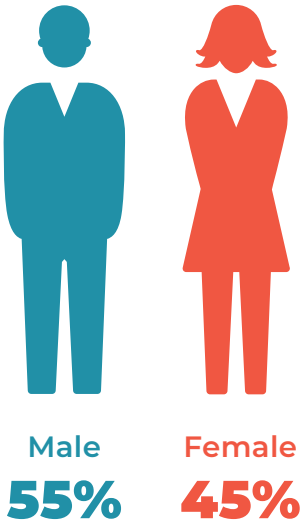


Figure 4:
The gender split of the respondents in the City of Johannesburg

5.3. RACE

The survey successfully captured a diverse range of racial groups, with most respondents being Black, constituting 88% of the total participants (Figure 5). This distribution closely mirrors the demographic composition of the City of Johannesburg, indicating that the survey sample is representative of the city's population.

This alignment with the city's demographics suggests that there is minimal bias in the data collection process. The data collectors have effectively reached and engaged participants from various racial backgrounds, ensuring that the survey results reflect the experiences and perspectives of the broader community.

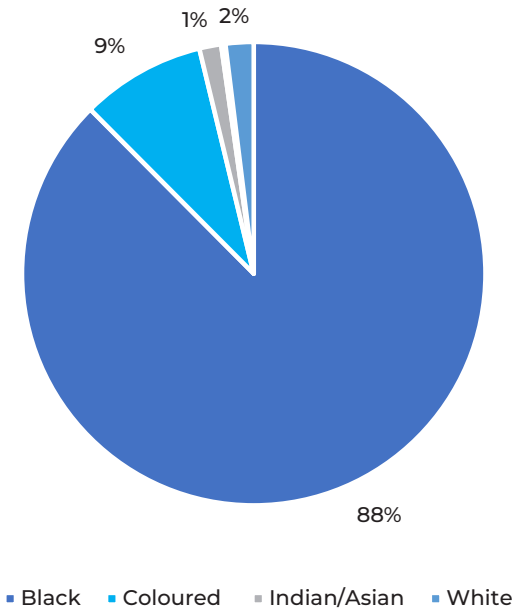


Figure 5: Race categories of respondents in the City of Johannesburg.

5.4. EDUCATION

Most of the participants surveyed possess some level of formal education. Notably, the largest segment of these individuals has successfully completed high school with 46%, as illustrated in Figure 6. This educational background is significant as it suggests that the participants are likely to have a basic understanding of environmental issues, including air quality. With higher educational attainment, individuals are generally more aware of the sources and impacts of air pollution, which can influence their attitudes and behaviours toward maintaining and improving air quality.

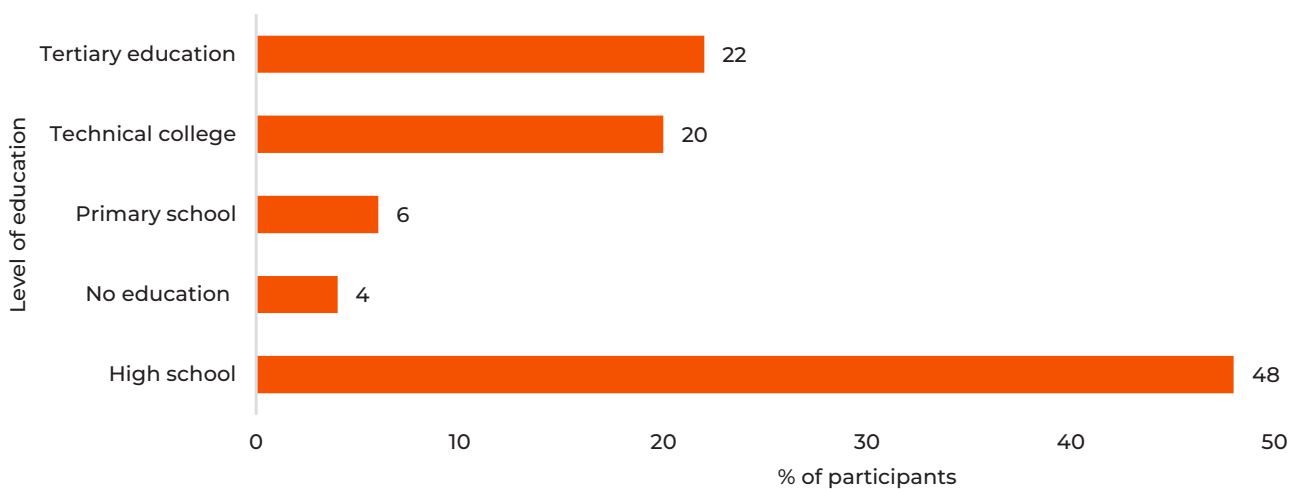


Figure 6: The level of education across respondents.

5.5. COMMUNITY

All residents surveyed in this study either live or work in the City of Johannesburg. A significant portion of the respondents have resided in Johannesburg for over a decade, with 34% having lived there for more than 10 years and 29% for more than 20 years (Figure 7). This long-term residency provides a valuable perspective on how air quality has evolved in Johannesburg over time. The insights gathered from these residents are crucial, as their extended exposure to the city's environment allows them to offer informed perceptions of air quality changes. Additionally, their suggestions for the clean air zone are likely to be well-founded, reflecting their deep understanding of the local air quality issues and potential solutions.

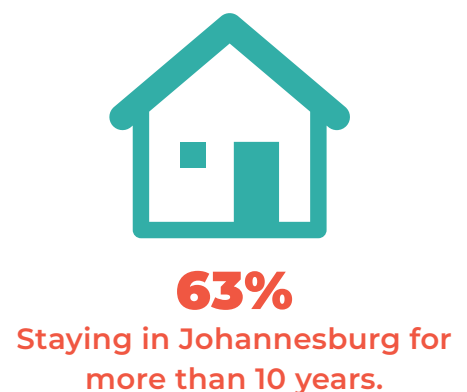


Figure 7:
Duration of residence of respondents in Johannesburg.

5.6. EMPLOYMENT

According to this study, most respondents are currently unemployed, as depicted in Figure 8. This is closely followed by those who are formally employed. The employment status of respondents has a notable impact on their awareness and understanding of air quality issues. Unemployed individuals may have varying levels of exposure to air quality information, depending on their access to educational resources and community programs.

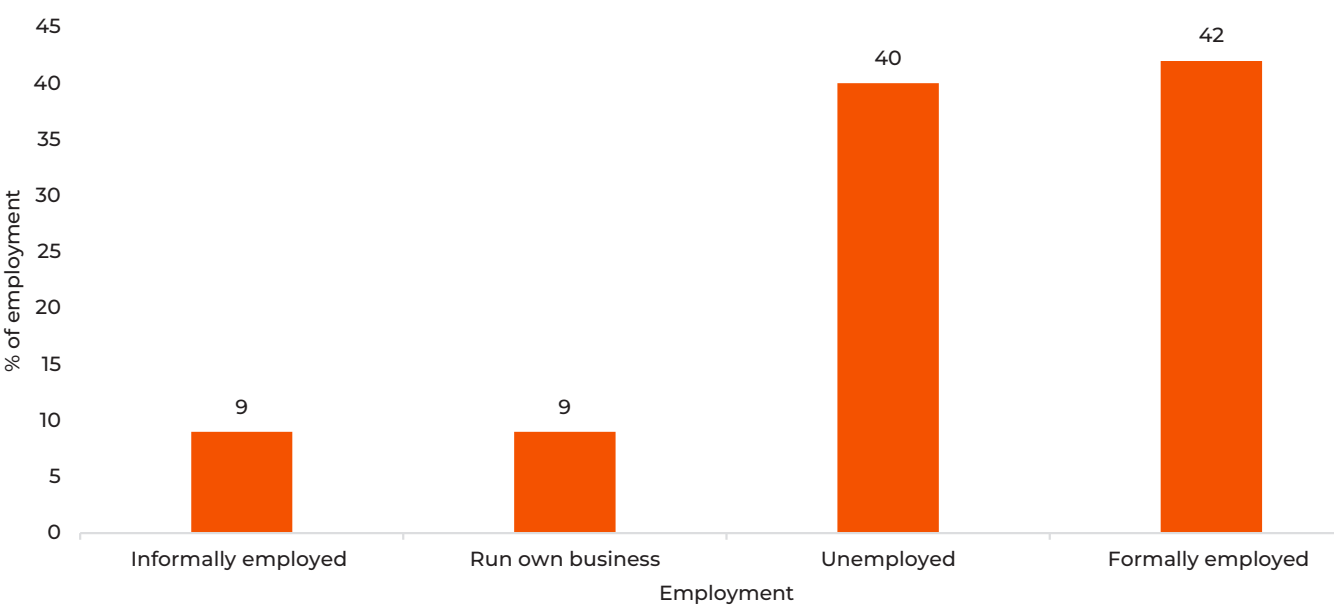


Figure 8: Percentage of employment of respondents in Johannesburg.

Among the employed respondents, a significant proportion of work labelled their work as ‘other’, upon examination, these individuals fell under the social services sector, working as freelancers or unemployed. Individuals that formally fall under the social services sector, as shown in Figure 9, include roles in healthcare, education, and community services, highlighting its importance in the local economy. Individuals employed in the social services sector are likely to have a higher awareness of air quality due to their roles in healthcare and community well-being. These professionals often receive training and education about environmental health, which includes the effects of air pollution.

Direct exposure to air quality issues in work environments can heighten their awareness and concern. For instance, healthcare workers may observe the health impacts of poor air quality on patients, while educators might incorporate environmental topics into their curricula. This heightened awareness can lead to more informed perceptions of air quality and stronger advocacy for clean air initiatives.





6

DEMOGRAPHIC & AIR QUALITY PERCEPTIONS

6. DEMOGRAPHIC & AIR QUALITY PERCEPTIONS

According to the demographic data of the participants, the age group that found air pollution in Johannesburg to be most concerning was 30-35 years old, followed closely by the 25-29 age group (see Figure 9). While very few participants stated that air pollution is not a problem, a notable portion of individuals aged 18-35 indicated that it is not a significant concern. This suggests a need for targeted awareness campaigns to educate this specific demographic about the impacts of air pollution.

When asked why they did not view air pollution as a concern, some community members cited the presence of sufficient green spaces as a mitigating factor. Others believed that “the impact of air pollution is relatively limited, affecting fewer people directly”. These responses highlight the importance of addressing misconceptions and providing clear information about the broader effects of air pollution on public health and the environment. In contrast, one individual indicated that “Air pollution is a problem because it endangers public health, making it a global concern that requires urgent attention and action”.

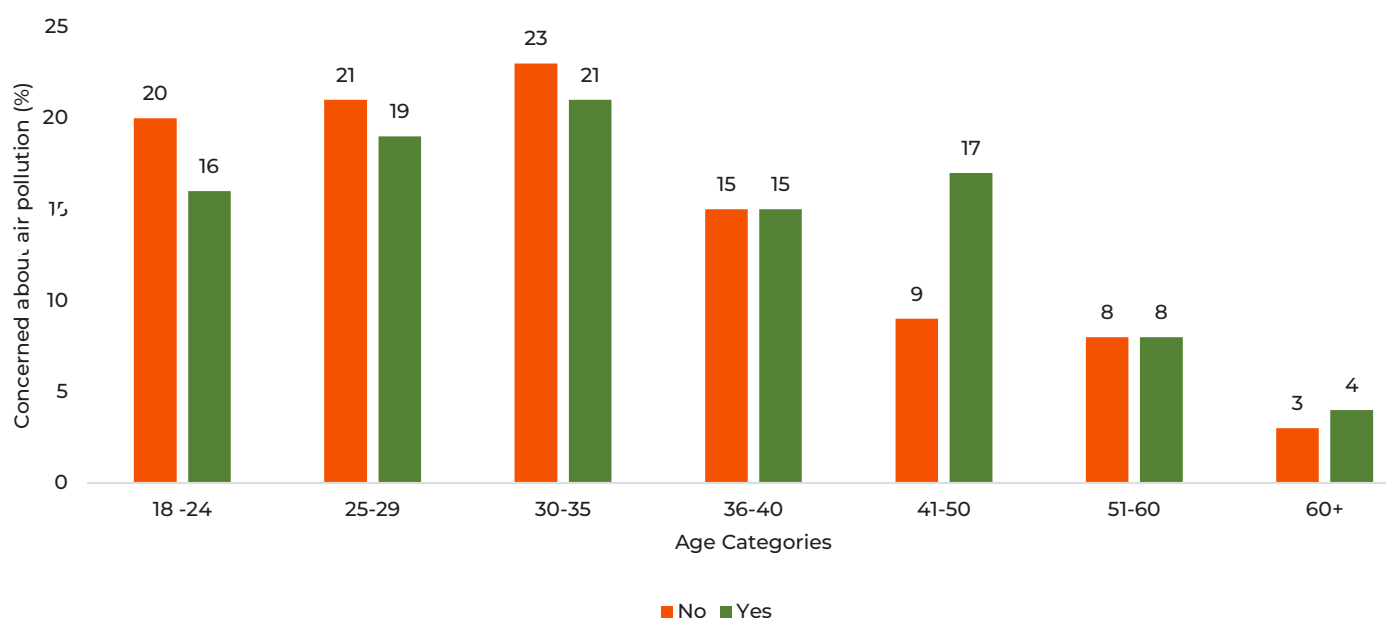


Figure 9: Age categories in the City of Johannesburg that are concerned about air pollution



Participants of both genders expressed varying degrees of concern about air pollution in the city. However, it was observed that males exhibited a higher level of concern compared to females (Figure 10). This discrepancy might be attributed to the fact that more men were surveyed than women. Interestingly, despite this higher level of concern, a notable number of men also indicated that they were not worried about air pollution. This suggests a diverse range of opinions among male participants regarding the issue.

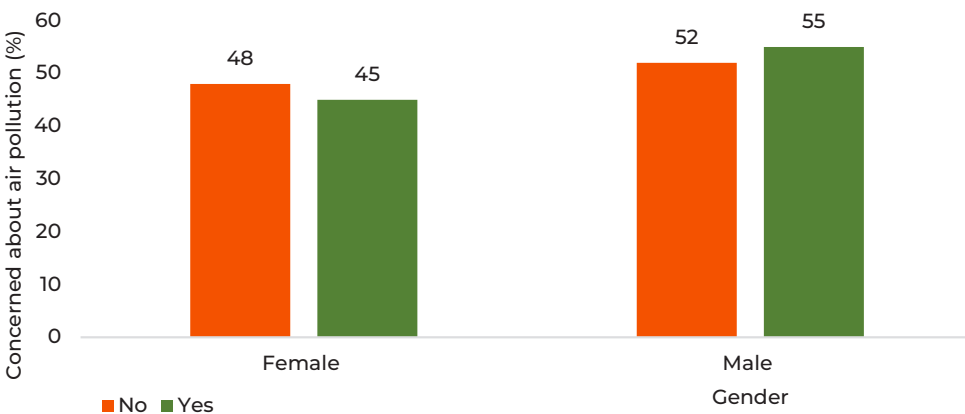


Figure 10: The difference in gender concern about air pollution in the City of Johannesburg

Participants from all education levels expressed some degree of concern about air pollution in the city, suggesting that education does not significantly influence their awareness and concern regarding air pollution (see Figure 11). However, the groups that were more likely to indicate that air pollution is not a concern were those who had completed only high school, followed by individuals with higher tertiary education. When asked to elaborate, these participants explained that they do not perceive air pollution as a localised issue and, therefore, do not feel personally affected by it. However, according to other participants, the indirect impacts of air pollution are felt and seen despite one’s immediate environment.

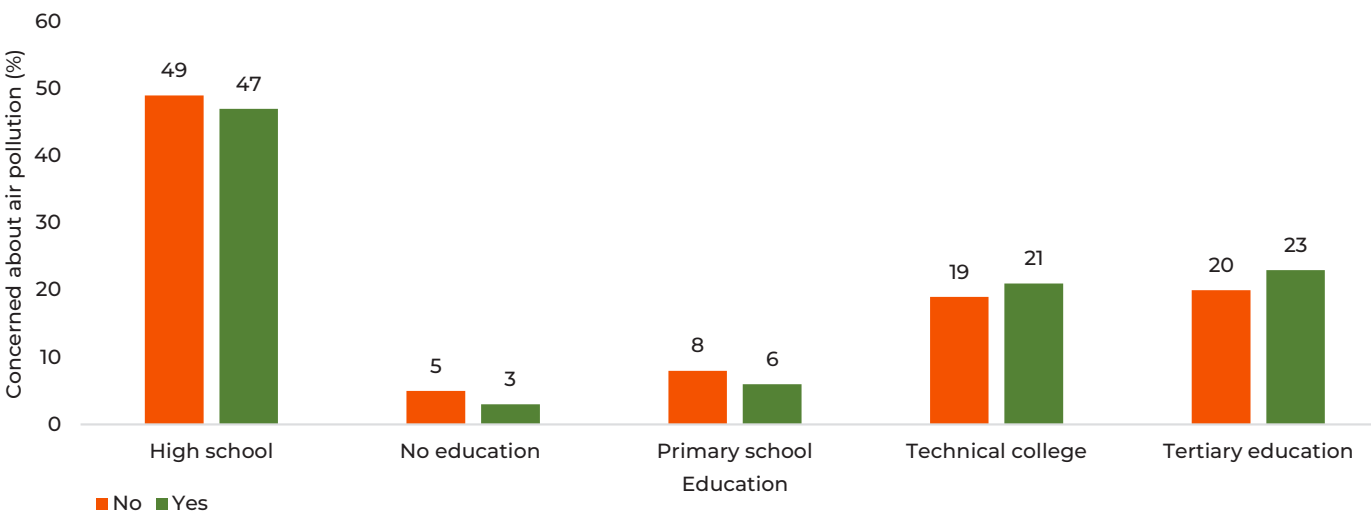


Figure 11: Various levels of education and concern about air pollution



7

AIR QUALITY PERCEPTIONS

7. AIR QUALITY PERCEPTIONS

In this section, the report delves into the perceptions of air quality within the City of Johannesburg. Here, air quality perceptions were explored, including information around seasonality, community initiatives, and differences in perceptions within respective communities and the city. The analysis highlights the concerns of various demographic groups, such as the impact of air pollution on vulnerable communities, the economic implications, and the broader environmental consequences.

7.1. AIR QUALITY THEMATIC ANALYSIS

According to the participants of this study, there are several themes that emerged, including health, environmental damage, vulnerable communities and economic implications of air pollution (Table 1). Additionally, 5% of participants have indicated there is an overlap between these various themes, including health and environmental concerns, with one participant indicating, “Air pollution in Joburg is a significant environmental and health concern, primarily driven by industrial and informal burning practices”.

Table 1: Perceptions of air pollution and air quality in the City of Johannesburg

EMERGING THEMES	EXPLANATION	PERCEPTIONS
Health	36% of participants expressed concerns about various health issues arising from air pollution in their communities. Among these concerned individuals, 25% specifically identified respiratory diseases as a major consequence of air pollution. This highlights a substantial awareness of the direct impact that poor air quality can have on respiratory health, including conditions such as asthma, bronchitis, and other chronic respiratory disorders. The data underscores the urgent need	“Air pollution is extremely bad, because people are burning copper in an open area, and they burn grass and smoking here is too much everyone is smoking.” “Absolutely, it’s a significant issue because it affects respiratory health for vulnerable populations, especially children and the elderly.” “Air pollution in Joburg is a growing concern. The combination of vehicle

EMERGING THEMES	EXPLANATION	PERCEPTIONS
	for effective air quality policies to mitigate these health risks and protect the well-being of the community.	emissions, industrial activities, and construction sites is contributing to poor air quality, which is harmful to both health and the environment.”
Environmental damage	A significant portion of participants, 34%, expressed concerns about the environmental consequences and damage caused by air pollution. Among these concerned individuals, 38% specifically highlighted their worries about the scarcity of green spaces and how air pollution exacerbates this issue. Additionally, a smaller group, 4%, voiced their apprehension about the broader impact of air pollution on climate change.	“Continuous air pollution causes lasting environmental harm that will take years to reverse.” “Air pollution is severe because we neglect environmental control measures.” “Definitely, air pollution impacts the local ecosystem by damaging vegetation and reducing biodiversity around Johannesburg.”
Vulnerable communities	18% of participants indicated that vulnerable communities are disproportionately affected by air pollution. These communities include individuals with respiratory diseases, the elderly, infants, and women. Among these concerned participants, 47% specifically expressed worries about the impact of air pollution on younger generations, particularly regarding the development of children’s lungs. Additionally, 25% highlighted that pregnant women are at significant risk due to air pollution, which can further affect the developmental stages of their children.	“Air pollution is disaster because many people affected especially old age, causes harmful disease.” “It really affects vulnerable communities often living in high density areas with limited access to clean air, it is crucial to address air pollution. In Johannesburg, however this will require comprehensive strategies, including stricter emissions”

EMERGING THEMES	EXPLANATION	PERCEPTIONS
Economic implications	7% of the surveyed participants expressed concerns about the economic implications of air pollution. They suggested that businesses and larger industries should divest from coal and gas to enhance economic outcomes. Among these participants, 36% highlighted that jobs are at risk due to air pollution and emphasised the importance of adopting clean technologies to mitigate this issue.	“The high rate of air pollution is too bad. Johannesburg is beckoning less attractive for new businesses, slowing economic growth.” “Addressing air pollution also has economic implications. Health care costs, lost workdays, and decreased agricultural productivity due to pollution lead to significant financial losses globally.”

7.2. SEASONALITY

65% of participants indicated there is a difference in air pollution per time of the day. According to participants, levels of air pollution are higher during midday, with 39% indicating that midday is the most polluted, however, this is closely followed by 35% who believe that air pollution peaks during the evening (Figure 12). These findings suggest that there is a significant concern about air quality during these specific times, which could be attributed to various factors. In the evening, increased traffic congestion as people make their way back home from work, combined with lower wind speeds, might contribute to higher pollution levels. Similarly, midday pollution could be influenced by the accumulation of emissions from morning rush hour traffic and industrial activities that peak during this time.

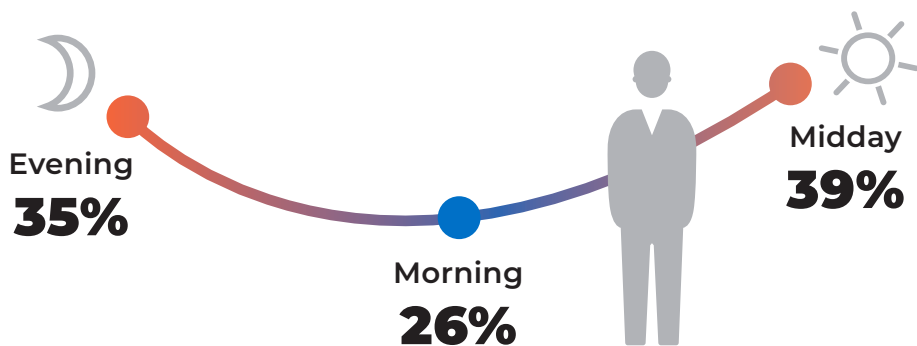


Figure 12:
Perceptions of the level of
air pollution per time of day

Additionally, participants were asked if they believe there is a difference between air pollution and different seasons; 65% of participants indicated there is a difference, with a majority indicating that air pollution is at its greatest during winter, with 52% of respondents highlighting this season as the most polluted (Figure 13). This can be attributed to several factors that typically exacerbate air quality issues during the colder months.

During winter, heating systems use increases, leading to higher emissions from residential heating. Interestingly, participants indicated that summer, with 31% is the next concerning season that leads to an increase in air quality issues. In summer, higher temperatures may accelerate the formation of ground-level ozone, a key component of smog, which can significantly reduce air quality and increase air pollution. Additionally, increased sunlight and heat can enhance the chemical reactions between pollutants, leading to higher concentrations of harmful substances in the air.

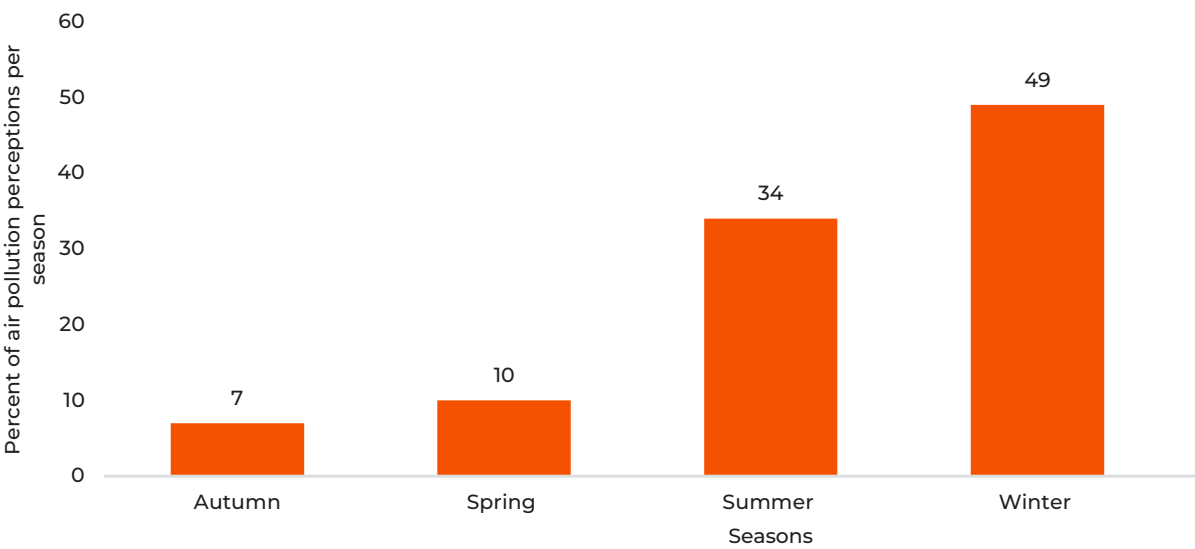


Figure 13: Perception of which season has the worst air pollution

7.3. HEALTH RISKS ASSOCIATED WITH AIR POLLUTION

Most participants were aware of the effects of air pollution on health (Figure 14) with **74% of individuals indicating that they are aware**, there is 26% of participants that have indicated that they are unaware of the risks or there are no risks to health. This highlights the need for increased efforts and awareness campaigns to inform residents about the risks associated with air pollution.

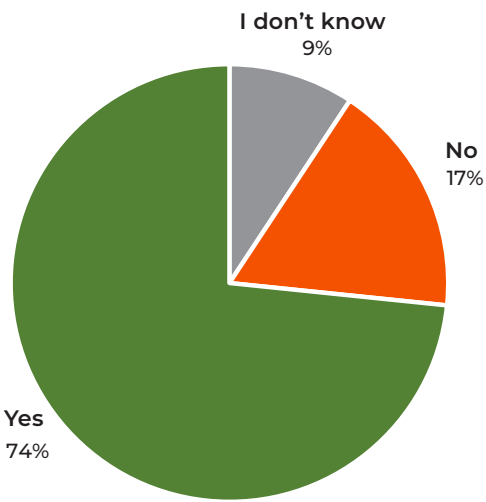


Figure 14: Participants perceptions of the effects of air pollution on health

Participants were presented with a range of symptoms commonly associated with air pollution, including sinus issues, headaches, fatigue, shortness of breath, and wheezing. Among the respondents, 39% reported experiencing at least one of these symptoms, suggesting a significant impact of air pollution on their health. One participant indicated “Air pollution can also cause long-term health issues such as lung cancer and chronic obstructive pulmonary disease (COPD)”. Conversely, 25% of participants indicated that they do not suffer from any of these symptoms (see Figure 15A).

75%
participants
experience one
or more of the
following sinus
issues, headaches,
fatigue, shortness of
breathe and wheezing”



Figure 15: A:
Health effects associated with air pollution

When asked about the perceived cause of their symptoms, 78% of participants attributed their health issues to the effects of increased air pollution. However, 22% did not believe that their symptoms were related to air pollution (Figure 15B).

This disparity highlights the need for further education and awareness campaigns to better inform the public about the health risks associated with air pollution and to address any misconceptions.

78%
participants
have indicated
they suffer from
these symptoms
as a result of air
pollution



Figure 15: B:
Perception of air pollution causing health effects
on participants

7.4. SOURCES OF AIR POLLUTION IN THE COMMUNITY VS THE CITY OF JOHANNESBURG

A majority of participants expressed concerns about air pollution in Johannesburg (Figure 16). According to these participants, air pollution poses a serious threat not only to human health but also to the environment. One participant remarked, “Air pollution doesn’t just harm people, it also damages ecosystems. Acid rain, caused by sulfur and nitrogen oxides, harms soil, forests, and freshwater ecosystems.” This highlights the broader environmental impact of air pollution, which extends beyond immediate health concerns.

Furthermore, another participant emphasised the public health implications by stating, “Air pollution causes premature deaths and studies show a link between air pollution and early mortality, making it a serious public health issue.” This underscores the urgency of addressing air pollution to prevent early deaths and protect public health. The dual impact on both human health and the environment underscores the urgent need for effective measures to combat air pollution in Johannesburg.

Additionally, participants identified the burning of fossil fuels as the largest source of air pollution in their communities, with 41% of respondents highlighting this issue (Figure 17). This includes emissions from industrial activities, power plants, and residential heating. Following this, vehicle emissions were noted as another significant contributor to air pollution. Participants emphasised that these insights are widely recognised and shared within their communities, reflecting a common understanding of the primary sources of air pollution and their impacts.

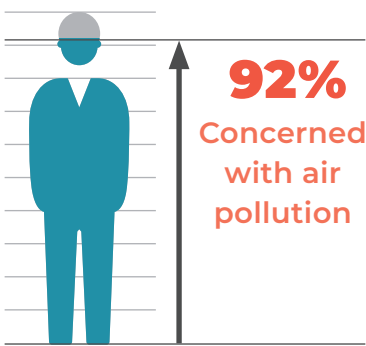


Figure 16:
Air pollution in Johannesburg is a concern to participants

Furthermore, this insight was corroborated by the City of Johannesburg. Participants indicated that the burning of fossil fuels is the largest contributor to air pollution across the entire city. This includes emissions from industrial activities, power plants, and residential heating systems. The widespread use of coal and other fossil fuels for energy production significantly impacts air quality.

In addition to fossil fuel combustion, vehicle emissions were identified as another major source of air pollution. The high volume of traffic in Johannesburg, combined with older, less efficient vehicles, exacerbates the problem. Participants noted that these sources of pollution are well-recognised within their communities, highlighting a shared understanding of the primary contributors to poor air quality in the city.

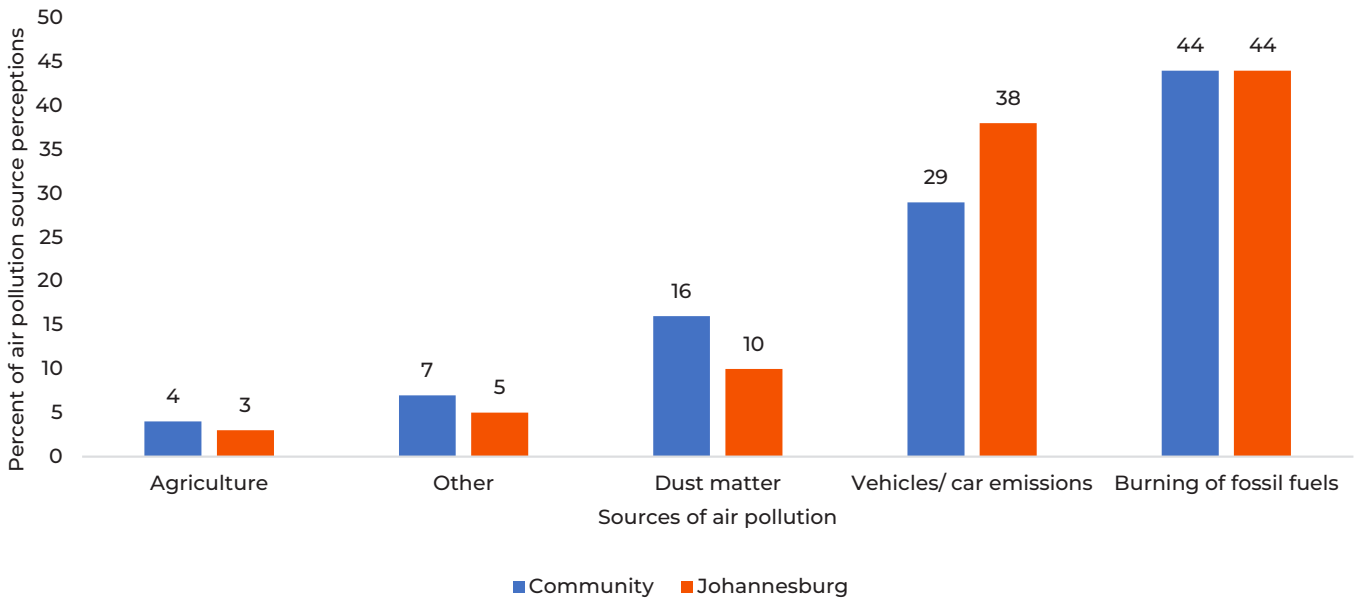


Figure 17: Sources of air pollution in the community

7.5. AIR QUALITY DISSEMINATION OF INFORMATION AND MEDIA CHANNELS

As previously mentioned, awareness of air quality and air pollution is essential to educating and involving community members. According to participants, a majority would seek air quality information through social media, with 56% indicating this preference (Figure 18). This highlights the significant role that social media platforms play in disseminating information and raising awareness about environmental issues.

Social media’s widespread use and accessibility make it an effective tool for reaching a broad audience quickly. Platforms like Facebook, Twitter, and Instagram can be leveraged to share real-time air quality updates, educational content, and tips for reducing pollution.

Additionally, 6% of individuals have indicated that they would not look for information pertaining to air pollution. This minority highlights a potential gap in awareness and engagement that could be addressed through targeted outreach and education efforts.

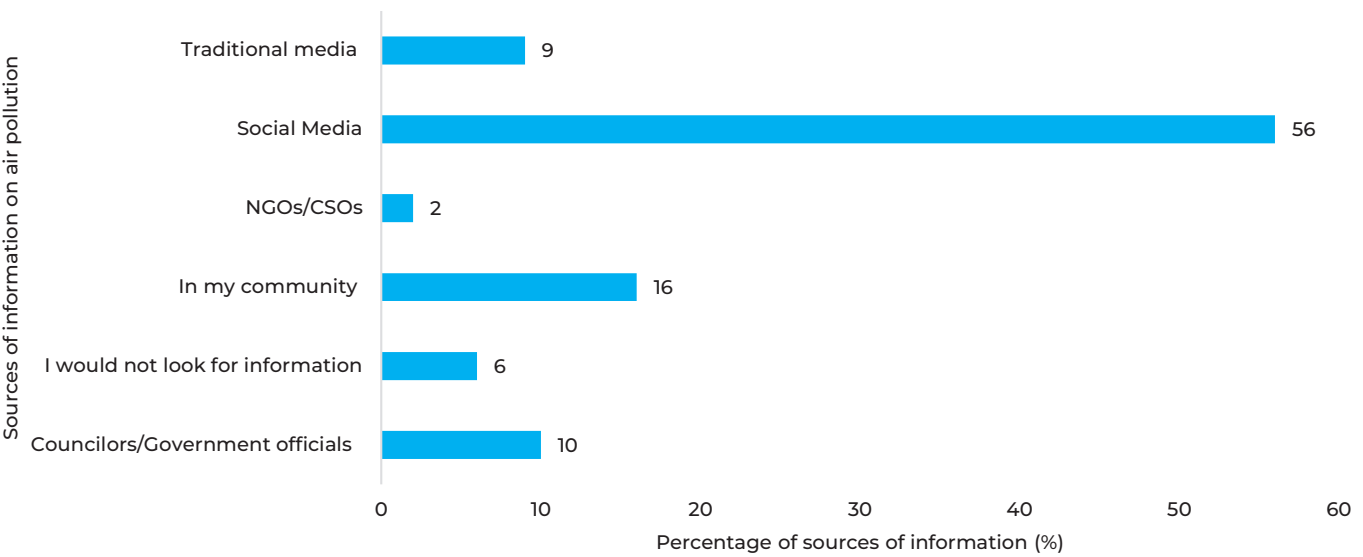


Figure 18: Relevant platforms for the dissemination of air quality information according to participants

7.6. PERCEPTION OF PERSONAL EFFORTS TO REDUCE AIR POLLUTION

When participants were asked about strategies to reduce air pollution in their communities, the majority expressed strong support for transitioning to renewable energy sources (Figure 19). They emphasised the importance of adopting solar, wind, and other clean energy technologies to replace the reliance on fossil fuels. This shift is seen as a crucial step in mitigating air pollution and promoting sustainable development. Additionally, participants advocated for the implementation of stricter government regulations to control emissions.

They suggested that the government should enforce more rigorous standards for industrial emissions, vehicle exhaust, and other significant sources of pollution. **These measures could include tighter monitoring, higher penalties for non-compliance, and incentives for adopting cleaner technologies.**

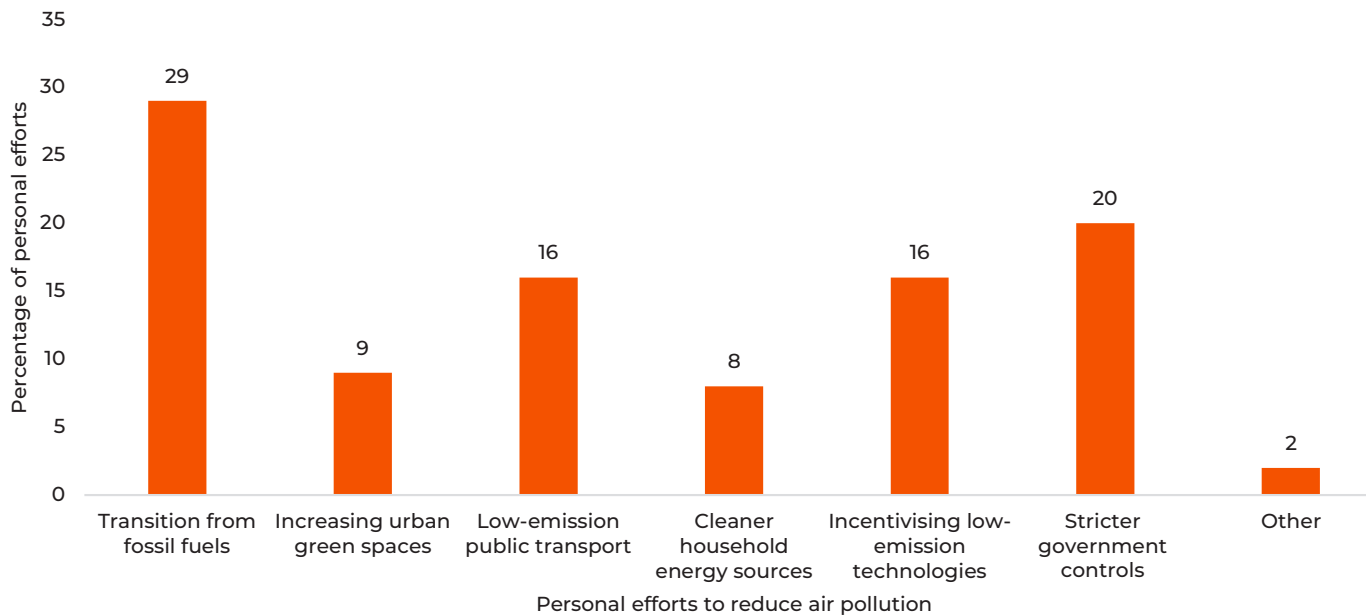


Figure 19: Residents' personal suggestions to reduce their impact of air pollution

7.7. INITIATIVES AND INVOLVEMENT OF THE COMMUNITY

According to the survey results, most community participants indicated that they were unaware of any initiatives related to air quality. Only 5% of respondents mentioned that there was some involvement of different initiatives within the community (Figure 20). This lack of awareness highlights a significant gap in communication and outreach efforts regarding air quality initiatives. These findings suggest a pressing need for targeted educational campaigns throughout the City of Johannesburg. These campaigns should aim to raise awareness about existing air quality initiatives, their benefits, and how community members can get involved. Effective strategies could include community workshops, informational pamphlets, social media campaigns, and collaboration with local schools and organisations to disseminate information. By increasing awareness and engagement, these educational efforts can empower residents to take an active role in improving air quality in their neighbourhoods. Additionally, fostering a well-informed community can lead to greater support for policies and initiatives aimed at reducing air pollution and promoting a healthier environment.



Figure 20:
Knowledge of air pollution
initiatives in the community

An aerial photograph of Johannesburg, South Africa, featuring the Ellis Park Stadium in the foreground. The image is overlaid with a semi-transparent blue filter. Large white geometric shapes, including a thick 'C' and a thick 'U', are positioned in the lower half of the page. A blue circle highlights a specific area in the middle-right of the image, and a white circle is partially visible on the right edge.

8

CLEAN AIR ZONE POLICY

8. CLEAN AIR ZONE POLICY

This section focuses on identifying the preferences and priorities of residents in the City of Johannesburg regarding the creation of a clean air zone policy. By examining the views and opinions of the local community, the aim was to understand what aspects of air quality improvements are most favoured. This includes considerations such as the integration of sustainable development, the balance between air quality and economic growth, and the inclusion of green technologies. The insights gathered will help shape a policy that not only addresses air pollution effectively but also aligns with the values and needs of Johannesburg's residents.

8.1. KNOWLEDGE OF AIR QUALITY POLICIES IN SOUTH AFRICA

Moreover, there is a clear call for increased public awareness and action, as most residents indicated they are unfamiliar with air pollution policies in Johannesburg (Figure 21). The lack of knowledge about existing air pollution policies suggests that many residents need to be made aware of the measures already in place to combat air pollution.

This gap in awareness can hinder community involvement and support for these initiatives.



94%

indicated that they do not have knowledge of existing air quality policies in South Africa

Figure 21: Participants knowledge of any existing air quality that exists in South Africa



8.2. TOP PRIORITY OF CLEAN AIR ZONES

Many participants indicated that the top priority in creating clean air zones should be limiting residential air pollution. This could potentially be achieved by restricting the burning of waste in residential areas (Figure 22). Participants emphasised that reducing such practices would significantly improve air quality and contribute to healthier living environments.

A recurring theme throughout the survey was the strong need to raise awareness within the community. Participants highlighted the importance of educating residents about the harmful effects of air pollution and promoting sustainable practices. This could involve community workshops, informational campaigns, and collaboration with local organisations to foster a collective effort towards cleaner air.

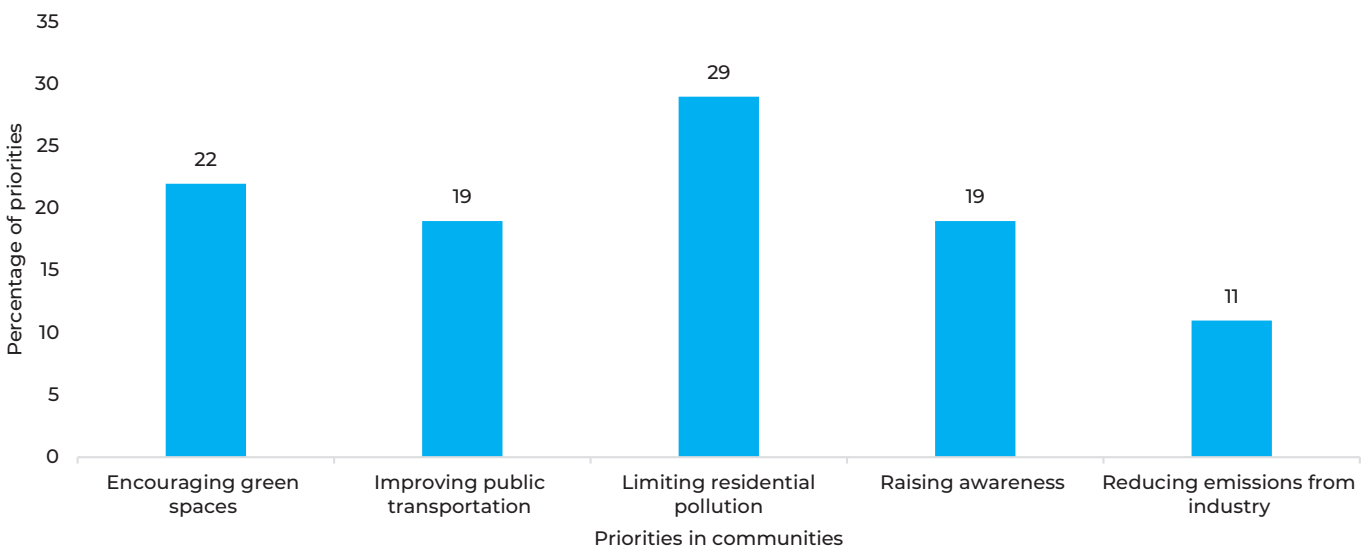


Figure 22: Priorities in creating a clean air zone in the community

8.3. COMMUNITY CLEAN AIR ZONES

According to the survey results, most participants expressed that to enhance the air quality in their community, they would prioritise the creation of more green spaces (see Figure 23). These green spaces, such as parks, gardens, and tree-lined streets, are essential for filtering pollutants and providing cleaner air. Participants believe that increasing the number of green areas would not only improve air quality but also enhance the overall well-being of the community by offering recreational spaces and promoting biodiversity.

Following this, participants also emphasised the importance of encouraging residents to adopt cleaner energy sources. This includes promoting the use of renewable energy options like solar and wind power, as well as advocating for energy-efficient appliances and practices. By reducing reliance on fossil fuels and minimising emissions, the community can significantly improve its air quality. Participants suggested various initiatives, such as community workshops on renewable energy, incentives for installing solar panels, and educational campaigns about the benefits of cleaner energy, to drive this change.

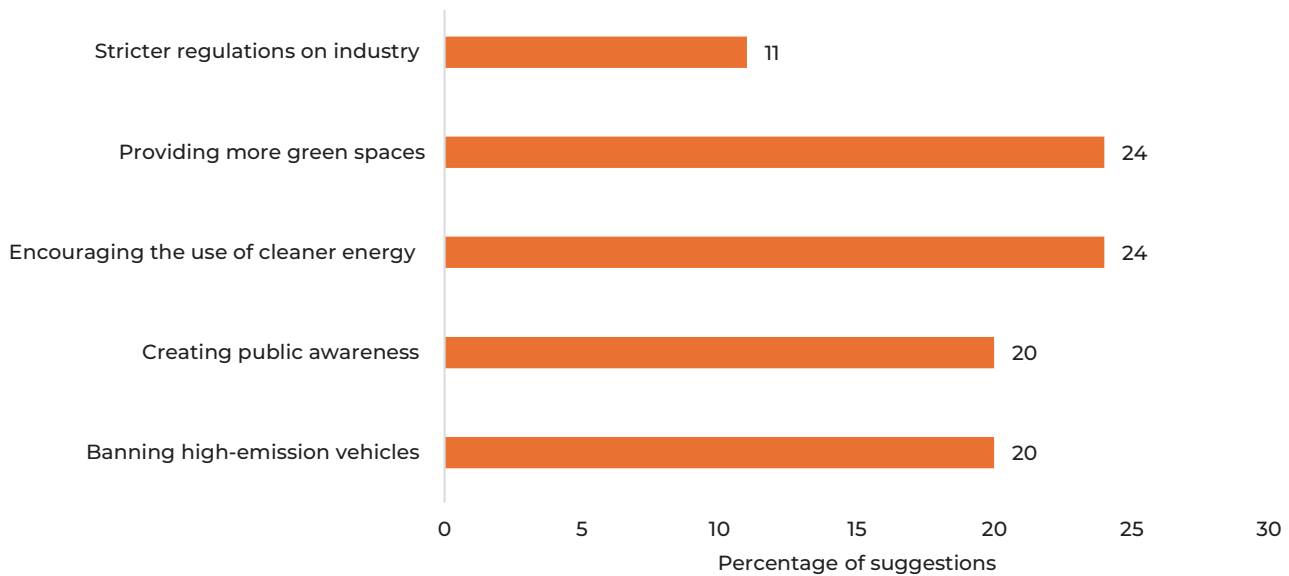


Figure 23: Suggestions for industries efforts to address air pollution

8.4. PUBLIC INFRASTRUCTURE IMPROVEMENTS

According to the participants, several public infrastructure improvements can be made to reduce the impact of air pollution on the community. A majority of participants indicated that significant progress could be achieved through the enhancement of waste and energy management facilities (see Figure 24). This finding is particularly important as, across all communities in Johannesburg, most participants highlighted that the burning of waste has severe negative implications for the community. Participants suggested that improving waste management facilities would involve establishing more efficient and environmentally friendly waste disposal systems. This could include the introduction of more recycling programs, the development of waste-to-energy plants, and stricter regulations on waste burning. By reducing the need to burn waste, these measures would directly decrease the release of harmful pollutants into the air.

In addition to waste management, participants emphasised the need for better energy management facilities. This includes upgrading existing infrastructure to support renewable energy sources, such as solar and wind power, and improving the efficiency of energy distribution systems. By transitioning to cleaner energy sources, the community can significantly reduce its reliance on fossil fuels, thereby lowering emissions and improving air quality.

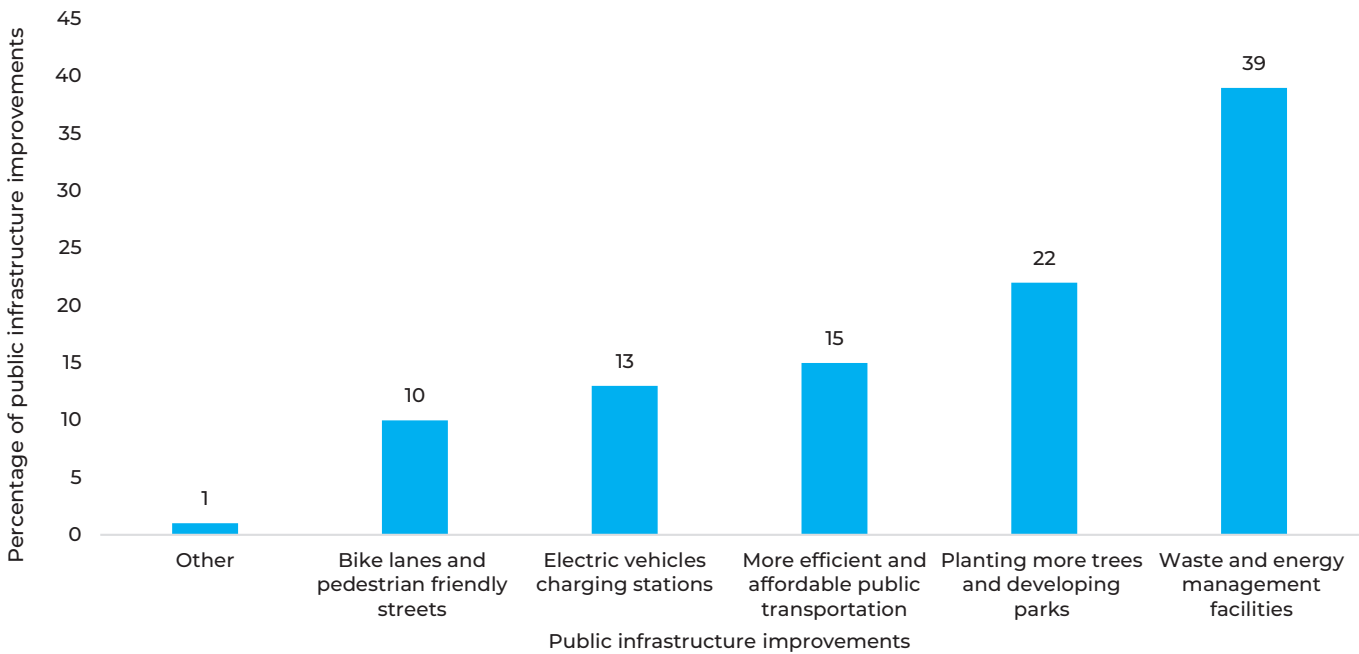


Figure 24: Public infrastructure improvements to improve air pollution

8.5. THE ROLE OF INDUSTRIES AND BUSINESSES IN ENSURING CLEAN AIR ZONES

Participants of this survey expressed strong opinions regarding the role of larger businesses and industries in contributing to air pollution.

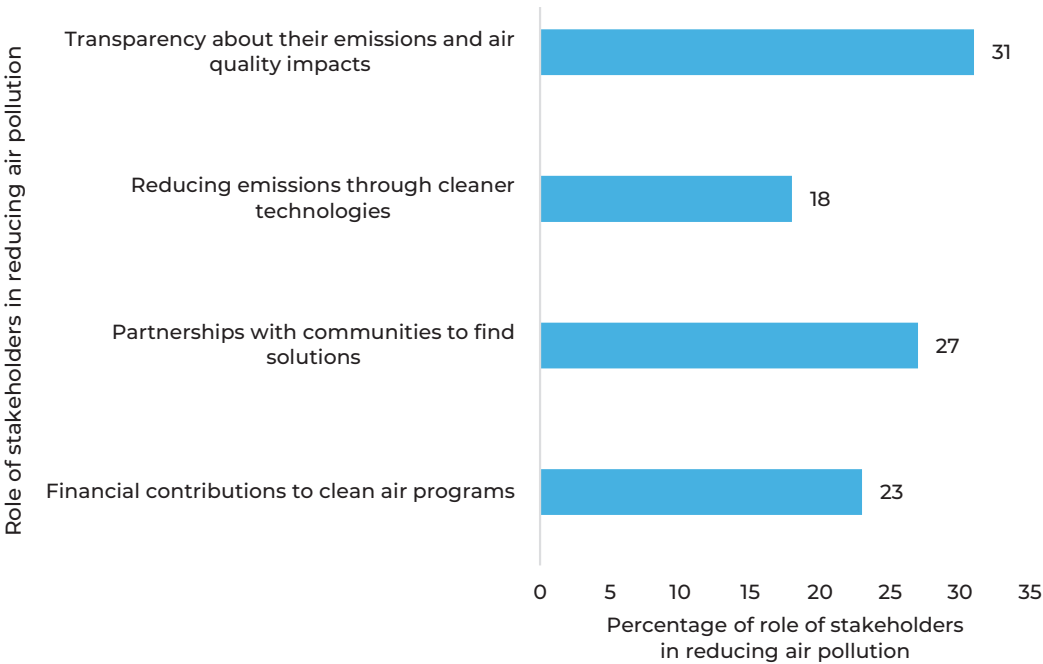


Figure 25: Role of stakeholders in reducing air pollution

Participants believe that these entities are significant sources of emissions and should take greater responsibility for their environmental impact. There is a call for increased transparency from these businesses, with participants urging them to openly disclose their emission levels and the measures they are taking to mitigate air quality impacts (Figure 25). This transparency is seen as a crucial step towards accountability and openness within the community. By being more open about their environmental practices, businesses can play a pivotal role in the collective effort to improve air quality in Johannesburg.

Additionally, participants in Johannesburg highly value the collaboration between government, businesses, and civil society in developing effective solutions to reduce air pollution in their communities and the city (Figure 26). This collaborative approach is crucial for the establishment of a clean air zone, where joint efforts are made to improve air quality. Furthermore, participants emphasised the importance of stricter regulations and the implementation of tax incentives to encourage the adoption of cleaner air technologies. Such measures are seen as essential steps towards achieving a healthier environment and ensuring sustainable air quality improvements for all residents of Johannesburg.

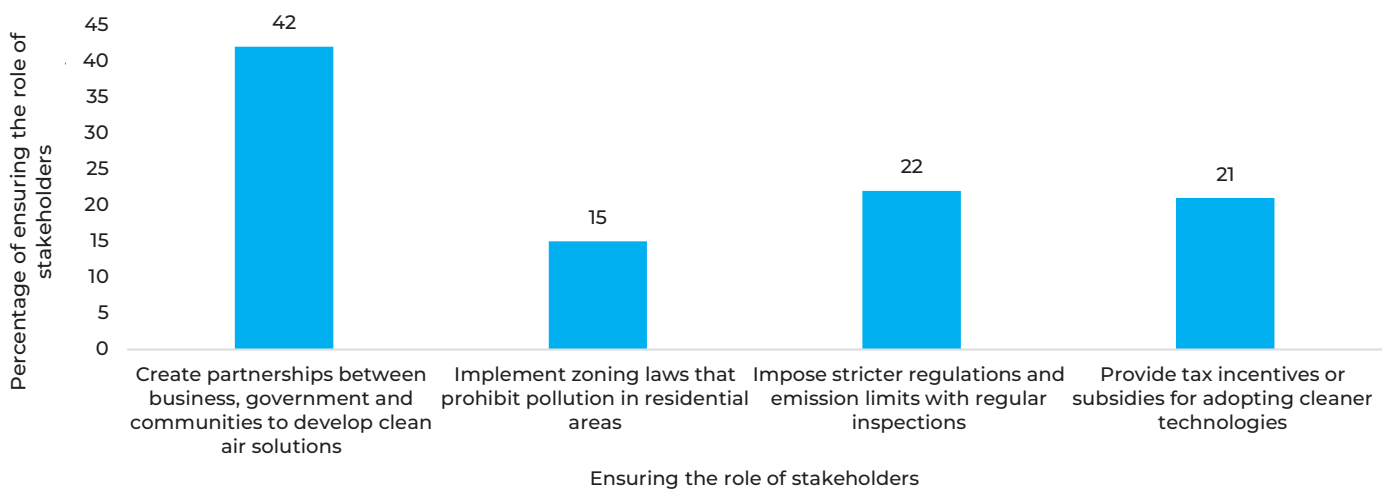


Figure 26: Ensuring the role stakeholders play in reducing air pollution and improving air quality in the City of Johannesburg

8.6. WHO SHOULD BE PRIORITISED?

According to the participants of this study, vulnerable communities and populations are the most affected by air pollution (Table 1). Participants strongly emphasised the need to prioritise individuals suffering from respiratory health diseases and children, who are particularly susceptible due to their developing lungs (Figure 27). These groups face heightened risks from air pollution, which can exacerbate existing health conditions and hinder healthy development in children. Furthermore, some participants suggested that certain groups should be prioritised in efforts to combat air pollution. However, upon further discussion, they emphasised that all groups of people should be prioritised, recognising that air pollution affects everyone regardless of age, socioeconomic status, or location.

Participants called for targeted interventions to protect these at-risk populations. This could include implementing stricter air quality standards in residential areas, increasing access to healthcare services, and providing educational programs to raise awareness about the dangers of air pollution. By focusing on these vulnerable groups, communities can take significant steps toward mitigating the adverse effects of air pollution and promoting overall public health.



Figure 27: Groups to be prioritised when creating a clean air zone





8.7. PRIORITIES OF THE CLEAN AIR ZONES IN JOHANNESBURG

8.7.1. IMPACT ON NATURE

Participants expressed their agreement with the statement, “Air quality improvements should consider the impact on nature when creating a policy.” Furthermore, a significant number of participants strongly agreed with this sentiment, highlighting the critical importance of integrating environmental considerations into the development of air quality policies (Figure 28). This consensus underscores the collective recognition of the need to balance air quality improvements with the preservation of natural ecosystems.

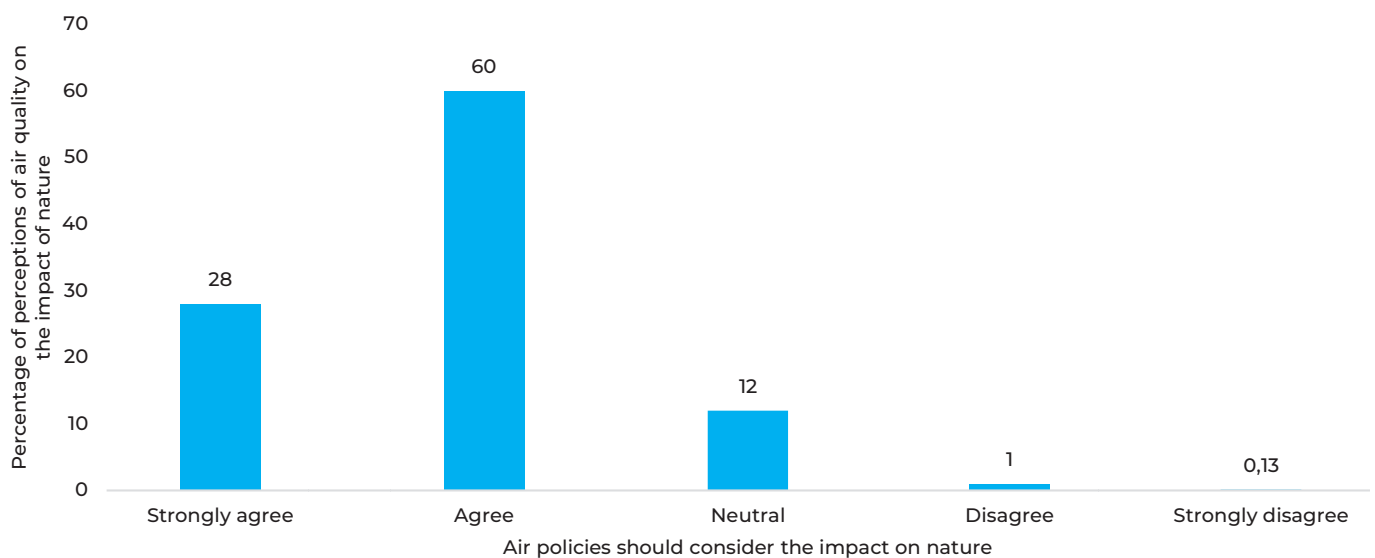


Figure 28: Air quality improvements should consider the impact on nature when creating a policy

8.7.2. VULNERABLE COMMUNITIES

When participants were prompted with the statement, “Air quality policies should consider vulnerable communities when being implemented,” the majority agreed or strongly agreed (see Figure 29). However, a minority of participants disagreed with this statement. This dissent may stem from responses to previous questions, where some participants indicated that air quality policies should be inclusive of all communities, not just vulnerable ones.

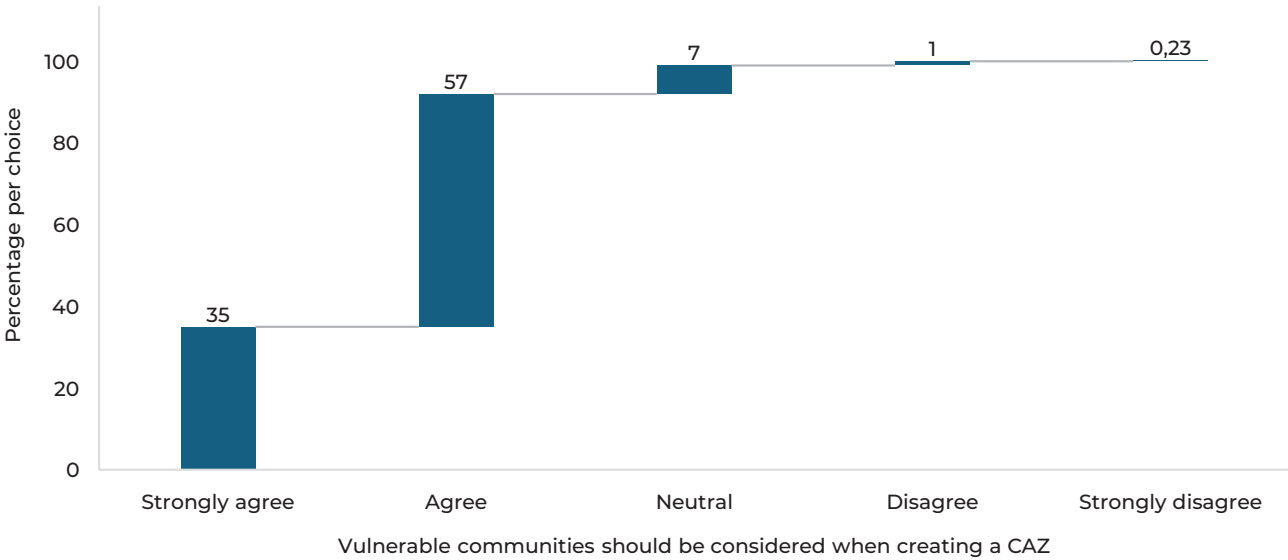


Figure 29: Air quality policies should consider vulnerable communities when being implemented

8.7.3. ECONOMIC GROWTH

When participants were prompted with the statement, “Air quality improvements should be prioritised over economic growth if they conflict,” the majority agreed (see Figure 30).

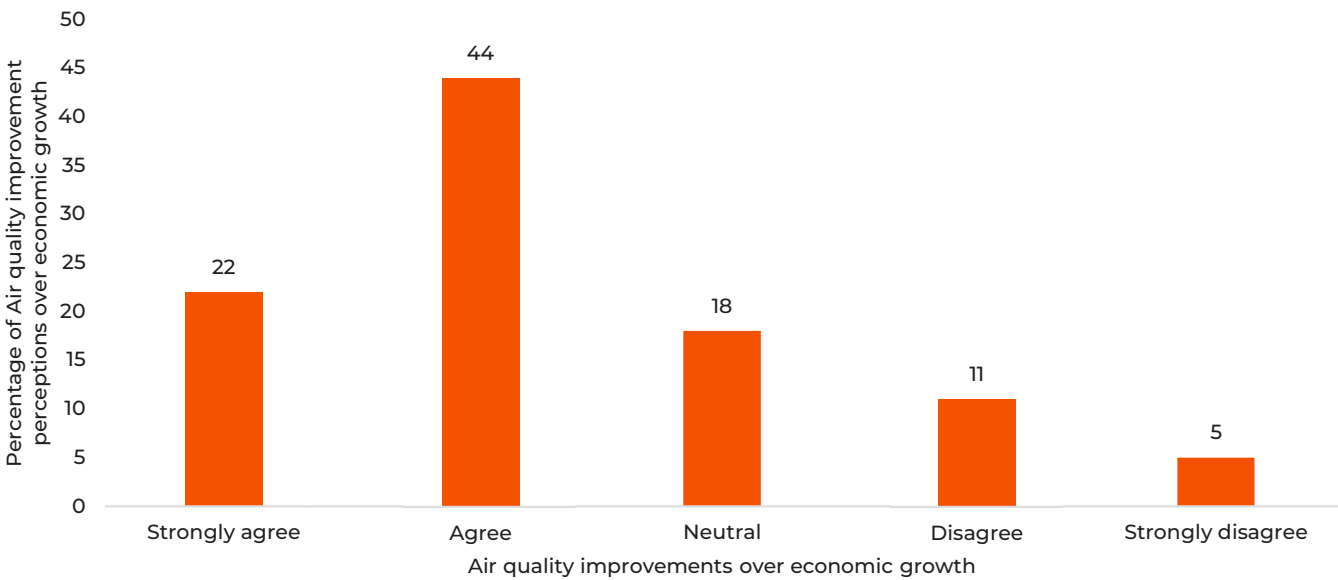


Figure 30: Air quality improvements should be prioritised over economic growth if they conflict

This consensus highlights the recognition of the severe consequences and impacts of air pollution on communities. However, some participants disagreed or strongly disagreed with this statement, emphasising the importance of economic growth.

This divergence in opinions suggests a complex balance between environmental priorities and economic development, reflecting the varied perspectives on how best to achieve sustainable progress.

8.7.4. SUSTAINABLE DEVELOPMENT

When participants were presented with the statement, “Air quality policies should prioritise sustainable development,” the majority agreed, with some expressing strong agreement (see Figure 31). This indicates a broad consensus on the importance of integrating sustainability into air quality policies. However, there were a few individuals who disagreed or remained neutral. This variation in responses suggests that while there is significant support for sustainable development, some participants may have reservations or differing priorities regarding the implementation of such policies.

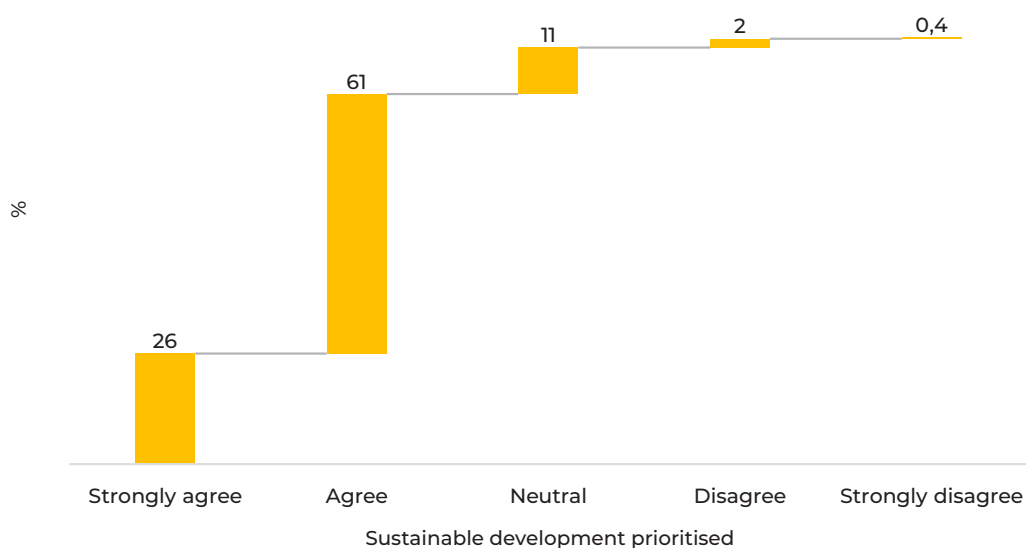


Figure 31: Air quality policies should prioritise sustainable development

8.7.5. GREEN TECHNOLOGIES AND IMPACTING NATURE

Lastly, participants were presented with the statement, “Should air quality interventions include green technologies that could lead to ecological degradation?” The majority of participants agreed, with a significant number strongly agreeing (see Figure 32). This indicates a consensus on the importance of incorporating green technologies in air quality interventions, despite potential ecological risks. However, some individuals disagreed or strongly disagreed with this statement.

This dissent highlights concerns about the potential negative impacts of certain green technologies on the environment, suggesting a need for careful consideration and balanced approaches in policymaking.

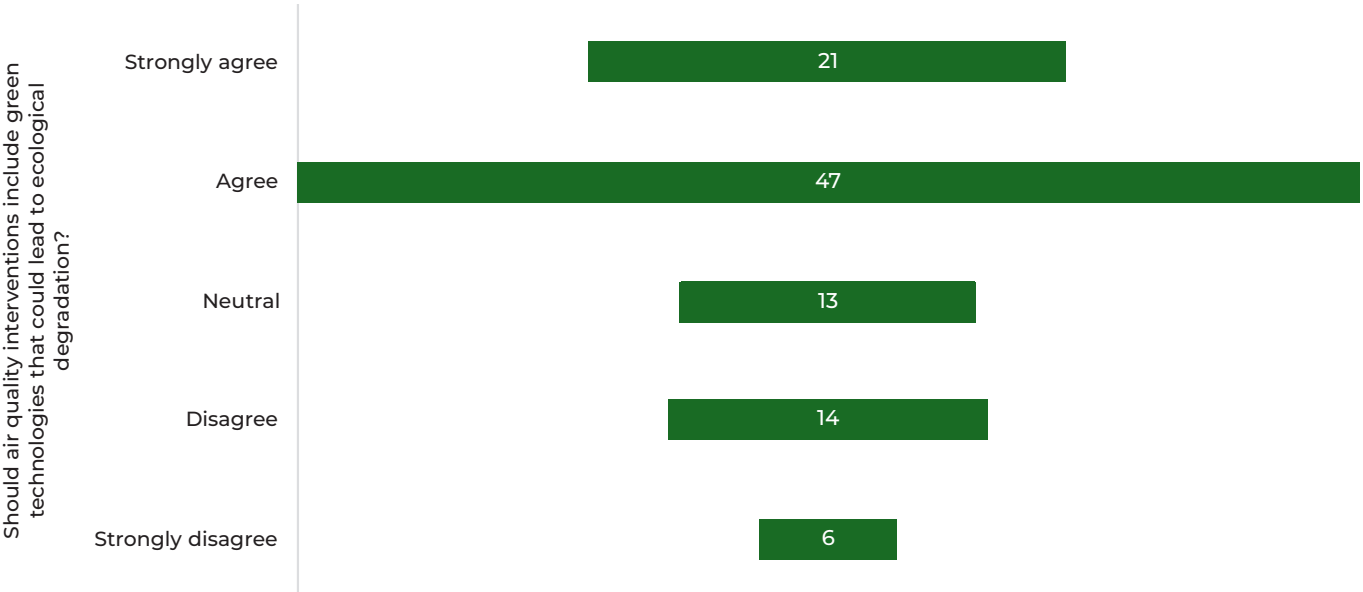


Figure 32: Should air quality interventions include green technologies that could lead to ecological degradation?

8.8. RECOMMENDATIONS AND NEXT STEPS

Drawing from insights gained through focus group discussions, stakeholder engagements, and the air quality survey, this section outlines strategic recommendations to create a CAZ policy in Johannesburg. These recommendations are designed to be inclusive, sustainable, and health-centred, addressing the city's unique social, economic, and environmental challenges while paving the way for meaningful air pollution mitigation.

POLICY AND REGULATORY FRAMEWORK

- **STRICTER AIR QUALITY POLICIES:** Strengthen and enforce existing regulations addressing emissions, waste burning, and industrial pollution. Build robust compliance mechanisms, including regular inspections, penalties for violations, and incentives for meeting or exceeding standards.
- **ENFORCEMENT OF EXISTING BY-LAWS:** Bolster enforcement capabilities by increasing monitoring resources and capacity, particularly in high-risk areas with concentrated industrial activity or traffic emissions.
- **GOVERNMENT-LED GREEN PROCUREMENT:** Introduce green procurement policies within public institutions, prioritizing the adoption of low-emission transport fleets, renewable energy projects, and eco-friendly urban infrastructure. This sets a precedent for sustainability in both the public and private sectors.

PUBLIC TRANSPORT AND MOBILITY SOLUTIONS

- **EXPANDING PUBLIC TRANSPORT INFRASTRUCTURE:** Strengthen the Rea Vaya Bus Rapid Transit (BRT) system, rail networks, and minibus taxi services to offer reliable, cost-effective, and accessible transport alternatives. Invest in system upgrades, improved maintenance, and expanded routes to increase user adoption.
- **PARK-AND-RIDE SYSTEMS:** Develop designated park-and-ride facilities on the outskirts of CAZ areas, enabling commuters to switch from private vehicles to cleaner public transport options, reducing inner-city congestion and emissions.
- **ACTIVE MOBILITY INFRASTRUCTURE:** Enhance pedestrian and cycling infrastructure by improving pathways, ensuring connectivity, and addressing safety concerns through better lighting, surveillance, and community policing initiatives.

SUSTAINABLE WASTE AND ENERGY MANAGEMENT

- **RECYCLING AND WASTE REDUCTION:** Implement formalized recycling programs in collaboration with local waste pickers, community organizations, and private waste management companies. Transform existing dumping sites into urban green spaces to discourage waste burning and enhance community aesthetics.
- **CLEANER FUELS AND ENERGY TRANSITION:** Accelerate renewable energy adoption and incentivize shifts to cleaner fuel technologies for both industry and transport sectors. Conduct pilot projects for alternative energy solutions to test scalability and effectiveness.
- **INCENTIVES FOR CLEANER VEHICLES:** Provide subsidies, tax benefits, or low-interest financing to encourage businesses and individuals to adopt electric vehicles (EVs) or low-emission alternatives. Support fleet transitions in industries like logistics and public transport.

COMMUNITY AWARENESS AND ENGAGEMENT

- **AIR POLLUTION AWARENESS CAMPAIGNS:** Launch targeted public education initiatives that emphasize the health risks of air pollution and promote behaviour change. Tailor messaging to younger age groups (18–35) and marginalized communities, who may have lower levels of concern or awareness.
- **COMMUNITY-BASED DECISION MAKING:** Establish local clean air committees that include representation from vulnerable communities. Empower residents to co-design interventions and provide feedback on CAZ implementation.
- **YOUTH AND SCHOOL INVOLVEMENT:** Integrate air quality education into school curricula and introduce green skills training programs to equip young people with the knowledge and expertise to lead sustainability efforts in the future.

HEALTH-FOCUSED INTERVENTIONS

- **PUBLIC HEALTH CAMPAIGNS:** Collaborate with healthcare providers to raise awareness of pollution-related illnesses, such as respiratory and cardiovascular diseases, and provide resources for prevention and treatment.
- **MONITORING AND RESPONSE SYSTEMS:** Set up real-time air quality monitoring networks to track pollution levels and generate early warnings for high-risk periods. Share this data with healthcare institutions to enable timely medical responses.
- **ACCESSIBLE MEDICAL SUPPORT:** Expand healthcare services in high-pollution areas to provide better access to treatment and resources for communities most affected by air quality issues.

LEVERAGING TECHNOLOGY AND DATA

- **DIGITAL AWARENESS AND ENGAGEMENT:** Use social media platforms, mobile apps, and interactive websites to spread information about air quality and educate the public on CAZ benefits.
- **AIR QUALITY DATA TRANSPARENCY:** Publish real-time air quality data to empower residents with the knowledge to make informed decisions and actively participate in pollution mitigation efforts.
- **SMART TRAFFIC AND EMISSION TRACKING:** Deploy data-driven solutions such as intelligent traffic management systems and pollution sensors to optimize traffic flows, reduce congestion, and track vehicle emissions in CAZ areas.

ECONOMIC AND SOCIAL SUSTAINABILITY

- **GREEN JOB CREATION:** Facilitate economic growth by supporting initiatives in clean energy, sustainable waste management, urban greening, and renewable technologies. This will also create employment opportunities for local communities.
- **EQUITABLE TRANSITION STRATEGIES:** Design transition programs to support low-income workers and informal sectors in adapting to sustainable practices. Provide training and financial assistance to ensure equitable access to opportunities created by CAZ.
- **INCENTIVIZING PRIVATE SECTOR INVOLVEMENT:** Encourage businesses to invest in air quality improvement initiatives by offering tax breaks, grants, and opportunities for public-private partnerships. Promote corporate social responsibility efforts in the private sector.

8.9. CONCLUSION

Implementing a CAZ policy in Johannesburg represents a vital opportunity to address the city's air pollution challenges and create a healthier, more sustainable future. The insights gathered through the polling exercise, focus groups, and stakeholder engagements underscore the critical importance of taking bold and coordinated action.

The recommendations outlined in this report focus on developing inclusive policies, adopting community engagement, and integrating sustainable development practices. Stricter enforcement of air quality regulations enhanced public transport infrastructure, and investments in renewable energy are central to achieving meaningful progress. At the same time, educating residents, particularly vulnerable communities and younger demographics, will ensure equitable participation and acceptance of CAZ interventions.

By leveraging technology, promoting green economic growth, and creating collaboration across sectors, Johannesburg can build a Clean Air Zone framework that serves as a model for cities facing similar

challenges. This initiative has the potential to deliver wide-ranging benefits, from improved public health and environmental quality to job creation and economic resilience.

Moving forward, a collective effort from government, businesses, civil society, and residents is essential. Through coordinated action, transparent communication, and sustained commitment, Johannesburg can transform into a cleaner, greener, and more liveable city, setting the stage for a sustainable urban future for its residents.





9

FOCUS GROUP DISCUSSION

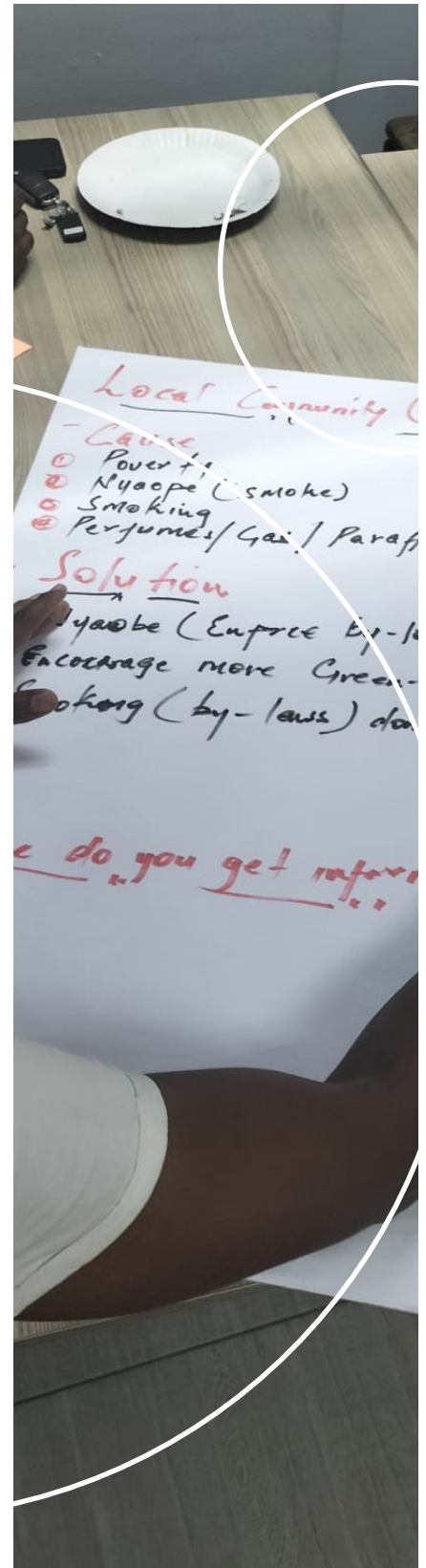
9. FOCUS GROUP DISCUSSION

9.1. INTRODUCTION

Following the completion of the polling report, our next step was to speak to community members about air quality. The focus groups aimed to explore the lived experiences, concerns, and suggestions of Johannesburg residents regarding air quality. By engaging participants from various demographics, including age, gender, socioeconomic status, and cultural backgrounds, the team sought to create an inclusive environment where all voices could be heard. To better understand these challenges and explore potential solutions, focus group discussions were organized with diverse groups of community members. These focus groups were held in two locations within the City of Johannesburg: in the South, on January 27, 2025, in Orange Farm, and in the North, on January 28, 2025, in Alexandra. To ensure consistency between groups, the same agenda was adhered to, and the same questions were prompted. However, where required, participants were prompted for additional information (Appendix 1).

This chapter presents the findings from the focus group discussions, offering a community-driven perspective on air pollution in Johannesburg. The discussions provided a platform for residents to share their lived experiences, concerns, and suggestions for improving air quality. Insights from these sessions will contribute to the development of a clean air zone policy that reflects the community's needs and priorities.

The chapter also includes a SWOT analysis, highlighting the strengths, weaknesses, opportunities, and threats related to air pollution in Orange Farm and Alexandra. Furthermore, it outlines actionable recommendations to address these challenges, emphasizing the importance of community engagement, improved infrastructure, policy enforcement, and innovative technological solutions.

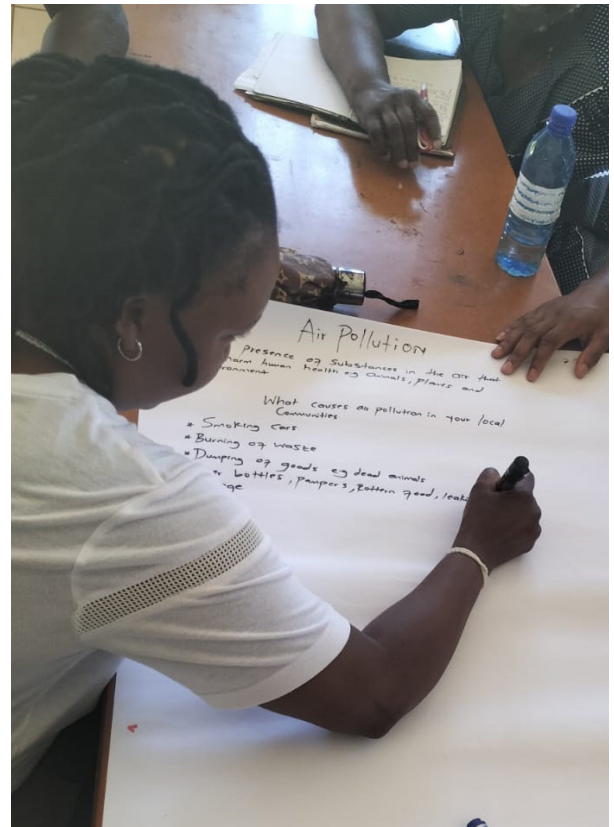


By incorporating the voices of Johannesburg residents into the policy development process, the project team aimed to create a collaborative approach to air quality management. The proposed strategies, supported by community insights, provide a foundation for achieving cleaner air and healthier communities for all city residents.

9.2. INCLUSIVE COMMUNITY ENGAGEMENT

In addition to participants from the chosen areas, the team extended invitations to neighbouring communities to join the focus groups. This included areas like Lenasia, Eldorado Park and Ennerdale for the Orange Farm focus group and areas like Midrand, Wynberg and Libro Park. This inclusive approach allowed us to gather a diverse range of perspectives on air quality perceptions and the challenges faced by different community members.

To further enrich the discussions, surveyors with strong community ties participated in the focus groups. Their involvement provided valuable context and helped bridge the gap between the research team and community members. These surveyors played a crucial role in facilitating open and honest dialogue, ensuring that the voices of all participants were heard and respected.



9.2.1 ORANGE FARM FOCUS GROUP

A total of 22 participants attended our focus group session in Orange Farm. This group was evenly balanced between males and females, with each gender representing 50% of the total participants. This balanced representation allowed us to capture diverse perspectives on air quality issues from both men and women in the community.

Additionally, most participants fell within the 25-29 age category. This demographic trend highlights the significant interest and concern that young adults have regarding air quality issues in their communities. Their active participation underscores a growing awareness and willingness among younger residents to engage in discussions about environmental health and the quality of life in Johannesburg.



9.2.2 ALEXANDRA FOCUS GROUP

A total of 29 participants attended our focus group session in Alexandra. The gender distribution in this session skewed towards females, who comprised 59% of the attendees. This higher representation of women provided a nuanced perspective on air quality issues from a female viewpoint, enriching the overall discussion.

Additionally, the majority of participants, 31%, were aged between 25 and 29. This indicates a notable interest among young adults in air quality issues affecting their communities. This specific result closely links with the polling results report, which found that showed that particularly the age group 30-35 years showed the highest concern for air quality issues. Interestingly, the age category of 41 to 50 was also significantly represented, accounting for 28% of the participants. This close following suggests that middle-aged adults are equally concerned about air quality issues and are keen to contribute their experiences and suggestions for improvement.

By engaging a broad spectrum of participants, including residents, local leaders, youth, senior citizens, and informal workers, a wide array of experiences and viewpoints were captured. This diversity is essential for developing well-rounded and inclusive air quality recommendations that address the unique needs and challenges of different segments of the population.

Through these focus group discussions, deeper insights were gained into the community's concerns and suggestions, which will be instrumental in shaping our recommendations. Our goal is to create actionable strategies that not only improve air quality but also enhance the overall well-being of Johannesburg residents.

9.3. FOCUS GROUP METHODOLOGY

The focus group discussions were facilitated by the community program's lead and researcher, who acted as moderators. This role allowed the moderators to guide the conversation while giving participants the freedom to steer the discussion and express their opinions openly. The format of the focus group discussions was flexible, with the facilitators asking follow-up questions based on participants' responses from the polling exercise, ensuring a dynamic and interactive session.

To conduct these focus groups, 50 participants from our existing pool of participants, that participated in the polling exercise between November and December, were selected. To enrich the diversity of perspectives, these selected participants were encouraged to bring along other community members. This approach aimed to ensure a broader range of views and experiences were represented in our discussions, with one group located in the South of Johannesburg and the other in the North. The focus groups were scheduled for 8 hours. This extended timeframe ensured that participants had sufficient time to thoroughly respond to questions and that every voice was given an equal opportunity to be heard and for any other arising matters to be dealt with. For example, in Alexandra, participants had issues finding the exact venue for this focus group, resulting in a program shift. The program was structured to include regular refreshment breaks and a lunch break, allowing participants to rest and recharge. Additionally, icebreaker activities were incorporated between sessions to keep participants actively engaged and to encourage a comfortable and interactive environment.

During the focus group sessions, a presentation was shared with community members to inform them of the results of the polling report. Following the presentation, participants engaged with the results, asking the team questions about the surveys and thereafter a discussion took place – this was centred on insights and questions arising about current perceptions of air quality, the impacts of air pollution, and the challenges related to air quality. Participants were asked about their experiences with air quality impacts to understand how a clean air zone policy could be developed for the city.

9.3.1. ETHICS AND INFORMED CONSENT

Throughout the study, ethical considerations were paramount. Participants were treated with respect and dignity, and their wishes regarding identity and responses were honoured. Informed consent was

obtained before focus groups commenced and participants were informed of their voluntary participation and right to withdraw at any time. Confidentiality and anonymity were maintained, with all data securely stored and contributions anonymised.

9.4. SUMMARY OF RESULTS COLLECTED IN ORANGE FARM AND ALEXANDRA

Air pollution is an escalating concern in the communities of Orange Farm and Alexandra, significantly impacting public health, the environment, and the local economy. The detrimental effects of poor air quality were discussed further, and impacts include increased incidence of respiratory illnesses, environmental degradation, and economic challenges faced by these areas, as per the questions in Appendix 1. To address this pressing issue, an action plan has been proposed, focusing on sustainable and effective solutions to reducing air pollution.

The proposed action plan from both communities includes several key initiatives:



1. Stricter regulations:

Implementing and enforcing stricter air quality regulations to reduce emissions from industrial and vehicular sources. This includes zoning laws, which prohibit the burning of fossil fuels at certain periods during the day. Interestingly, a control between moving through to different provinces and stricter movement laws was discussed.



2. Improved waste management:

Enhancing waste management practices and recycling initiatives to minimize open burning and other activities that contribute to air pollution.



3. Green spaces:

Developing and maintaining green spaces to improve air quality and provide recreational areas for residents.



4. Community engagement:

Actively involving community members in awareness campaigns and decision-making processes to ensure their voices are heard and their needs are met.

However, the success of these initiatives depends on various internal and external factors. To assess the feasibility of the action plan and identify areas that need improvement, a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) was conducted after the focus groups concluded.

9.4.1. SWOT ANALYSIS FOR AIR POLLUTION IN ORANGE FARM AND ALEXANDRA

To gain an understanding of the air quality issues and the potential avenues for improvement within the City of Johannesburg, a SWOT analysis was conducted (Table 2). This analysis evaluates the strengths, weaknesses, opportunities, and threats related to air pollution in the communities of Orange Farm and Alexandra. This approach enables us to develop targeted strategies that leverage existing strengths, address current weaknesses, capitalize on emerging opportunities, and mitigate potential threats.

The insights gathered from our focus group discussions have been instrumental in informing this



STRENGTHS

- Strong community support for air quality initiatives
- Existing infrastructure (recycling centers, public transport)
- Commitment from local authorities to improving air quality
- Potential for increasing green spaces to improve air quality



WEAKNESSES

- Limited financial resources for implementing solutions
- Low public awareness and education on air pollution
- Challenges in enforcing air quality regulations
- Poor maintenance of roads and public transport systems



OPPORTUNITIES

- Partnerships with NGOs, private sector, and international bodies
- Availability of funding and grants for air quality projects
- Technological advancements for air quality monitoring and awareness
- Green job creation through air quality education and implementation



THREATS

- Economic challenges that may divert resources from environmental issues
- Resistance from industries and businesses against stricter regulations
- Climate change worsening air pollution issues
- Corruption within enforcement agencies affecting policy

9.4.2. RECOMMENDATIONS

- **RECYCLING AND WASTE MANAGEMENT:** Implement recycling programs and convert dumping sites into gardens to reduce waste burning.
- **AWARENESS CAMPAIGNS:** Create air pollution boards and conduct awareness campaigns to educate residents about the importance of reducing waste and improving air quality.
- **Green Spaces:** Increase the number of green spaces and plant trees to improve air quality and provide health benefits.
- **STRICTER POLICIES:** Develop and enforce stricter policies for dumping and air pollution, including fines for violators and reporting mechanisms for heavily polluting businesses.
- **PUBLIC TRANSPORT:** Encourage the use of public transport and lift clubs to reduce traffic and emissions. Strengthen the transport system with better infrastructure and maintenance.
- **COMMUNITY ENGAGEMENT:** Create committees and forums that champion clean air and involve community members in decision-making processes.
- **EDUCATION AND TRAINING:** Include air pollution and climate change in school curricula and provide training opportunities to upskill residents in green jobs and skills.
- **TECHNOLOGICAL SOLUTIONS:** Develop apps and use social media to disseminate information about air pollution and climate change. Implement monitoring systems to track air quality and identify areas for improvement.

9.4.3. POTENTIAL OUTCOMES OF RECOMMENDATIONS

According to participants, the following should be achieved if the recommendations are followed through correctly. This includes:

- **HEALTH IMPROVEMENTS:** Reduction in respiratory diseases, rashes, and cancer caused by air pollution.
- **ENVIRONMENTAL BENEFITS:** Improved air quality, reduced food insecurity, and mitigation of climate change effects such as drought and acid rain.
- **ECONOMIC ADVANTAGES:** Job creation through green initiatives, reduced healthcare costs, and enhanced long-term sustainability.
- **COMMUNITY WELL-BEING:** Increased awareness and engagement, leading to a cleaner and healthier environment for all residents.

By leveraging the strengths and opportunities while addressing the weaknesses and mitigating the threats, Orange Farm and Alexandra can move toward a cleaner and healthier future.



9.5. CONCLUSION

In conclusion, the focus group discussions have provided valuable insights into the community's perceptions of air pollution and the challenges they face. The recommendations outlined in this report emphasize the importance of a holistic and inclusive approach, involving stricter regulations, improved infrastructure, increased green spaces, effective waste management, community engagement, technological solutions, and support for green jobs.

By leveraging the strengths and opportunities identified in the SWOT analysis; while addressing the weaknesses and mitigating the threats, Johannesburg can move towards a cleaner, healthier future.

10

STAKEHOLDER WORKSHOP

10. STAKEHOLDER WORKSHOP



10.1. INTRODUCTION

Following the focus groups held in Orange Farm and Alexandra, the next step of this work was to hold a stakeholder engagement with city, provincial and national officials. These discussions with officials shaped a more focused approach to air quality concerns, identifying priorities for a clean air zone policy. Various presentations were used to highlight the work being done on clean air zones internationally, the polling results of this report was then presented and thereafter contextualised in the city to provide context to the city by-laws and importance of this work.

Key themes explored include alternative transport systems, regulatory enforcement, cleaner fuel transitions, and urban infrastructure improvements. Stakeholders also emphasized the importance of economic inclusivity, effective policy execution, and public engagement to ensure CAZ success.

10.2. CITY OFFICIALS

Our partners at Breathe Cities and the City of Johannesburg extended an invitation to participate in a stakeholder workshop aimed at tackling air quality challenges in the city. The workshop served as a platform to discuss the conceptualization and implementation of CAZ as a focused strategy to combat pollution and improve urban health. The event brought together representatives from a broad range of departments at city, provincial, and national levels, creating a multi-sectoral and coordinated approach to addressing Johannesburg's air quality concerns. Participants were tasked with contributing valuable recommendations to define the framework for Clean Air Zones, identify ideal pilot locations within Johannesburg, and adapt the CAZ model to the unique socio-economic and environmental dynamics of the region.

Discussions underscored the importance of aligning policies and efforts across different governmental tiers to ensure coherence and effectiveness. Additionally, input from the workshop highlighted actionable strategies for enhancing urban infrastructure, supporting cleaner fuel transitions, and promoting alternative transport systems, among other critical considerations.

This collaborative effort reinforced the necessity of stakeholder engagement at all levels of governance to drive sustainable solutions for improved air quality and urban development tailored to Johannesburg's context.

10.3. WORKSHOP METHODOLOGY

The stakeholder workshop was facilitated by the community program's lead, who served as a moderator, and further supported by the community officer and researcher. Their role was to guide the discussions while allowing participants the freedom to direct conversations and express their views openly. The workshop format was designed to be flexible, with moderators posing follow-up questions based on participants' responses from earlier polling exercises, ensuring a dynamic and interactive experience (Appendix 3).

The workshop brought together departments from the city, province and government to engage with the polling exercise conducted between November and December. To enhance the diversity of perspectives, these participants were encouraged to invite other stakeholders from various sectors relating their work to air quality and defining a clean air zone, representing a broad range of interests and expertise.

The workshop session was scheduled for approximately 5 hours, allowing ample time for in-depth discussions and ensuring every voice was heard. The agenda included regular refreshment breaks and a lunch break to enable participants to rest and re-energize (Appendix 3). Additionally, icebreaker activities were incorporated to keep attendees engaged and create an interactive and collaborative atmosphere. However, due to the intensity of the discussions across different departments, this session should have been ideally scheduled for eight hours.

During the workshop, a detailed presentation was shared, outlining the results of the polling exercise. This provided a foundation for participants to engage critically with the findings, pose questions to the team, and initiate discussions. Conversations focused on insights into current air quality perceptions, the impacts of air pollution, and the challenges associated with addressing these issues. Participants also shared their experiences with air quality challenges, contributing valuable input on how a Clean Air Zone policy could be effectively developed and adapted to Johannesburg's context.



As per our prompting questions, City officials defined a CAZ as a designated area where targeted interventions are implemented to reduce air pollution and promote sustainable urban mobility. Its defining features include:

- Enforcement of strict emission standards and pollution control measures.
- Integration of accessible and efficient public transport systems.
- Development of pedestrian-friendly and cycling-safe urban spaces.
- Effective waste management practices to prevent informal burning.
- Active public awareness campaigns to encourage voluntary shifts in behaviour and support policy goals.



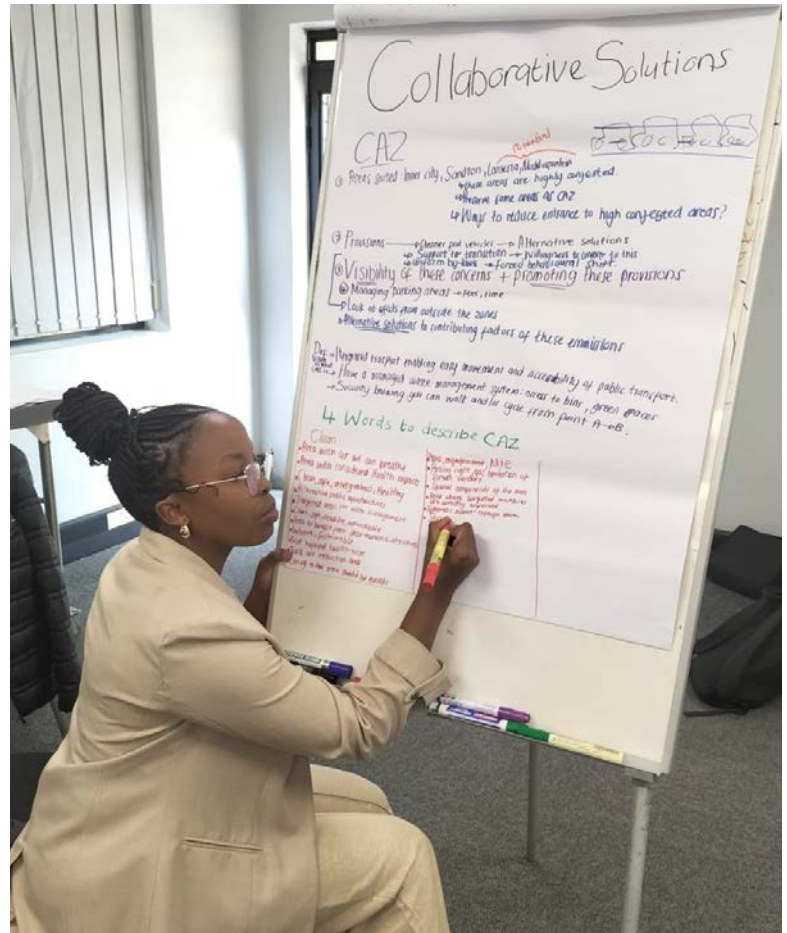
Selecting appropriate locations for CAZ implementation requires a data-driven and multi-criteria approach. Key factors include pollution intensity, transport and infrastructure capacity, enforcement feasibility, and socio-economic dynamics.

10.5. CRITERIA FOR SELECTING A CAZ IN JOHANNESBURG

Various themes arose under the criteria for selecting a clean air zone, this included traffic congestion, economic growth, issues with enforcement, and overall perceptions of what a clean air zone would include.

10.5.1 AIR POLLUTION AND TRANSPORT CONGESTION

- Areas with high levels of congestion and vehicle emissions represent priority zones where CAZ interventions can achieve significant pollution reduction.
- Locations with existing public transport infrastructure, such as the Bus Rapid Transit (BRT) system and the Gautrain, provide a strong foundation for shifting commuters away from private vehicle use.



10.5.2 ECONOMIC GROWTH AND FUTURE PLANNING

- Developing regions such as Lanseria and Modderfontein present significant opportunities for structured CAZ implementation. These areas are in a phase of economic growth and urban development, offering a unique window to integrate sustainable urban planning and clean mobility initiatives from the outset. Their current status as developing areas positions them well for the establishment of CAZ, as planning frameworks can accommodate the necessary infrastructure and behavioural shifts with fewer constraints.
- In contrast, areas such as Sandton and the Central Business District (CBD) were identified as zones that could achieve substantial reductions in emissions due to their high levels of economic activity and significant traffic volumes. However, further discussions highlighted the complexities involved in converting these established hubs into functional CAZ. Challenges in Sandton, for example, include limited available space to implement infrastructure improvements and the scale of behavioural

change required among its commuters and residents. Planning considerations in these developed areas would necessitate more extensive resources and adjustments to existing urban frameworks.

- Projections of continued economic growth in these areas indicate their suitability for long-term clean mobility investments and effective enforcement mechanisms.

10.5.3 REGULATORY ENFORCEMENT AND COMPLIANCE

- Robust enforcement of regulatory frameworks, such as vehicle emissions standards and compliance monitoring, is pivotal to CAZ success. While Johannesburg has established transport and environmental policies, gaps in enforcement remain a significant challenge, underscoring the need for strengthened institutional capacity. One critical aspect of this enforcement gap is the safety concerns surrounding sustainable mobility options such as public transport, cycling, and walking.
- For instance, the safety of public transport users remains a pressing issue, with reports of commuters facing theft and harassment at bus stops, train stations, and within transport vehicles. Similarly, individuals opting for active mobility, such as cycling or walking, encounter risks such as bike thefts and vulnerability to muggings, particularly in areas with low police visibility. Walking with valuables, such as mobile phones or bags, in poorly monitored zones further exacerbates safety concerns, discouraging the use of these sustainable modes of transport.
- To address these challenges, an increased police presence in high-risk areas, particularly transport hubs and popular cycling or walking routes, is necessary to improve safety and build public confidence. Additionally, implementing measures such as secure bike storage facilities, enhanced lighting along pedestrian and cycling pathways, and regular patrols at public transport stations can create a safer environment. Strengthening institutional capacity to monitor and address these safety risks is vital for ensuring that Johannesburg's sustainable mobility policies can be effectively implemented and widely adopted.
- While Johannesburg has established transport and environmental policies, gaps in enforcement remain a significant challenge, highlighting the need for strengthened institutional capacity.

10.5.4 PUBLIC ACCEPTANCE AND BEHAVIOURAL CHANGE

- Public awareness campaigns are critical to building an understanding of the health and economic benefits associated with CAZ implementation.
- Ensuring the availability of affordable and accessible transport alternatives is essential to encourage shifts away from private vehicle use, particularly among lower-income communities.

10.6. CHALLENGES AND OPPORTUNITIES

10.6.1 KEY CHALLENGES

According to City Officials, implementing CAZ in Johannesburg presents several significant challenges that must be addressed for successful execution and sustainability:

FUNDING CONSTRAINTS FOR INFRASTRUCTURE AND ENFORCEMENT

Developing the necessary infrastructure to support CAZ, including public transport networks, cycling lanes, and clean energy facilities, requires substantial financial investment. Limited public funding and competing budgetary priorities pose significant constraints. Additionally, the operational costs of enforcing CAZ regulations, such as deploying monitoring technologies and personnel, further amplify the financial burden.



PUBLIC RESISTANCE TO BEHAVIOURAL CHANGE AND NEW RESTRICTIONS

Introducing restrictions such as emission limits, vehicle exclusions, or parking controls within CAZ may face resistance from the public. Behavioural shifts, such as reduced reliance on private vehicles and adoption of alternative transport options, often require time, awareness, and incentives to gain widespread acceptance.



WEAK ENFORCEMENT OF EXISTING ENVIRONMENTAL LAWS

Johannesburg has established environmental and transport policies; however, the enforcement of these regulations remains inconsistent. Gaps in monitoring, lack of resources, and weak institutional frameworks hinder effective compliance and undermine the potential impact of CAZ initiatives.



HIGH INITIAL COSTS OF ALTERNATIVE TRANSPORT SOLUTIONS

The transition to cleaner transport options, such as electric vehicles and gas-powered taxis, is costly. High upfront costs deter both consumers and operators from adopting these technologies, creating a barrier to implementing widespread clean mobility solutions.





10.6.2 OPPORTUNITIES FOR SUCCESS

Despite these challenges, significant opportunities exist to pave the way for effective CAZ implementation and long-term success:

LEVERAGING EXISTING POLICIES AND FRAMEWORKS	Johannesburg already has existing by-laws, policies and frameworks focused on sustainable urban development and environmental management. These can be strengthened and expanded to include specific provisions for Clean Air Zones. By building on existing foundations, the city can reduce policy development timelines and enhance regulatory coherence.
ENGAGING PRIVATE SECTOR STAKEHOLDERS	Collaboration with private sector entities offers a valuable opportunity to secure funding and resources for CAZ initiatives. Businesses can contribute to clean mobility solutions through investments in sustainable transport technologies, infrastructure development, and public-private partnerships that align with their corporate sustainability goals.
PILOTING CAZ INITIATIVES IN TARGETED AREAS	Starting with pilot projects in strategically selected locations, such as economically growing areas with manageable enforcement challenges, allows for iterative learning and refinement. These pilot zones can serve as testing grounds for policies, enforcement mechanisms, and public engagement strategies before scaling CAZ implementation citywide.
UTILIZING DATA-DRIVEN APPROACHES	Advanced data analytics and air quality monitoring systems provide valuable insights into pollution patterns and the effectiveness of implemented measures. Continuous data collection can inform policy adjustments, optimize CAZ boundaries, and demonstrate measurable improvements in air quality, strengthening public and stakeholder confidence.

CATALYSING GREEN ECONOMIC GROWTH	Implementing CAZ in developing areas such as Lanseria and Modderfontein presents an opportunity to drive green economic development. Investments in clean energy, sustainable transport infrastructure, and waste management systems can create new economic opportunities while promoting environmentally sustainable practices. These initiatives have the potential to generate green jobs, attract eco-conscious businesses, and position Johannesburg as a leader in urban sustainability.
INCENTIVIZING PUBLIC ADOPTION	Offering incentives, such as subsidies for cleaner vehicle purchases, tax benefits for businesses adopting sustainable practices, or discounts on public transport fares, can encourage greater participation and accelerate behavioural change. Public awareness campaigns can further highlight the health, environmental, and economic benefits of CAZ to instil broad-based support.

10.7. NEXT STEPS AND RECOMMENDATIONS

10.7.1 NEXT STEPS

To move forward with the Clean Air Zones initiative and build on the outcomes of prior engagements and assessments, the following key actions are proposed:

DEEPEN STAKEHOLDER ENGAGEMENT	Organize follow-up workshops with a broader range of stakeholders, including the health department, private sector representatives, and community leaders.
	Develop a comprehensive stakeholder map to identify any remaining gaps in representation and ensure inclusivity in future discussions.
CONDUCT PILOT PROJECTS:	Select one or more of the proposed regions—such as Lanseria, Modderfontein, or another high-potential area—for pilot CAZ implementation.
	Outline a phased approach for each pilot, starting with voluntary participation and incentives, and progressing to full regulatory enforcement.
EXPAND DATA COLLECTION AND ANALYSIS	Collaborate with relevant departments and organizations to gather more granular data on air pollution hotspots, transport patterns, and public health indicators.
	Establish a centralized data-monitoring system to track baseline air quality and measure the impact of CAZ implementation over time.
DEVELOP PUBLIC AWARENESS CAMPAIGNS	Design targeted communication initiatives to educate the public about the benefits of CAZ, such as reduced pollution, improved health outcomes, and economic savings.

	Incorporate feedback mechanisms, such as community surveys, to align messaging with public concerns and priorities.
SECURE FUNDING AND PARTNERSHIPS	Approach international development organizations, local businesses, and private investors to co-fund CAZ-related infrastructure and policy initiatives.
	Explore grants and subsidies to support lower-income groups in adapting to CAZ measures, such as acquiring clean fuel vehicles or accessing affordable public transport.
POLICY REVIEW AND ALIGNMENT	Conduct a review of existing policies to ensure alignment with CAZ objectives. This includes transport, urban planning, and environmental regulations.
	Draft a CAZ-specific policy framework that includes clear enforcement mechanisms, incentives, and penalties.

10.7.2 RECOMMENDATIONS

Based on the findings and key challenges identified, the following recommendations are put forward to support the successful implementation of Clean Air Zones in Johannesburg:

PRIORITIZE HIGH-IMPACT AREAS	Prioritize high-impact areas: Focus initial efforts on regions with significant economic growth potential, manageable enforcement challenges, and existing transport infrastructure, such as Lanseria and Modderfontein. These areas can serve as proof-of-concept zones to refine the approach before broader citywide implementation.
STRENGTHEN ENFORCEMENT CAPACITY	Strengthen enforcement capacity: Invest in the development of institutional and technological resources for monitoring and enforcement. Examples include real-time emissions tracking systems and dedicated enforcement teams for compliance assurance.
PROMOTE EQUITABLE SOLUTIONS	Promote equitable solutions: Ensure that CAZ policies do not disproportionately impact vulnerable groups. Introduce subsidies or alternative support mechanisms to ensure economic inclusivity, particularly for lower-income households and small businesses.
ENHANCE PUBLIC TRANSPORT AND MOBILITY OPTIONS	Enhance public transport and mobility options: Scale up investment in integrated and sustainable transport systems, such as expanded public transit networks, cycling infrastructure, and park-and-ride facilities. These systems are essential for reducing reliance on private vehicles and ensuring the accessibility of CAZ regions.

BUILD MULTI-SECTORAL PARTNERSHIPS	Build multi-sectoral partnerships: Create collaborations between government, private enterprises, academic institutions, and civil society organizations to pool resources and expertise. Public-private partnerships can play a key role in funding infrastructure projects and driving innovation in clean mobility.
PROMOTE CROSS-SECTORAL COLLABORATION AND COORDINATION	Promote cross-sectoral collaboration and coordination: Achieving meaningful and sustained air quality improvements requires interventions across multiple sectors, such as transport, waste management, urban planning, and public health. A coordinated effort is essential to ensure that all departments and systems function effectively and collaboratively within targeted CAZ. This includes aligning objectives, streamlining operations, and open communication between relevant stakeholders to address systemic challenges. Establishing a multi-departmental task force could be a practical step to drive and monitor these collaborative efforts.
ADOPT A PHASED APPROACH	Adopt a phased approach: Implement CAZ initiatives incrementally to allow time for public adaptation and capacity building. For example, begin with voluntary participation and incentives before transitioning to mandatory compliance.
ESTABLISH A MONITORING AND EVALUATION (M&E) FRAMEWORK	Establish a Monitoring and Evaluation (M&E) framework: Develop a robust M&E system to create baseline data on air quality, transport usage, and public health indicators within targeted CAZ areas. Regular data collection and analysis should be prioritized to measure progress, track changes, and assess the effectiveness of interventions. This approach will ensure informed decision-making and enable adaptive improvements to the CAZ policy and implementation process. Transparency in reporting the outcomes will also build public trust and support for the initiative.
LEVERAGE TECHNOLOGY FOR IMPACT ASSESSMENT	Leverage technology for impact assessment: Use advanced data analytics and air quality monitoring tools to continuously evaluate the effectiveness of CAZ interventions. Regular reporting on progress can build public trust and inform adaptive policymaking.

By following these steps and recommendations, Johannesburg can establish a robust framework for Clean Air Zones, which can be replicated in other areas of the city and country, ultimately achieving significant improvements in air quality, public health, and sustainable urban living.

10.8. CONCLUSION

Establishing CAZ in Johannesburg represents an important step towards addressing the city's escalating air pollution crisis. This report has highlighted the urgency of the challenge, driven by emissions from transport, industry, and waste burning, and has underscored the significant health, environmental, and economic consequences of inaction. Through targeted interventions such as emissions regulation, sustainable transport systems, and enhanced urban planning, CAZ offers a scalable solution to improve air quality and promote healthier, more sustainable urban living.

Key insights from this report underscore the importance of a data-driven and inclusive approach to CAZ implementation. Economically thriving areas present strategic opportunities for piloting initiatives, provided challenges such as funding constraints, enforcement gaps, and behavioural resistance are effectively addressed. Moreover, the success of CAZ relies on multi-sectoral collaboration, robust regulatory frameworks, and public engagement to ensure inclusivity and equity.



Moving forward, Johannesburg has the opportunity to lead by example, setting a precedent for other urban centres across South Africa and the region. By adopting the recommendations outlined—strengthening policies, building partnerships, investing in clean mobility infrastructure, and garnering public support—the city can achieve significant improvements in air quality, public health, and urban sustainability.

APPENDICES

APPENDIX 1:

AIR QUALITY FOCUS GROUPS

WE WANT EACH PARTICIPANT TO:

- Know the engagement and understand air quality plans and activities in their area.
- Feel engaged and excited at the event and beyond so they can share their experience and observations on air quality, giving them space to share their experiences.
- Act in service of the big vision by committing to collaborative efforts to raise awareness and engage in a platform for longer-term community engagement.

HERE ARE SOME ESSENTIAL POINTS TO NOTE:

- Event flow for the day is outlined below.
 - Harmony Khoza will be facilitating the event.
 - Yashila Govender is the scribe for the event.
 - The event will commence promptly at 8h30 am.
 - Numbers: Orange Farm = 25; Alexandra = 25
 - Event Address: Orange Farm – 27 January 2025 and Alexandra – 28 January 2025;
 - Contact Details: Seriti Institute Office – 011 262 7700

TIME	ACTIVITY	RESPONSIBILITY
08h30 – 09h00 (30 mins)	Registration: Networking & Survey	ALL
	TEA, COFFEE & BREAKFAST	ALL
09h00 – 09h05 (5 min)	Opening & Welcome Setting the agenda and intentions for the session	Harmony Khoza
09h05 – 09h15 (15min)	Who is Seriti Institute?	Facilitator: Harmony Khoza

09h15 – 09h45 (30 min)	What is air quality? What are the air quality health impacts?	Facilitator: Harmony Khoza
09h45 – 10h30 (45 min)	Polling results presentation What are the key insights obtained from the polling report? Background information on air quality focusing on the drivers and impacts.	
10h30 – 11h30 (60 min)	Addressing questions on the results obtained from the polling report	ALL
10h30 – 12h00 (1 hour)	GROUP DISCUSSION: LOCAL ISSUES	ALL
	Format: Breakouts (Groups of 7 or 8) & Flipcharts	
	Air Pollution Air pollution & quality (e.g., smell, smoke, smog, fumes) Health problems (e.g., lungs, eyes, nose, sinuses, skin)	
	Climate Change: Environment, weather patterns and extreme weather events – Have you noticed any major environmental changes in your surrounding area? Where/how do you receive warnings about extreme weather events such as floods? [Extreme weather e.g., heavy rains that lead to flooding, extreme heat, and heatwaves]	
	Health: Sinus, Cardiovascular issues and	

	respiratory issues Have you noticed impacts of air quality on health? What can be done to limit the impact of air pollution on health?	
	Bonus question: Community waste disposal practices (e.g., burning, dumping, municipal, river) – How does it contribute to your environment and health?	
12h00 – 13h00 (1 hour)	LUNCH	ALL
Information Sharing 13h00 - 14h30 (1 hour 30 mins)	Presentation: Each group will get an opportunity to present their work and their take on air quality – including challenges, strengths of the community, opportunities and threats.	ALL
14h30 – 15h00 (30 mins)	Action Plan: a reflective exercise into local experiences of air pollution/climate change behaviour of community members and effects on people's lives	Facilitator: Harmony Khoza
	Questions for going narrower: What solutions could help? What kinds of risks might our communities face? What can we do differently? What can the city do differently?	
15h00 – 16h00 (1 hour)	Closing & Comment – What are our Next Steps for draft action plan? THANK YOU!	ALL
16h00	TEA, BISCUIT & NETWORKING	ALL

Climate changes - threatens our health by effecting the food we eat, the water we drink, the air we breathe, our future and the weather we experience

Air pollution - Is the presence in or introduction into the air of a substance which has harmful or poisonous effect- it can be by emissions of gaseous and changes in nature by people

Awareness - The state or ability to perceive, to feel, or to be conscious of events, objects, or sensory patterns – helps us to understand things from multiple perspectives

QUESTIONNAIRE

1. Local community – what are the issues that cause air pollution and
2. What is the solution to be considered?
3. Where do people get information from?
4. If air pollution continues- what are the significant threat to us or our country- (Food security, water resources, health, infrastructure and the ecosystem services and biodiversity) ?

TOPICS

- A. What laws can be enforced or implemented by the municipal or traffic department to address the issue of air quality or penalties to vehicles that are adding to air pollution with visible smoke?
- B. Traffic congestion - how can this be reduced?
- C. Dust - roads that are unpaved or tarred- how do we deal with this?
- D. Burning of waste – how do we deal with this?
- E. How can the public transport system be improved (Buses, taxis, trains)
- E. Technology - How we minimize the waste stockpiles and products that aint suitable for the environment (plastic, etc.)

OTHER PROMPTING QUESTIONS

1. How does air pollution impact your daily life or community?
2. What health issues have you noticed that might be linked to air quality in your area?
3. How do you currently receive information about air quality, and what would make this information more accessible or impactful?
4. What do you think should be the top priority for addressing air pollution in Johannesburg?
5. How can communities like yours contribute to reducing air pollution?
6. What kind of initiatives would you like to see implemented in your community to improve air quality?

APPENDIX 2:

AIR QUALITY CITY STAKEHOLDER WORKSHOP

TIME	EVENT	SPEAKERS / PARTICIPANTS
8:30- 9:30	Registration and tea	All
9:30 – 10:00	Welcome and Introduction	Musa Mahlatji – City of Johannesburg
10:00 – 10:15	Breathe Cities Presentation	Lunga Ngcukana – Breathe Cities
10:15 - 10:20	Q&A Session	Breathe Cities
10:20 – 10:45	Presentation of Polling Report Findings	Alwyn Esterhuizen and Yashila Govender – Seriti Institute
10:45 - 11:00	Q&A Session	Harmony Khoza and Nomfundo Hlela – Seriti Institute
11:00 - 11:15	Break	
11:15 - 11:45	COJ Presentation:	Musa Mahlatji - City of Johannesburg
11:45 – 12:00	Q&A Session	City of Johannesburg
12:00 - 12:45	Workshop Session: Collaborative Solutions for co-creating Clean Air Zones in the City of Johannesburg	Harmony Khoza and Nomfundo Hlela – Seriti Institute
12:45 - 1:15	Report Back from Workshop Sessions and summary	Harmony Khoza – Seriti Institute
1:15 - 1:30	Closing Remarks	Musa Mahlatji – City of Johannesburg
1:30 – 2:00	Lunch	All

1. GUIDING QUESTIONS

1.1 General Questions to Define a Clean Air Zone (CAZ)

To initiate the conversation surrounding CAZ, general questions will be prompted to allow for participants to engage with this topic before diving into breakout sessions addressing different thematic areas as raised by the community. Participants will be encouraged to draw and find other creative methods to communicate their thoughts of what a CAZ is. The following, but not limited to, will be prompted:

- Which areas in Johannesburg would be best suited for a Clean Air Zone, and why?
- What are the biggest challenges Johannesburg faces in reducing air pollution?
- What criteria should be used to designate an area as a CAZ (e.g., pollution levels, traffic congestion, public health concerns)?
- What mechanisms can ensure that low-income communities are not disproportionately affected by restrictions?
- How will the CAZ be enforced, and who will be responsible?
- What penalties should be put in place for violating emissions limits within the CAZ?
- What metrics should be used to determine if the CAZ is successful?
- How can Johannesburg learn from other cities that have successfully implemented CAZs?

1.2 Specific Questions Based on Key Themes

City Official Participants will be divided into smaller groups to have a more guided and direct discussion around the following thematic areas:

1.2.1. Stricter Regulations (Industrial & Vehicular Emissions)

- How can Johannesburg strengthen enforcement of existing air pollution by-laws, particularly for industries and vehicles?
- Would the city consider time-based restrictions on fossil fuel burning, such as banning high-emission industrial activities during peak pollution hours?
- How feasible is it to regulate the movement of high-emission vehicles and goods between provinces to limit cross-border pollution?
- Could a Low Emission Zone (LEZ) be implemented within Johannesburg's CAZ to restrict or charge high-pollution vehicles?

1.2.2. Improved Waste Management

- What policies or programs currently exist to address open waste burning and illegal dumping?
- What are the biggest obstacles to expanding recycling initiatives in informal and low-income communities?

- How can the city support the conversion of illegal dumping sites into green spaces or community-managed parks?
- Would the city consider a waste separation program to encourage better disposal practices?
- Could local businesses or informal waste collectors be incentivised to participate in better waste management?

1.2.3. Green Spaces and Urban Greening

- What steps has the city taken to integrate urban greening into air pollution mitigation efforts?
- Could Johannesburg mandate green infrastructure requirements (e.g., rooftop gardens, tree planting along roads) for new developments?
- How can the city encourage community-led tree-planting initiatives in high-pollution areas?
- What challenges does the city face in maintaining existing parks and green spaces?
- Could the city partner with businesses (e.g., corporate social responsibility programs) to fund urban greening projects?

1.2.4. Community Engagement and Education

- How does the city currently engage residents on air pollution issues?
- Could the city mandate environmental education in schools to increase awareness from a young age?
- What role could ward councillors and local community committees play in enforcing CAZ policies?
- What platforms (e.g., mobile apps, social media, local radio, community councillors) could be used to engage communities on air quality initiatives?
- Could the city provide funding or support for community-led awareness campaigns?

1.2.5. Public Transport and Traffic Control

- What plans exist to modernize and expand public transport to make it a more viable alternative to private cars?
- Would the city consider subsidies or incentives for businesses to encourage employees to carpool or use public transport?
- What barriers exist to improving cycling and pedestrian infrastructure as alternatives to vehicle use?

- How can the city encourage the adoption of electric and hybrid vehicles, especially for taxis and buses?

1.2.6. Technological Solutions for Monitoring and Enforcement

- How does Johannesburg currently monitor air pollution, and where are the key monitoring stations located?
- Could the city implement automated enforcement systems, such as AI-based cameras that track vehicle emissions?
- What funding or partnerships could help implement smart sensors for pollution tracking in high-risk areas?
- How could the city improve public access to air quality data to empower residents to take action?

APPENDIX 3:

PUBLIC TRANSPORT AND TRAFFIC CONTROL RESPONSE TO STAKEHOLDER QUESTIONS

1. WHAT PLANS EXIST TO MODERNIZE AND EXPAND PUBLIC TRANSPORT TO MAKE IT A MORE VIABLE ALTERNATIVE TO PRIVATE CARS?

The DoT at the policy level has the National Land Transport Strategic Framework (NLTsf) 2023 - 2028. It embodies the overarching, national five-year (2023 to 2028) land transport strategy, which gives guidance on transport planning and land transport delivery by the national government, provinces in the development of Provincial Land Transport Frameworks (PLTFs) and municipalities in the development of the respective Integrated Transport Plans (ITPs) for the five years.

Gautrain using digital payments and platforms, upgrade of the Metrorail, e-hailing services, pilot program of electric buses in Cape Town. These initiatives are currently in place as modernization of public transport.

The DoT is in a process of reviewing the GTS and is at a consultation phase for the Transport Just Transition Plan; these two documents are inclusive of public transport and a transition to electric vehicles, modal shift of private cars to public transport, and green hydrogen initiatives.

2. WOULD THE CITY CONSIDER SUBSIDIES OR INCENTIVES FOR BUSINESSES TO ENCOURAGE EMPLOYEES TO CARPOOL OR USE PUBLIC TRANSPORT?

The city should consider subsidies or incentives provided there are funds available, that will encourage employees to use carpools over public transport.

Subsidizing employees to use carpools or public transport is a common practice in some European countries; maybe its time for SA to start considering subsidies as this will help to reduce emissions and promote public transport.

3. WHAT BARRIERS EXIST TO IMPROVING CYCLING AND PEDESTRIAN INFRASTRUCTURE AS ALTERNATIVES TO VEHICLE USE?

The concept of cycling is new in SA, the majority of South Africans do not consider cycling as part of NMT, therefore will opt for other modes of transport.

Inadequate infrastructure, safety issues around the city for pedestrians and cyclists, funding for the infrastructure, and the spatial planning of the city that was/is not inclusive of cycling and walking.

4. HOW CAN THE CITY ENCOURAGE THE ADOPTION OF ELECTRIC AND HYBRID VEHICLES, ESPECIALLY FOR TAXIS AND BUSES?

The city should have awareness campaigns and education on electric and hybrid vehicles and first engage the associations at high level, secondly engage taxi owners and thirdly taxi drivers.

The city should make the adoption of EVs attractive to the taxi industry in the form of subsidies/ incentives/ reduction of purchase price or preferable use the model of the taxi recapitalization programme.

The city must engage the City of Cape Town and Golden Arrow as they have already began with the conversion of their bus fleet to electric and are also buying new electric buses.

For buses, the city can offer incentives/subsidies to bus companies. Kindly also note that it is easier to convert buses to electric and subsidize buses because buses belong to companies, eg, Putco and Golden Arrow etc unlike taxis that belong to individual owners and different associations.



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Breathe Cities is a first-of-its-kind initiative delivered by the Clean Air Fund, C40 Cities and Bloomberg Philanthropies to clean our air, cut carbon emissions and enhance public health in cities around the world. We bring together air quality data, communities and city leaders in our mission to reduce air pollution and planet-warming emissions by 30% across participating cities by 2030. Breathe Cities programmes are running in 14 cities worldwide, from Bogotá to Bangkok and Jakarta to Johannesburg. Learn more at breathecities.org

