

# Knowledge Production: Air Pollution

Terms of Reference Draft No.2

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MobiliseYourCity, Agence  
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(AFD)

## Donors



## Implementing partners



## Knowledge and Network partners



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# 1. Background

Launched at COP21 in Paris, the MobiliseYourCity Partnership is a leading global Partnership for sustainable mobility of nearly 100 partners, including more than 70 member cities and 15 member countries. Our Implementing Partners are working with cities and countries all over the world to develop scalable solutions to improve mobility in complex environments. By leveraging the unique core competencies of a wide range of organisations, we act as a knowledge hub and collaborate to generate solutions that exceed what we could do alone, helping make lasting positive changes possible. We support our members through four service areas:

- **Mobility planning:** We support our member cities and countries to shift from road-centric transport planning to mobility planning that focuses on meeting the needs of all people while balancing the needs of our planet.
- **Capacity building:** To facilitate lasting change at a global level, we focus on developing, deploying and scaling tested solutions that lead to real results. The Partnership works as a knowledge hub to create, disseminate and scale knowledge. By bringing together global experts with local practitioners we can generate solutions that are ambitious, adaptable and achievable. Our partners work together to add value to each other's contributions.
- **Advocacy:** We inspire our members to take bold, ambitious actions toward decarbonised and just mobility systems, and we animate others to support them to do so. We gain their trust by collecting and communicating results that will improve the lives of their people.
- **Implementation support:** While full implementation of mobility plans and investment programmes remains the responsibility of our member cities and countries, we secure results by accompanying our member cities from planning to implementation, through policy and regulatory reforms, small scale investments and digital technologies.

**Air pollution from urban transport**<sup>1</sup> has emerged as a growing concern for MobiliseYourCity member cities and development partners alike, particularly in Asia, where cities are heavily impacted. It must be integrated into MobiliseYourCity planning processes to equip members with strategies that address health, environmental, and governance dimensions effectively.

Accordingly, it is proposed to elaborate knowledge products **on the role of urban transportation in air pollution in the Global South, with a focus on Asian cities. Aligning with the Partnership's Capacity Building Service**, it would focus on developing tailored methodologies and tools for air pollution governance at the local level as well as providing training opportunities for mobility professionals.

Particularly, the proposed work would aim to:

- Mainstream air pollution reduction within mobility planning processes, focusing on governance measures that align with MobiliseYourCity's global strategy,
- Support cities with technical guidelines and policy recommendations for reducing air pollution at the local level (e.g., low-emission zones),
- Develop practical tools on air quality estimates/assessment (subject to feasibility), and
- Raise awareness among MobiliseYourCity member cities about the importance of integrating air quality considerations into urban mobility planning and enhance capacity to do so.

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<sup>1</sup> Urban transport refers to the systems, services, and infrastructure used to move people and goods within a city or metropolitan area. It includes various modes of transportation, such as public transit (buses, trains, trams), private vehicles, commercial vehicles (freight trucks, delivery vans, taxis), bicycles, and pedestrian pathways, as well as supporting infrastructure like roads, bridges, bike lanes, and public transit stations.

Coordinated by the MobiliseYourCity Asia program team members, this activity is designed to address the specific challenges and opportunities faced by cities in the Global South, with a particular focus on Asian cities. This approach ensures that the unique contexts of Asian cities are prioritized, while fostering the exchange of learnings and best practices across other regions such as Africa and Latin America, which are increasingly grappling with similar transport-related air quality challenges.

This knowledge production will provide the MobiliseYourCity Partnership with actionable insights at the local level, helping cities and partners address the urgent challenge of transport-related air pollution and improve urban mobility outcomes worldwide.

## 2. MobiliseYourCity Objectives & Principles

**MobiliseYourCity** is a **globally operating multi-partnership initiative** launched at Paris' 21st Conference of Parties (COP21) in December 2015 by the Governments of France and Germany and by its founding partners ADEME, AFD, CEREMA, CODATU and GIZ, and supported by the European Commission. This multi-donor action is jointly co-financed by the European Commission's Directorate-General for International Cooperation and Development (DG DEVCO), the French Ministry of Ecological Transition and Solidarity (MTES), the French Facility for Global Environment (FFEM), the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and the French Development Agency (AFD).

In 2022, the **Asian Development Bank (ADB)** officially joined as a new implementing partner of the MobiliseYourCity Partnership as well as contributors. It then allows the MobiliseYourCity Partnership to geographically extend its activities, for instance in the Asia and Pacific Region. ADB and AFD are together conducting mobility planning project in Asia and Pacific under the umbrella of MobiliseYourCity.

The partnership aims to support the governments of emerging and developing countries, both nationally and locally, in planning actions for transformative sustainable urban mobility. The Partnership is a **global climate initiative** with a strong political dimension. It is part of the international initiatives for the transport of the UN Global Climate Action (GCA). Through its activities, **MobiliseYourCity** contributes to reducing Greenhouse Gas (GHG) emissions in urban transport and fostering the development of inclusive, liveable and economically efficient cities.

**The initiative aims at achieving the following targets:**

- At least 20 countries are committed to implement ambitious National Urban Mobility Policies (NUMPs) promoting sustainable urban mobility planning;
- At least 100 cities and local governments are committed to implement ambitious Sustainable Urban Mobility Plans (SUMPs)<sup>2</sup> aiming to reduce urban mobility emissions by 50% by 2050.

**The overall objectives of MobiliseYourCity are:**

- Enabling transformational changes towards more inclusive, liveable, and efficient cities.

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<sup>2</sup> MobiliseYourCity adopts the Sustainable Urban Mobility Plan (SUMP) concept as the foundation for its work, guided by the accompanying "Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan" ([SUMP Guidelines](#)). These Guidelines were initially developed between 2010 and 2013 through a comprehensive expert consultation process and were revised and republished in February 2020. With the introduction of the European Union's "Urban Mobility Package" in December 2013, the SUMP concept was officially established as [European policy](#).



- Fostering more comprehensive, integrated and participatory urban mobility planning (local & national levels).
- Targeting reduction of transport-related GHG emissions in participating cities (50% by 2050).
- Linking planning with agreement on investments and optional use of financial assistance.
- Making use of innovative planning techniques and digitalization and promoting state-of-the-art mobility and transport technologies.

Additional content on **MobiliseYourCity** approach to conduct SUMPs, NUMPs and mobility studies is presented in [Appendix [6.1](#) and [6.2](#)] and online: [https://mobiliseyourcity.net/about\\_the\\_partnership](https://mobiliseyourcity.net/about_the_partnership)

## 3. General Description of the Assignment

### 3.1. Scope of the Assignment

The assignment aims to support the **development and implementation of strategies to address transport-related air pollution** through detailed studies, practical recommendations, and capacity-building activities.

The scope of the assignment include:

- **Mainstreaming air pollution reduction within mobility planning processes**, focusing on governance measures that align with MobiliseYourCity's global strategy,
- Supporting cities with **technical guidelines and policy recommendations** for reducing air pollution at the local level (e.g., low-emission zones),
- Assessing the feasibility of **practical tools** on air quality estimates and developing them (if deemed feasible), and
- Raising **awareness** among MobiliseYourCity member cities about the importance of integrating air quality considerations into urban mobility planning and **enhancing capacity** to do so.

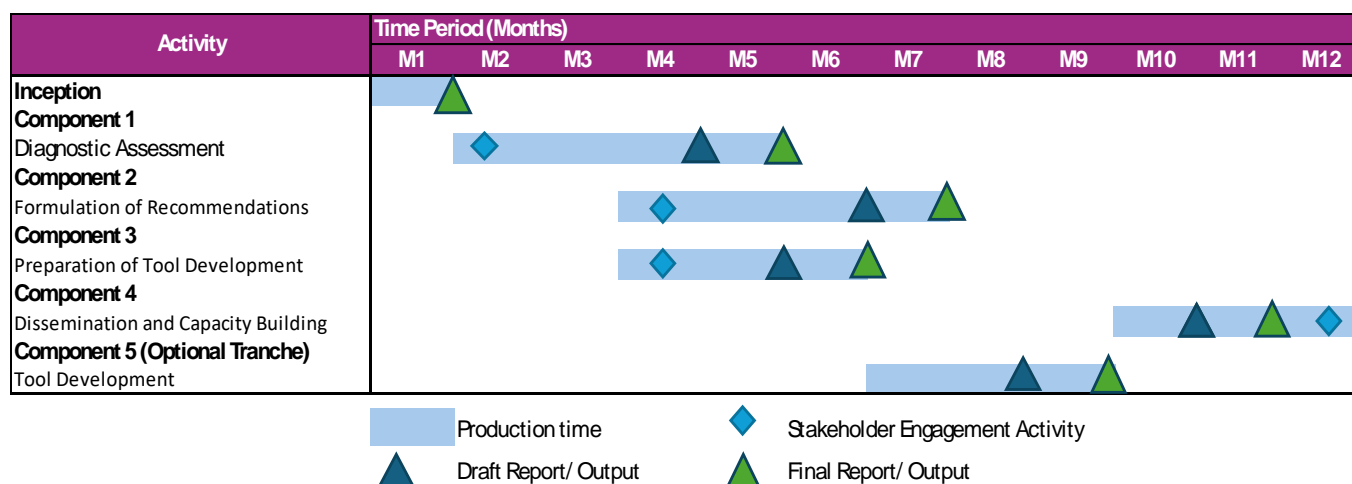
### 3.2. Assignment Main Components and Calendar

The assignment includes the following key components:

- **Inception phase:** The inception phase will establish the foundation for the study, ensuring alignment among key stakeholders, validation of the project scope, and initiation of data collection efforts.
- **Component 1 – Diagnostic Assessment:** The Consultant will perform a comprehensive diagnostic assessment focusing on trends, impacts, and governance of transport-related air pollution.
- **Component 2 – Formulation of Recommendations:** The Consultant will establish a framework summarizing interventions at the national, local, and project levels and identify actionable solutions to mainstream air pollution management into sustainable mobility planning.
- **Component 3 – Preparation of Tool Development:** The Consultant will assess the feasibility of a tool to calculate air pollutant emissions at the city level.

- **Component 4 – Dissemination and Capacity Building:** The Consultant will develop dissemination materials and deliver training to share findings and build capacity among stakeholders.
- **Component 5 (Optional Tranche)<sup>3</sup> – Tools Development:** The Consultant will develop a tool to calculate air pollutant emissions at the city level and/or an interactive tool to support the implementation of LEZs.

**Diagram 1: Components and Missions Schedule**



**Diagram 2: Deliverables Submission**

| Activity  | Deliverables  | Time from start (months) |
|---|---|--------------------------|
| <b>Inception</b>  | Inception Report                                    | 1                        |
| <b>Component 1: Diagnostic Assessment</b>               | Issues Paper  | 5                        |
|   | Technical Briefs (minimum 3)                        | 5                        |
| <b>Component 2: Formulation of Recommendations</b>      | Overall Framework of Recommendations                | 7                        |
|   | Practical Guide                                     | 7                        |
|   | Action Sheets (minimum 3)                           | 7                        |
| <b>Component 3 - Preparation of Tool Development</b>    | Short note on Feasibility and Proposed Methodology  | 6                        |
| <b>Component 4: Dissemination and Capacity Building</b> | Training materials (in French, English and Spanish) | 11                       |
| <b>Component 5 (Optional Tranche) –</b>                 | Excel tool  | 9                        |
|   | User guide  | 11                       |
|   | Training materials                                  | 9                        |

<sup>3</sup> The optional tranche will be commissioned only if the outcome of Component 3 meets the required conditions.



|                                |                  |   |
|--------------------------------|------------------|---|
| <b>Tool(s)<br/>Development</b> | Interactive tool | 9 |
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## 3.3. Assignment Management

### 3.3.1. Assignment Validation and Monitoring Framework

The validation process for deliverables will primarily be overseen jointly by AFD and the MobiliseYourCity Secretariat. AFD will review and provide comments on the deliverables prior to final approval, with support from the MobiliseYourCity Asia Program officer, who will serve as the primary focal point for interactions with the Consultant throughout the assignment. The MobiliseYourCity Secretariat will collaborate with AFD to review and validate all deliverables to ensure consistency and quality. Due to the emphasis on the geographical scope (i.e., Asia) and its involvement in the Partnership, the ADB will also review and provide comments on the deliverables.

### 3.3.2. Coordination and Management Tasks

The Consultant shall coordinate and manage all components and missions of the Study in an optimal manner.

The Consultant team will nominate a project manager who will be the focal point for the MobiliseYourCity Asia Program officer and the AFD Project officer during the entire study process.

The project manager is responsible for the quality and consistency of all the project outputs. The project manager shall ensure the timely execution of work processes, validation and delivery of the results and deliverables. The project manager shall in addition ensure that the objectives of each component of this assignment are guiding their production.

As part of this coordination and management tasks, the Consultant is expected to organize regular follow-up meetings with the MobiliseYourCity Asia Program officer. Additionally, monthly meetings will be organized with AFD and the MobiliseYourCity Secretariat to monitor progress.

## 4. Expected Activities

### 4.1. Inception Phase

#### 4.1.1. Objectives

- Engage with key stakeholders to establish a shared understanding of the project scope and objectives.
- Confirm the assignment scope, work plan, and initial data collection needs.

#### 4.1.2. Consultant's Tasks

During the inception phase, the Consultant is expected to initiate the following activities:

- **Stakeholder Engagement:** Conduct interviews with main stakeholders, including AFD and MobiliseYourCity Secretariat, to gather initial insights and align on project priorities.

- **Preliminary stakeholder mapping:** In close collaboration with AFD and MobiliseYourCity Secretariat, identify main stakeholders to contact and interview to perform Components 1, 2 and 3.
- **Validation of Work Plan and Timeline:** Confirm the scope of the study's components and expected timeline.

### 4.1.3. Deliverables – Inception phase

- Meeting:
  - Kick-off meeting with AFD and MobiliseYourCity Secretariat to align on project objectives and confirm scope.
- Report:
  - **Inception report** detailing activities conducted during the inception phase and confirmed work plan.

## 4.2. Component 1: Diagnostic Assessment

### 4.2.1. Objectives

- **Provide an overview of air pollution trends and transport-related emissions across Asian cities, including comparative case studies from cities in the Global South.**
- **Enhance knowledge by providing short technical briefs on specific topics e.g. health impacts.**

### 4.2.2. Consultant's Tasks

#### Deliverable 1: Data Mapping and Stakeholder Consultation

The paper will draw from multiple sources, including **global data, air quality monitoring reports, academic literature, and case studies** of effective policies. As part of Task 1, the Consultant is expected to **map the data and information** to be used and identify any gaps.

The paper will notably build on what has already been produced within the MobiliseYourCity ecosystem. As part of the **"Mastering Mobility" trainings**, MobiliseYourCity has produced a presentation focusing on the role of air quality in urban transportation systems. It aimed to:

- Understand the difference between Greenhouse Gas (GHG) emissions and air pollution
- Identify the main air pollutants, their impact on health and their main sources
- Understand the contribution of transport to air pollution

As part of this data mapping and gathering exercise, the Consultant will **identify a number of case studies** to illustrate the trends with real-world examples. The diagnostic is expected to rely on **selected case studies**, highlighting policy and regulatory success stories and emerging practices from the Global South – such as electric vehicle (EV) adoption, congestion pricing, and public transport investments.

The case studies' research will be **desk based** and informed by one or two interviews **with key informants** per case study a part of the proposed **stakeholder consultation**. It is suggested, when relevant, to rely on the **partnership members**: AFD, IRD, Airparif, Citepa, SDC, GIZ, Climate and Clean Air Coalition, SEI etc. Other partners such as Codatu will be associated at later stages. Engagement with Clean Air Asia will also help inform the collected data.

These cases should primarily illustrate the intended "issues paper" and "technical briefs" (refer to section 4.2.3). The cases study aim to showcase concrete measures that have been

implemented in various cities across the Global South (Asia, Africa, and Latin America) to tackle air pollution matters. Regardless of the measures undertaken, it is essential to provide quantitative data demonstrating clear improvements in air quality and/or air quality management. Each case study should tackle a specific aspect of transport-related air pollution. The selected study cases should feature proven results of improvement, and the Consultant must be able to explain the factors behind their success, including preexisting conditions, activities conducted, budgets, and human resources mobilized.

The **proposed case studies** are detailed in the table below, it is expected that around 6 case studies will be studied.

**Table 1 Indicative and Potential Case Studies, source: multiple**

| Case Study                    | Relevance   | Key Informants              |
|-------------------------------|---|-----------------------------|
| Hanoi (Vietnam)               | Recently established a comprehensive monitoring network (with AFD support)  | Airparif (with AFD) and IRD |
| Beijing-Tianjin-Hebei (China) | Ongoing ADB program (since 2015) to support air quality improvement in the greater BTH region.  | ADB                         |
| Bishkek (Kyrgyzstan)          | Ongoing ADB program to tackle air pollution   | ADB                         |
| Ulanbataar (Mongolia)         | Ongoing ADB program to tackle air pollution   | ADB                         |
| Multiple cities (India)       | Ongoing GIZ support to the National Clean Air Programme / Ongoing World Bank India Air Quality Management Program                           | GIZ<br>World Bank           |
| Jakarta (Indonesia)           | Implementation of a LEZ in Kota Tua area  | ITDP                        |
| Yaoundé (Cameroon)            | Implementation of tools for air pollution control (with AFD support)  | AFD and DVDH                |
| Dakar (Senegal)               | Increasing the competence of the Air Quality Management Centre (AQMC) (CGQA) (with AFD support) – could be converted into a recommendation. | AFD and Airparif            |
| Guadalajara (Mexico)          | Mexico's first LEZ (TBC)  | AFD (TBC)                   |

The proposed case studies are **suggestions only and open for discussion**. The Consultant after being appointed should challenge the above proposal list and proposal additional cases that show relevant results regarding air quality improvement. The final selection will depend on the availability of key informants and relevant data.

## Deliverable 2: Issues Paper Development

The Consultant will draft an **Issues Paper**, serving as a concise, high-level diagnostic report to establish the key context for transport-related air pollution. This Issues Paper will aim to provide a high-level diagnostic assessment of transport-related air pollution across the Global South, with a focus on Asia.<sup>4</sup>

This document is intended to provide strategic insights rather than in-depth academic analysis. It will be delivered as a PDF (final) report, limited to **40-50 pages** to ensure clarity and focus.

The proposed outline for this assessment is as follows:

<sup>4</sup> Asia's rapid urbanization and economic growth have led to a surge in vehicular traffic, resulting in significant air pollution challenges. Several cities in Asia, such as Delhi and Dhaka, regularly rank among the most polluted in the world.

## **1. Introduction:**

- a. Overview/Background
- b. Scope and Objectives

## **2. Trends and Patterns in Air Pollution related to Urban Transport**

- a. Overview of air pollution trends in the Global South with a focus on Asian cities
  - i. Sources (transport, industry, etc.) and influences (seasonal, meteorological, topography)
  - ii. Trends (across time and geography)
- b. Specific contribution of the transport sector to overall emissions (GHG and pollutants)
  - i. Share of transport and breakdown by transport mode
  - ii. Emission factors of vehicles and variables (vehicle type, fuel type, technology)
  - iii. Other contributing factors (traffic congestion and urban sprawl, driving behaviour)
  - iv. Comparative analysis of emissions trends and evolution across key countries

## **3. Impacts of Transport-Related Air Pollution<sup>5</sup>**

- a. Health impacts: short term (e.g. respiratory conditions) and long term (e.g. cognitive development)
- b. Environmental impacts: acid rain, smog formation, etc.
- c. Economic costs: higher healthcare costs, reduced labour productivity, and losses in tourism and property value
- d. Disparity in impact: Vulnerable populations, including low-income communities<sup>6</sup> and children/ the elderly, are disproportionately affected, exacerbating inequalities.

## **4. Current Governance Practices and Policy Responses<sup>7</sup>**

- a. Main policy approaches to address transport-related air pollution (national and local levels), including short-term crisis management responses
- b. Flagship projects and implementation of policy interventions at the local level (e.g., Low Emission Zones (LEZs), bus electrification programs, etc.)

## **5. Challenges in Tackling Transport-Related Air Pollution/ Barriers to Cleaner Transport**

- a. Lack of robust air pollutants emissions inventories to inform policy decisions
- b. Governance gaps in monitoring and regulating emission
- c. Inadequate emission standards and lack of enforcement mechanisms
- d. Limited adoption of cleaner technologies due to costs, lack of incentives/infra, etc.
- e. Insufficient investment in public transportation
- f. Social acceptability of measures related to air pollution and public resistance to change

## **6. Conclusion:**

- a. Summary of findings
- b. Next steps

**IMPORTANT NOTE:** The above report structure is indicative; the Consultant team is expected to challenge it. However, it is crucial to keep the final report brief, concise, and digestible due

<sup>5</sup> Data from case study analyses should be incorporated, such as the economic assessment of the Yaoundé BRT, which quantified the air quality impact in monetary terms.

<sup>6</sup> Lower-income populations often live in areas with higher exposure to traffic emissions and have less access to healthcare (Pratt and al., 2015)

<sup>7</sup> This would not be expected to be an exhaustive review but rather an overview of leading policies and measures.

to the amount of existing knowledge and the need to provide a clear, understandable, and absorbable document for dissemination.

### Deliverable 3: Technical Briefs Elaboration

To support engagement and outreach efforts, the Consultant should elaborate a minimum of **three Technical Briefs** in order to complement the Issues Paper. These briefs should be 3-page documents, expanding on topics raised in the Issues Paper, and designed with visual elements for clarity and appealing formats to enhance accessibility.<sup>8</sup> This specific task will require support from a graphic designer.

Potential topics, subject to further discussion, include:

- Health impacts of transport emissions, with a focus on vulnerable populations (validated topic for technical brief).
- Real-world emission factors for different vehicle categories to understand order of magnitude.

#### 4.2.3. Deliverables – Component 1

- **The Issues Paper** is intended as a concise, high-level diagnostic report (40-50 pages) on transport-related air pollution across the Global South, with a focus on Asia, providing strategic insights into trends, impacts, governance practices, and challenges.
- **The Technical Briefs** (minimum 3) are visually engaging 3-page documents, expanding on key topics from the Issues Paper, such as health impacts on vulnerable populations or real-world emission factors, to support outreach and engagement efforts.

### 4.3. Component 2: Formulation of Recommendations

#### 4.3.1. Objectives

- **Identify technical and policy solutions to reduce transport pollutant emissions.**
- **Provide guidelines to incorporate and mainstream air pollution management into urban mobility strategies.**
- **Support policy interventions such as low-emission zones.**

#### 4.3.2. Consultant's Tasks

##### Deliverable 1: Establishing an Inventory

The Consultant will develop an "inventory" summarizing **targeted recommendations/measures** across **national, local, and project levels** to ensure effective air pollution management in urban transport. The inventory would work as a long list of potential interventions aiming to offer operational insights, enabling the development of solutions that can be replicated in various contexts.

The proposed interventions should cover all three aspects of the "**Avoid, Shift, Improve**" approach<sup>9</sup>:

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<sup>8</sup> The proposed format would resemble the format used for the SUTP iNUA implementation guides (developed by TUMI; see <https://transformative-mobility.org>).

<sup>9</sup> The Avoid-Shift-Improve (A-S-I) approach is a widely adopted framework for sustainable transport strategies, aiming to reduce the environmental and social impacts of transportation. It provides a structured way to guide policies and projects by targeting different stages of transport demand and efficiency.

- ➔ **Avoid:** Minimize unnecessary trips and traffic through urban design (e.g., transit-oriented development).
- ➔ **Shift:** Promote non-polluting transport modes such as walking, cycling, and public transport.
- ➔ **Improve:** Encourage the adoption of cleaner vehicles, such as electric buses, and implement low-emission zones.

The **intervention levels** considered in the framework should include:

1. **National level**<sup>10</sup>: Regulatory reforms and policy incentives for air pollution control in the transport sector.
2. **Local level**: (i) Strategies to integrate air pollution considerations into SUMP, as well as (ii) outside the SUMP process.
3. **Project level**: Recommendations to ensure transport-related emissions are mitigated through targeted interventions, and throughout the project cycle.

For each level of intervention, the **measures could be categorized and structured** as follows:

1. **National level**: Legislative, Regulatory, Fiscal, Programmatic
2. **Local level**:
  - **As part of a SUMP Process**: Diagnosis, Visioning and Scenarios, Elaboration of Measures, Implementation and Monitoring
  - **Outside the SUMP Process**: Governance and Collaboration, Technology and Innovation, Infrastructure Development
3. **Project level**: Design Phase, Implementation Phase, Operational Phase

A draft of the proposed inventory can be found in **Annex**, for representation purposes only.

## Deliverable 2: Elaborating a Practical Guide (for the local level)

Once the inventory is drafted, the Consultant will develop a **practical guide to integrate air quality management into sustainable mobility planning at the local level**.

As part of the "Mastering Mobility" training, MobiliseYourCity has produced a presentation focusing on strategies to **integrate air quality management into sustainable mobility planning**. The MobiliseYourCity training aimed at supporting members to:

- ➔ Identify the main stakeholders to be involved in the planning process to effectively address air quality
- ➔ Identify measures to improve air quality from the urban transport sector
- ➔ Learn how to establish monitoring and evaluation systems for air quality

The proposed practical guide will build on this document as well as on the diagnostic assessment and recommendations' inventory in order to propose a structured approach to mainstreaming air pollution interventions within the urban mobility planning processes.

In practical terms, the practical guide will detail the **measures listed in the local level section of the recommendations' inventory (as shown in Annex)**. A total of approximately 10 recommendations could be considered for the practical guide. Detailing **implementation guidelines** for these measures will provide actionable insights and serve as replicable models.

For each intervention, the Consultant will detail the following information:

1. Objective of the intervention

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<sup>10</sup> The potential interventions at the national level can be addressed to any ministry in charge of transport and mobility. They can be part of a National Urban Mobility Programme (NUMP) or can be implemented as stand-alone measures.

2. Scope and description of options/scenarios to implement the intervention
3. Enabling conditions/Pre-requisites (if any)
4. Common pitfalls to avoid (using lessons learned from case studies)
5. Stakeholders involved
6. Timeline and milestones (key steps in the process)
7. Resources (budget, personnel, etc.)
8. Indicators for monitoring progress and evaluating impact

### Deliverable 3: Elaborating Action Sheets (for the Local Level)

The Consultant will draft up to **3 action sheets** (i.e. standalone and visual implementation guides) aiming to facilitate the **implementation of the most effective and cost-efficient interventions** – These can be SUMP compatible or not.

The selection of key interventions to detail can be **based on selected criteria** to be agreed upon with MobiliseYourCity Secretariat and AFD. The table below summarises potential criteria.

**Table 2 Indicative and Potential Criteria to Select Measures for Action Sheets, Source: author**

| Criteria                            | Associated Questions   |
|-------------------------------------|--|
| Effectiveness in Reducing Emissions | <ul style="list-style-type: none"> <li>Does the intervention directly reduce air pollutants (e.g., NOx, PM2.5, CO)?</li> <li>Does it have a measurable impact on air quality improvements?</li> </ul>                          |
| Cost-Efficiency                     | <ul style="list-style-type: none"> <li>What is the cost relative to the expected environmental and health benefits?</li> <li>Can the intervention be scaled within available resources?</li> </ul>                             |
| Ease of Implementation              | <ul style="list-style-type: none"> <li>Does the intervention require complex coordination or technical expertise?</li> <li>Are there existing policies or infrastructure to support its implementation?</li> </ul>             |
| Impact on Public Health             | <ul style="list-style-type: none"> <li>Does the intervention address health risks linked to transport-related air pollution?</li> <li>Will it benefit vulnerable populations (e.g., low-income, children, elderly)?</li> </ul> |
| Scalability and Replicability       | <ul style="list-style-type: none"> <li>Can the intervention be replicated across different regions?</li> <li>Is the intervention adaptable to local contexts?</li> </ul>   |

Based on the criteria above, here are three **potential interventions** that could be detailed into action sheets/practical guides (open for discussion):

**Table 3 Indicative and Potential Interventions for Action Sheets, Source: author**

| Intervention  | Rationale   |
|---|---|
| Establishment of Low-Emission Zones (LEZs) and Congestion Pricing | <ul style="list-style-type: none"> <li>LEZs and congestion pricing have proven effective in reducing emissions in urban areas.</li> <li>They generate revenue that can fund other green initiatives.</li> <li>LEZs discourage the use of polluting vehicles and encourage modal shifts toward public transport.</li> <li>An interactive tool could be developed to complement the creation of the action sheet/implementation guide, enhancing usability and engagement (as shown in the Box 1 below).</li> </ul> |



|  |  |
|--|--|
| Promotion of Electric Public Transport (Buses, Rail Systems)           | <ul style="list-style-type: none"> <li>• Transitioning public transport fleets to electric vehicles reduces both greenhouse gases and local air pollutants.</li> <li>• EV buses and rail systems offer significant health benefits by eliminating tailpipe emissions.</li> <li>• Electric public transport has a long operational lifespan and is scalable.</li> <li>• Effective financial mechanisms, such as those supported by ADB, SDC, and AFD, can facilitate the adoption of electric public transport by reducing initial costs and enabling sustainable implementation.</li> </ul>  |
| Strengthening Air Quality Monitoring Networks and Emission Inventories | <ul style="list-style-type: none"> <li>• Accurate and real-time data are essential for informed decision-making and policy adjustments. It can leverage monitoring stations, modelling, micro-sensors, or satellites.</li> <li>• Emission inventories reveal major emitting sectors and allow for targeted actions, improving cost-efficiency. Typically, to evaluate transport's contribution, concentration data near roadways are essential, along with inputs for emission inventories, including fleet composition, mobility surveys, and traffic counting loops. <ul style="list-style-type: none"> <li>◦ The Air Pollution tool/module can be introduced in this practical guide.</li> </ul> </li> <li>• It provides a baseline for evaluating the effectiveness of other interventions.</li> </ul> |

The **proposed outline** for each action sheet is as follows:

1. Objective of the intervention
2. Scope and description of options/scenarios to implement the intervention
3. Enabling conditions/Pre-requisites (if any)
4. Stakeholders involved
5. Timeline and milestones (key steps in the process)
6. Resources (budget, personnel, etc.)
7. Indicators for monitoring progress and evaluating impact

### 4.3.3. Deliverables – Component 2

- ➔ **The Inventory of Recommendations:** This is intended as a high-level summary of potential interventions. It would take the form of a table and could be understood as a panorama of measures. It could be integrated as an additional section or annex to the Diagnostic Assessment.
- ➔ **The Practical Guide** on “How to integrate air quality management into sustainable mobility planning” would take the form of a PDF report – it should also remain concise to facilitate appropriation by MobiliseYourCity members (no more than 30 pages).
- ➔ **The Action Sheets (minimum 3)** are 3-page documents, designed with visual elements for clarity and appealing formats to enhance accessibility (similarly to the Technical Briefs). They also aim to support engagement and outreach efforts. This will require support from a graphic designer.

## 4.4. Component 3: Preparation of Tool Development

### 4.4.1. Objectives

- ➔ **Assess the feasibility of developing a practical tool for calculating air pollutant emissions at the city level, complementing MobiliseYourCity's existing GHG emissions calculator.**

- Prepare the development of the tool by considering technical requirements, data availability, and user needs.

#### 4.4.2. Consultant's Tasks

##### Deliverable 1: Assessment of Feasibility

The Consultant will **assess the feasibility** of developing a practical tool for **calculating air pollutant emissions at the city level**. They will also assess the benefits and drawbacks of developing a standalone tool or integrating it as a module within the existing MobiliseYourCity greenhouse gas (GHG) emissions calculator.<sup>11</sup>

Such a tool can serve as a **decision-support system for policymakers and planners**, helping to design low-emission zones, optimize public transport, and assess the environmental impact of policy interventions, ultimately supporting cities in meeting air quality objectives. In the context of MobiliseYourCity, the tool could help to feed data into the "Core Indicators and Monitoring Framework" (Impact Indicator 4) and could help calculate the impact of MobiliseYourCity projects on air pollution. The tool should ideally enable the comparison of forecasted emissions, particularly between "business as usual" and SUMP scenarios, similar to the approach used by the GHG tool.

However, **pollutant emission calculations are complex and require detailed datasets and sophisticated modelling techniques** to provide accurate insights. The proposed tool would need to account for key variables such as vehicle types, fuel standards, fleet age, traffic volumes, speed variations, driver's behaviour (braking style) and weather conditions (temperature), all of which influence pollutant emissions.

Preliminary discussions revealed that the addition of air pollution monitoring to the emissions calculator would require: (i) **Specialized technical skills** for both development and end-use, and (ii) Significant resource allocation.

As a priority, it is suggested to investigate the feasibility of **IFEU's proposed approach** (as described in Box 2 below). A **meeting should be organized with IFEU and GIZ** to discuss the technical feasibility of the proposed approach. Additional meetings with IRD and AirParif should be organized to cross-check information and discuss alternative methodologies. The Consultant is also expected to conduct discussions with end users such as engineering companies or consultants like Egis and Systra to identify the functional needs of users.

During initial discussions, it will be key to understand whether **field surveys** and **on-the-ground measurements** are necessary for local calibration and enhancing the reliability of the tool, as it will (i) greatly influence the technical feasibility of the tool development and (ii) impact its applicability/relevance.

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<sup>11</sup> The MobiliseYourCity Emissions Calculator supports cities in estimating transport-related GHG emissions. It provides insights into transport demand, energy consumption, and GHG emissions by transport mode, enabling users to assess the collective effect of mitigation actions.

## Box 2. IFEU' Proposed Approach to Calculate Air Pollutant Emissions

In 2020, IFEU produced a document outlining an approach for integrating pollutant emission calculations into the GHG emissions calculator, focusing on emissions from the transport sector. It emphasizes that pollutant emissions, unlike CO<sub>2</sub> emissions, depend heavily on the circumstances of fuel combustion and environmental conditions, complicating their measurement. The proposed methodology aims to assess pollutants such as Nitrogen Oxides (NO<sub>x</sub>), Particulate Matter (PM), and Carbon Monoxide (CO) – the primary pollutants from road transport.

The document highlights the limitations of existing emission calculation tools (like COPERT, HBEFA, and MOVES) when applied to developing countries due to data unavailability and local-specific challenges. It proposes using a Tier 2 approach, as the most feasible level for MobiliseYourCity's tool<sup>12</sup>. This involves disaggregating the fleet data by vehicle category, type, and emission standard to enhance accuracy without overburdening users.

The recommendation is to focus initially on "hot emissions" – those emitted when the engine is warm – and incorporate vehicle speed as a key variable. To ensure practicality, the paper advises developing a separate pollutant module to avoid over-complicating the existing MobiliseYourCity emissions calculator.

Another approach to be discussed with both IFEU and Clean Air Asia is the **relevance of black carbon as a proxy to calculate air pollution generated by the transport sector at the city scale**. Black carbon is a key component of particulate matter (PM<sub>2.5</sub>), primarily emitted by diesel engines, which are prevalent in urban transportation. However, black carbon alone does not capture the full spectrum of urban transport-related pollutants. Typically, other indicators like NO<sub>x</sub> or ozone levels would be required to account for the full range of pollutants generated by the transport sector.

### Deliverable 2: Technical Requirements and Methodology

Once the feasibility assessment is completed, the Consultant will focus on defining the technical approach and methodology for developing the air pollutant emissions calculation tool. The proposed methodology should notably include:

- The recommended modelling approach, including key assumptions; and
- The data requirements and potential sources for accurate emissions estimation.

**IMPORTANT NOTE:** Based on the review of this proposed methodology, it will be decided whether to conduct the optional tranche and carry out **Component 5 – Tools Development**.

To inform this decision at this stage, the Consultant will be expected to draft a preliminary budget to develop the tool.

### 4.4.3. Deliverables – Component 3

- **Short note on Feasibility and Proposed Methodology:** The Consultant will deliver a concise feasibility assessment outlining the practicality, technical requirements, and potential challenges of developing a tool for calculating air pollutant emissions or integrating it as a module into the existing MobiliseYourCity GHG emissions calculator.

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<sup>12</sup> The Tier system is a hierarchical framework used to estimate emissions, with Tier 1 relying on basic default values, Tier 2 incorporating some disaggregated local data, and Tier 3 using highly detailed inputs for the most accurate, site-specific results.

## 4.5. Component 4: Dissemination and Capacity Building

### 4.5.1. Objectives

- **Strengthen stakeholder engagement and knowledge-sharing by providing relevant guidelines and sharing successful case studies.**
- **Facilitate capacity building through interactive webinars to promote best practices in air quality management.**

### 4.5.2. Consultant's Tasks

#### Deliverable 1: Training Materials Drafting

The Consultant will draft training materials, based on the outputs detailed in the previous sections, in order to effectively **disseminate the assignment's findings through webinars and training modules** to ensure that cities, partners, and stakeholders have access to actionable knowledge. These webinars should serve as a platform for sharing findings, promoting capacity building, and enabling peer-to-peer learning among member cities.

To enhance the effectiveness of dissemination efforts, webinars should focus on the diagnostic assessment and main recommendations. They should aim to equip participants with the knowledge required to mainstream air pollution considerations into the mobility planning.

They should also present some of the selected interventions' action sheets and present real-world case studies to illustrate best practices in emission reduction strategies, including for instance the use of Low-Emission Zones (LEZs).

The materials used for these webinars should be developed based on the previous materials prepared for the "**Mastering Mobility**" trainings (1. Role of air quality in urban transportation systems, and 2. Strategies to integrate air quality management into sustainable mobility planning).

#### Deliverable 2: Trainings Delivery

The Consultant will conduct **capacity-building webinars** aimed at **integrating air quality management into mobility planning** and **supporting the implementation of key recommendations**.

The webinars should be organized in a **collaborative and participative way**. They should include interactive elements such as Q&A sessions, surveys, or quizzes to engage participants and assess their learning progress. The participation of air quality experts such as Clean Air Asia team members or other relevant specialists would be required. Sessions should be recorded and made available on-demand to ensure continuous learning.

The dissemination webinars are **not proposed as extended training or series of instructional sessions**. They would be designed as one-off dissemination sessions, focusing on sharing knowledge and resources in a concise format.

At least one webinar in French and one in Spanish should be planned, in addition to the sessions conducted in English.

Two **internal training sessions** (one in French and one in English) should be planned for AFD, ADB and MobiliseYourCity Project Officers. They are expected to be conducted ahead of the capacity-building sessions for the wider MobiliseYourCity Community of Practice (that include for instance representatives of city members).

### 4.5.3. Deliverables – Component 4

- **Training materials (in French, English and Spanish):** The Consultant will produce training materials and conduct interactive webinars designed to disseminate key findings, promote capacity building, and share actionable knowledge on integrating air quality management into sustainable mobility planning. All training material and presentation support should follow MobiliseYourCity Secretariat guidelines.

## 4.6. Component 5 (Optional Tranche): Tools Development

**IMPORTANT NOTE:** Component 5 is an optional tranche and will only be commissioned if the outcome of Component 3 meets the required conditions. As part of this optional tranche, the Consultant may be commissioned to carry out Task 1 and/or Task 2 (described in the sections below).

The Financial Proposal should detail the budget for each task (1 and 2) independently.

### 4.6.1. Objectives

- **Develop a practical tool for calculating air pollutant emissions at the city level, complementing MobiliseYourCity's existing GHG emissions calculator.**
- **Create a digital tool (web-based) supporting cities in planning, executing, and monitoring LEZs.**

### 4.6.2. Consultant's Tasks

#### Deliverable 1: Develop a Tool for Calculating Air Pollutant Emissions

As part of this task, the Consultant is expected to deliver three distinct outputs:

1. **The tool itself** – It is likely it would take the form of an Excel document serving as the core calculation tool, integrating relevant datasets to estimate air pollutant emissions from the transport sector at the city level. The tool should feature user-friendly input fields and automated calculations, allowing policymakers and planners to generate emissions reports and conduct scenario analyses with ease.
2. **The user guide** – It should provide detailed instructions on how to use the tool. It will also offer technical insights into the methodology and include practical tips for field surveys and data collection (if any). The outline proposed would be as follows (to be detailed):
  - a. Rationale for the tool
    - i. Short review of data and tools for air quality management including COPERT, HBEFA, etc.
    - ii. Overview of challenges in data collection and the use of tools in developing contexts.
  - b. Description and methodology used to build the tool (e.g., Tier 2 approach)
  - c. Step-by-step guidance on data input, calculation procedures, and interpreting results
  - d. Demonstration (one test city) showcasing the tool's application in a real-world context
3. **Technical training on the Air Quality/Pollution Tool and applications:** The Consultant is expected to design and deliver technical training on the tool (to be conducted jointly with trainings planned as part of Component 4):

- a. The training should provide hands-on training for member cities on how to use the Air Quality/Pollution tool.
- b. The training should include practical demonstrations of the methodology for air pollution estimates.

## Deliverable 2: Create an Interactive Tool to Support the Implementation of LEZs

The Consultant will create a **digital tool (web-based)** supporting cities in planning, executing, and monitoring LEZs. It could combine technical resources with user-friendly interactive features such as:

- **Customizable Plans:** Tailor LEZ guidelines to meet the unique needs of each city, including recommendations for zone boundaries, vehicle restrictions, and enforcement measures.
- **Real-Time Scenario Testing:** Enable cities to simulate different LEZ configurations and assess potential outcomes on air quality and traffic flow.
- **Case Studies and Knowledge Hub:** Provide access to a library of successful LEZ case studies, best practices, and policy templates that can be adapted to local contexts.

### 4.6.3. Deliverables – Component 5

- **The Tool** for calculating air pollutant emissions is expected to take the form of an Excel document (standalone or integrated to the MobiliseYourCity's existing GHG emissions calculator).
- **The User guide:** The Consultant will provide a clear and concise user guide to help member cities understand, adopt, and effectively utilize the tool.
- **The Training materials (in French and English):** The Consultant will produce training materials and conduct interactive webinars designed to provide hands-on training and practical demonstrations.
- **The Interactive Tool** would take the form of a web-based application supporting cities in planning, executing, and monitoring LEZs.

## 5. Organization of the Services

### 5.1. Expert Resources Expected

The Consultant will be required to engage experts with the following specialties:

| Expert  | Expertise  | Responsibilities   |
|---|--|--|
| Urban Mobility Specialist                                       | Proficient in sustainable mobility planning, stakeholder coordination, and capacity building. Experienced in integrating air quality management into urban transport systems.  | Serve as the team leader, ensuring the alignment of project outputs with the overall objectives. Conduct stakeholder engagement and oversee the development of all outputs.  |
| Air Quality Specialist/<br>Pollutant Emissions Modelling Expert | Experienced in air quality monitoring, health impacts of pollutants, emission reduction strategies. Strong expertise of emission modelling methodologies. Existing publications (reports, academic papers, etc.) will be an advantage. | Provide technical guidance on the integration of air quality management into transport policies and tools. Support the development of training materials and participate in webinars to share expert insights. Assess feasibility of tool to calculate air pollutant emissions at the city level and elaborate it (if feasible/ relevant). |
| Graphic Designer  | Skilled in graphic design and content visualization for technical reports.   | Develop visually appealing and accessible technical briefs, and action sheets. Collaborate with the team to enhance the engagement and clarity of outputs.   |

**IMPORTANT NOTE:** Additionally, the Consultant is encouraged to submit a tentative profile for a Web Developer in case Task 2 of Component 5 (Optional Tranche) is commissioned.

### 5.2. Contacts

Consulting firms interested in applying for this assignment are encouraged to contact the AFD Task Team Leader (Anne-Laure Ullmann, [ullmannal@afd.fr](mailto:ullmannal@afd.fr)) for any inquiries.

### 5.3. Format, submission and validation of the deliverables

→ The Consultants will be required to prepare and submit the following deliverables:

- Inception
  - Inception Report
- Component 1: Diagnostic Assessment
  - Issues Paper
  - Technical Briefs (minimum 3)
- Component 2: Formulation of Recommendations
  - Inventory of Recommendations
  - Practical Guide
  - Action Sheets (minimum 3)
- Component 3: Preparation of Tool Development
  - Short note on Feasibility and proposed methodology



- Component 4: Dissemination and Capacity Building
  - Training materials (in French, English and Spanish)
  - Dissemination webinars
- Component 5 (Optional Tranche): Tools Development
  - Tool to calculate air pollutant emissions at the city level
  - User guide
  - Trainings materials (in French and English)
  - Interactive tool supporting the implementation of LEZs

The deliverables are to be submitted in English, unless stated otherwise.

## 5.4. Budget

The proposed budget for the inception phase and components 1 to 4 of this assignment is set at 90,000 Euros.

The “optional tranche” budget (i.e Component 5) will not be disclosed at this stage and will be discussed with the selected Consultant.

## 5.5. Payment’s method

Invoicing shall be processed as follows:

- ➔ **Invoice 1:** 30% of proposed budget<sup>13</sup>; upon final acceptance of the deliverables of Component 1.
- ➔ **Invoice 2:** 40% of proposed budget; upon final acceptance of the deliverables of Components 2 and 3.
- ➔ **Invoice 3:** 30% of proposed budget; upon final acceptance of the deliverables of Component 4.
- ➔ **Invoice 4 (If relevant):** 100% of optional tranche; upon final acceptance of the deliverables of Component 5.

A 20% advance payment could be considered upon request from the Consultant.

## 5.6. Additional Responsibility of the Consultant

- ➔ **Language.** The language requested for reports and all workshops and interviews is English.
- ➔ **All international and national experts must be fluent in English (speaking, reading and writing).**
- ➔ **Operation services.** The Consultants shall provide own comprehensive services, facilities, and property sufficient to activity completion.

## 5.7. Duties of the Beneficiary

Not applicable.

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<sup>13</sup> Reference to the section 5.4, the proposed budget excludes the optional tranche.

## 6. Appendix

### 6.1. Complementary information on the MobiliseYourCity Partnership

The following elements relate to Partnership as a whole and presents the main methodological concepts for the development of SUMP and NUMP.

**MobiliseYourCity** offers two complementary **activity lines** to its partner countries and cities: the **National Urban Mobility Policy and Investment Programs** (NUMP) and the **Sustainable Urban Mobility Plan** (SUMP).

There are essential differences in the approaches of National Urban Mobility Policies and Sustainable Urban Mobility Plans compared to the approaches to conventional strategy development or master planning. The distinguishing characteristics of **National Urban Mobility Policies and Sustainable Urban Mobility Plans** are:

→ **Long-term vision.**

Short-term delivery plan embedded in a long-term vision for mobility, developed for the entire urban area and by engaging citizens and other stakeholders.

→ **Enabling access.**

Approach to enable, facilitate and improve access through transport (not to transport) to markets, jobs, education and other services offered in urban areas, thereby prioritizing people and their quality of life.

→ **Focus on integration.**

Integration of multiple sectors instead of single-sector planning approach (besides transport ministries buy-in to be ensured by ministries of finance, energy, environment, public works, land-use planning, health, education, etc.) as well as the balanced and integrated development of all transport modes.

→ **Participatory approach.**

Participatory and multi-stakeholder approach involving representatives of the public sector and the private sector, academia, civil society, NGOs, and other urban mobility stakeholders in order to establish a thorough understanding and sustainable anchorage of their ambitions, leverage support for urban mobility transformation, and justify/legitimize sustainable urban mobility policies.

→ **Institutional cooperation.**

Establishment of appropriate frameworks, efficient and effective (cooperation) processes, and, if needed, the transformation of prevailing structures to allow the development of sustainable urban mobility policies and plans. This relates to areas, such as institutional structures, budgeting and financing frameworks, technology choices, etc.

→ **Contribution to international climate change commitments.**

Linkage between sustainable urban mobility planning measures and their GHG emission reduction potential and therefore connecting sustainable urban mobility strategies with international commitments.

→ **Focus on implementation of financially sound and well-monitored measures.**

Action-driven planning process to ensure implementation of priority measures through precise action budgeting and financing stream identification, eventual pilot projects or pre-feasibility study on priority corridor implementation, and monitoring and reporting tools to ensure a follow-up of the implementation.

## 6.2. Monitoring indicators of the MobiliseYourCity supported projects

**MobiliseYourCity** is developing a set of standard impact and investment indicators. Indicative indicators are as follow:

### MobiliseYourCity Standard Impact indicators

- Standard impact indicator no. 1: Reduction of GHG emissions (in tCO<sub>2</sub>e) as opposed to a 'business as usual' scenario without SUMP or mobility study.
- Standard impact indicator no. 2: Accessibility to public transport (percentage of the population living within 500 meters or less of a public transport stop with a transit period of up to 20 minutes during rush hour or having access to shared mobility services with equivalent level of service and cost).
- Standard impact indicator no. 3: Safety (road, rail) (number of fatalities due to transport accidents in SUMP area or mobility study area per 100,000 inhabitants. According to the World Health Organization, a death is counted if it occurs within 30 days after the accident).
- Standard impact indicator no. 4: Air pollution: annual average air pollution (PM<sub>2.5</sub>) level in the SUMP area or mobility study area, measured at a defined number of stations.
- Standard impact indicator no. 5: Modal split (share of public transport and active modes of travel).
- Standard impact indicator no. 6: Public Transport affordability (440 x average public transport fee/ average annual income of 2nd quintile households).

### MobiliseYourCity standard investment indicators

- Standard investment indicator no. 1: km of walkway built or significantly rehabilitated.
- Standard investment indicator no. 2: km of cycle way built or significantly rehabilitated.

- Standard investment indicator no. 3: km of mass rapid transit system built or significantly rehabilitated.
- Standard investment indicator no. 4: number of parking plots recently subject to an active parking policy (including plots for which parking policy has evolved from free to charged parking).

**MobiliseYourCity** is currently in the process of revising these indicators. The Consultant is requested to confirm with **MobiliseYourCity** Secretariat indicators to be considered in the SUMP or in the mobility study at the beginning of the assignment.

The guide “MobiliseYourCity GHG Monitoring and Reporting approach” may be downloaded at the following address: <https://mobiliseyourcity.net/monitoring-reporting-approach-ghg-emissions-myc>

### 6.3. Draft Recommendations’ Inventory

The below table outlines a **structured inventory** for potential measures/actions aimed at improving air quality through sustainable transport interventions. This version is intended **for representation purposes only** and will serve as a starting point for further discussion and refinement.

Each recommendation is **colour-coded** according to its main objective:

|                      |
|----------------------|
| Govern and Regulate  |
| Implement Mitigation |
| Raise Awareness      |
| Enhance Knowledge    |
| Monitor and Evaluate |

**Table 4 Draft Recommendations’ Framework, source: MobiliseYourCity Trainings, Clean Air Asia and other**

| Level of Intervention  | Categorization of Measures | Potential Measures/Actions  |
|------------------------|----------------------------|---|
| National <sup>14</sup> | Legislative                | Set maximum emission standards for conventional emissions (carbon monoxide (CO), hydrocarbons, nitrogen oxides (NO <sub>x</sub> ), particulate matter (PM) and for toxic air pollutants (aligning with international best practices (e.g., Euro 6/VI standards)). |
|                        |                            | Enact laws mandating electric vehicle (EV) adoption targets by a certain year.  |
|                        |                            | Implement speed limits to reduce fuel consumption and lower emissions   |
|                        | Regulatory                 | Introduce or tighten limits on vehicle exhaust pollutants such as NO <sub>x</sub> , PM <sub>2.5</sub> , and CO.   |
|                        |                            | Mandate fuel quality standards for gasoline (lead, volatility, benzene, aromatics) and for diesel (volatility, sulphur, aromatics, cetane number, polyaromatic hydrocarbons).   |
|                        |                            | Establish vehicle scrappage policies to phase out high-polluting, older vehicles (inc. 2-stroked engines) and set maximum power/weight ratios for newer vehicles.   |
|                        |                            | Require emission testing for vehicles as part of regular inspections (as part of anti-tampering and diesel smoke control programs).   |
|                        |                            | Regulate urban freight transport operations to improve fuel efficiency (e.g., setting limits on freight vehicle ages).  |
|                        | Fiscal                     | Provide subsidies for electric vehicles, hybrids, compressed natural gas (CNG) vehicles, and vehicles using biofuels and/or differentiated fuel pricing favouring cleaner fuels.  |
|                        |                            | Offer tax exemptions or reductions for the purchase of clean vehicles or introduce road taxes based on vehicle emissions levels.  |
|                        |                            | Introduce road-based carbon taxes on fuel to GHG emissions.   |
|                        |                            | Launch carbon pricing initiatives to fund green infrastructure projects and/or  |
|                        | Programmatic               | Develop national programs for clean air targeting transport hubs and including deployment of electric bus fleets.   |
|                        |                            | Launch clean air public education campaigns to raise awareness about the health impacts of air pollution and promote sustainable mobility behaviours.   |

<sup>14</sup> The potential interventions at the national level can be addressed to any ministry in charge of transport and mobility. They can be part of a National Urban Mobility Programme (NUMP) or can be implemented as stand-alone measures.

## Knowledge Production: Air Pollution

|                              |                               |  |
|------------------------------|-------------------------------|--|
| Local<br>(As part of a SUMP) |                               | Create urban mobility observatory integrating air quality or air quality agency in charge of air quality monitoring networks and emission inventories.   |
|                              |                               | Support innovation hubs for the development of cleaner transport technologies.   |
|                              |                               | Strengthen technical cooperation with international bodies including donors for capacity building.   |
|                              |                               | Strengthen capacity building and coordination through (i) enhancing the capacity of institutions and (ii) promoting inter-agency collaboration between transport, environment and public health authorities.   |
|                              | Diagnosis                     | Perform transport-related air pollution estimate (potentially using tool developed as part of this knowledge production work).   |
|                              |                               | Map transport patterns to understand congestion hotspots and emission concentrations.  |
|                              |                               | Conduct surveys to capture public perceptions on transport and air quality.  |
|                              |                               | Organize workshops for information, awareness, disseminating knowledge including on topics such as eco-driving to encourage efficient driving habits.  |
|                              | Visioning and Scenarios       | Establish short, medium and long-term targets for air quality.   |
|                              |                               | Set goals for modal shifts towards clean and efficient urban mobility (public transport, walking, and cycling).  |
|                              | Elaboration of Measures       | Create low-emission zones (LEZs) with stringent access requirements.   |
|                              |                               | Develop and promote bike-sharing programs and pedestrian-friendly zones.   |
|                              |                               | Implement a network of measuring stations and micro-sensors <sup>15</sup> .  |
|                              |                               | Introduce electric bus corridors and dedicated bus lanes (promotion of public transportation system).  |
|                              |                               | Implement congestion pricing in high-traffic areas.  |
|                              |                               | Promote the use of shared mobility options (e.g., car-sharing, ride-hailing) through fiscal incentives for instance.   |
|                              | Implementation and Monitoring | Develop mobile apps to communicate real-time pollution levels to citizens.   |
|                              |                               | Set up regular monitoring and evaluation frameworks to track air quality improvements.   |
|                              |                               | Monitor public adoption of sustainable transport solutions.  |
|                              |                               | Integrate air quality data with city dashboards for dynamic urban management.  |
| Local<br>(Outside of a SUMP) | Governance and Collaboration  | Promote mixed-use development, discourage urban sprawl, and encourage smart growth reducing commuter travel and redistributing urban activities.   |
|                              |                               | Establish air quality task forces involving public, private, and community stakeholders.   |
|                              |                               | Establish a network of mayors dedicated to addressing air quality issues, serving as a platform for collaboration, knowledge sharing, and coordinated lobbying efforts to advocate for stronger air quality policies at the national level (as discussed). |
|                              |                               | Develop digital tools such as emissions calculators and air quality forecasting systems to support informed decision-making.   |
|                              |                               | Create municipal-level public-private partnerships (PPPs) for transport infrastructure projects.   |
|                              |                               | Establish a crisis management plan to address air pollution peaks, focusing on effective communication strategies and implementing emergency measures to protect public health (as discussed).   |
|                              |                               | Encourage the use of real-time traffic and pollution data for dynamic policy responses, such as traffic restrictions during pollution peaks.   |
|                              |                               | Partner with universities to study urban air quality patterns and mitigation strategies.   |
|                              |                               | Grant privileges (e.g. restricted lanes) for high-occupancy vehicles.  |
|                              |                               | Organize car-free days to raise public awareness about the health and environmental benefits of reduced vehicle use.   |
|                              | Technology and Innovation     | Introduce dynamic traffic management systems that adapt to pollution levels.   |
|                              |                               | Develop smart parking solutions to reduce cruising time and emissions, combined with “park and ride” solutions.  |
|                              |                               | Integrate autonomous vehicles to optimize traffic and minimize pollution.  |
|                              |                               | Install EV charging points at strategic city locations.  |

<sup>15</sup> As part of Yaoundé’s SUMP, micro-sensors were deployed to monitor pollution hotspots across the city, aiming to reduce emissions from traffic and raise public awareness of air quality issues.

## Knowledge Production: Air Pollution

|         |                            |   |
|---------|----------------------------|---|
| Project | Infrastructure Development | Develop green infrastructure like urban forests and green corridors along transport routes.   |
|         |                            | Upgrade urban bus fleets to electric or hybrid models.  |
|         |                            | Build multi-modal hubs that facilitate seamless transfers between public transport modes.   |
|         | Design Phase               | Create detailed project plans using TOD principles and promoting pedestrianisation, cycling facilities (lanes and storage), mass transit projects (BRT, tramway, metro, etc.), facilities for shared vehicles, etc. |
|         |                            | Design appropriate infrastructure (e.g., electric charging stations, dedicated bus lanes).  |
|         |                            | Incorporate smart technologies (e.g., IoT-based air quality sensors or Intelligent Transport System) into the design.   |
|         |                            | Prepare monitoring frameworks to track emissions reductions.  |
|         | Implementation Phase       | Execute pilot projects such as EV bus deployment on key routes.   |
|         |                            | Install low-emission transport infrastructure (e.g., cycle paths, LEZ signage).   |
|         |                            | Provide training for drivers and operators of new technologies (e.g., electric buses).  |
|         |                            | Engage the public with information campaigns promoting the project.   |
|         | Operational Phase          | Monitor key performance indicators (KPIs) to assess the project's success (e.g., emission reductions, ridership growth and modal shift).  |
|         |                            | Gather feedback from citizens and stakeholders about change in air quality.   |