### D7.2 Stakeholder Consultation Report

<table>
<thead>
<tr>
<th>Project acronym</th>
<th>EUNOIA</th>
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<tr>
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<td>Evolutive User-centric Networks for Intraurban Accessibility</td>
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<td>318367</td>
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<tr>
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<table>
<thead>
<tr>
<th>Edition</th>
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<td>Edition 1, Draft 1</td>
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<td>Add new responses from questionnaires</td>
</tr>
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Acknowledgements

The EUNOIA consortium would like to thank all the participants for answering the questionnaires. Without the support of the cities, this research would have been infeasible.

The consortium would also like to thank the Department of Sustainability and Mobility of the Madrid City Council for its collaboration during the design and testing of the questionnaires.
1. Introduction

This report presents the methodology and results of the EUNOIA Stakeholder Consultation. The consultation was designed to feed EUNOIA Deliverable D2.1 "Methods and Tools for Urban Mobility Policy" (D2.1 hereafter) with an overview of the current European practices in urban mobility planning, aiming to complement the literature review with the experiences in European cities and the needs of policy makers and other stakeholders regarding urban mobility policy assessment.

This report is divided into 7 sections:

- Section 1 ‘Introduction’.
- Section 2 ‘Design of the survey’.
- Section 3 ‘Policy maker questionnaire results’.
- Section 4 ‘Urban modeller questionnaire results’.
- Annex I ‘References’
- Annex II ‘Questionnaires’, which includes a PDF version of the English version of the questionnaires.
2. Design of the survey

2.1 Survey objectives

The questionnaire for the consultation was designed taking into account the main objectives of D2.1:

1. to define a comprehensive set of indicators and metrics for the assessment of sustainable urban mobility policies;
2. to identify the scenarios and policies that urban models should be able to reproduce in order to respond to the current and future challenges of urban mobility planning;
3. to identify the required improvements (theoretical advances, input data, user-model interfaces, methodologies) for the use of state-of-the-art urban models in policy decision contexts.

In order to meet these objectives, it was considered appropriate to design two different questionnaires, one of them addressed to policy makers and a second questionnaire addressed to urban modellers. Policy makers are to be understood as those responsible for urban mobility planning and decision making, and urban modellers as those technicians who manage urban models (transport and/or land-use models).

Policy makers are considered to be the most appropriate stakeholders to provide information about:

- Cities’ mobility objectives and indicators used to measure the progress towards these objectives.
- Current and future measures and policies planned by the cities.
- Collaboration with different stakeholders in decision making.
- Barriers and required improvements for the use of urban models in policy making.

Urban modellers are considered to be the most appropriate stakeholders to provide information about:

- The types and characteristics of the urban models used by the cities.
- The current measures and policies implemented into urban simulation models.
- Collaboration with different stakeholders in the building of urban models.
- Scientific/technical barriers and required improvements in current urban models.

2.2 Sample

The survey has been addressed to urban mobility policy makers and urban modellers of European cities. The criteria used to select the cities, in order of importance, are the following:

- European cities with more population and/or density of population.
- European capitals.
- Cities highly involved in urban mobility activities.

2.3 Structure of the questionnaires

The questionnaires were designed using the online platform Survey Monkey (www.surveymonkey.com), aiming to facilitate the collection and management of the responses. The tool allows the design of online questionnaires using a wide range of different types of questions. The questionnaires were designed to be short, slightly, interesting and challenging for the respondents. Apart from the questions themselves,
explanatory introductions, graphs and figures were provided to facilitate the interpretation of the questions, in order to obtain more accurate responses.

Preliminary questionnaires were designed taking into account relevant documentation related to urban mobility, such as European policy documentation, e.g. “Sustainable Urban Transport Plans. Preparatory Document in relation to the Thematic Strategy on the Urban Environment” (European Communities, 2007); European projects, e.g. “Questionnaire to local transport planners” (DISTILLATE project, 2005); and research papers, e.g. “Well measured. Developing indicators for Sustainable and Livable Transport Planning” (Litman, 2012). These preliminary versions of the questionnaires were tested and improved with the collaboration of the Madrid City Council and other experts from the transport sector. From the feedback received, changes were made in both questionnaires. The structure of the final version of both questionnaires is explained below.

Policy makers questionnaire:
The policy makers questionnaire is divided into 8 sections. The main part of the questionnaire, where the key questions are presented, encompasses 5 sections: Section 1 Objectives, Section 2 Indicators, Section 3 Urban mobility policies, Section 4 Governance and procedures, and Section 5 Policy models / Planning and decision support tools. The three remaining sections contain additional information such as an introduction to the survey, contact details and acknowledgements. The questionnaire contains a total of 19 questions. A brief description of the different sections is provided below:

- **Introduction**: brief introduction to the EUNOIA project. The section remarks the relevance of the questionnaire's results for the project and provides some general information about the characteristics of the questionnaire, such as the expected duration and the confidential treatment of the answers.
- **Contact details**: this section asks for the contact details of the respondents (confidential information).
- **Section 1 Objectives**: participants are invited to respond questions about the urban mobility objectives of their cities.
- **Section 2 Indicators**: questions about the use of indicators and the types of indicators.
- **Section 3 Urban mobility policies**: questions about the degree of implementation of several measures and policies.
- **Section 4 Governance and procedures**: questions about coordination between administrations and the relation with different stakeholders.
- **Section 5 Policy models / Planning and decision support tools**: this section was designed to find out how frequently models are used in policy making and which are the most important improvements and barriers that models have to face in order to position as effective decision-making tools.
- **Acknowledgements**: acknowledgements to all the participants in the EUNOIA Stakeholder Consultation.

Urban modellers questionnaire:
The urban modellers questionnaire is divided into 5 sections. The most relevant part of the questionnaire encompasses 2 sections: Section 1 Urban models, and Section 2 Stakeholders and policy makers. As in the policy makers questionnaire, the remaining sections contain additional information such as an introduction to the survey, contact details and acknowledgements. The questionnaire contains a total of 13 questions, many of them based on the work carried out by David Jung-Hwi Lee (2009) in the United States, “TMA/MPO Modeling Activity Survey”.
A brief description of the different sections is provided below:

- **Introduction**: brief introduction to the EUNOIA project. The section remarks the relevance of the questionnaire’s results for the EUNOIA project and provides some important information about the characteristics of the questionnaire, such as the expected duration or the confidential treatment of the answers.

- **Contact details**: this section asks for the contact details of the respondents (confidential information).

- **Section 1 Urban models**: questions such as which urban models are used by the cities or how models are developed.

- **Section 2 Stakeholders and policy makers**: questions about the relation with the different stakeholders, the measures and policies implemented in the models, and the main improvements and barriers that models have to face in order to position as effective decision-making tools.

- **Acknowledgements**: acknowledgements to all the participants in the EUNOIA Stakeholder Consultation.

The final English version of both questionnaires is available at the end of this document in Annex II.

### 2.4 Sending of the questionnaires

Personal emails with the link to the questionnaires were sent to each of the experts (either policy makers or urban modellers).

It should be noted that the number of appropriate people able to correctly answer the questionnaires is reduced. In most cases, questionnaires were sent to a specific policy maker or urban modeller. In some other cases, both questionnaires were sent to one of the policy makers of the cities, asking for collaboration to answer the policy makers questionnaire and to provide information about possible urban modellers willing to collaborate.

The sending process was divided into two rounds, the second one being mainly a reminder round addressed to those people who had not responded to the questionnaires in the first round.
3. Policy makers questionnaire results

First, this section presents a list of the participant cities and the position held by the respondents. Next, a detailed description of the questionnaire results is provided.

3.1 Characterisation of the respondents

35 policy makers questionnaires were sent to the cities. A total of 16 valid questionnaires were obtained (i.e. response ratio was 46%). Table 1 shows the complete list of the questionnaires received.

Table 1. Policy makers questionnaires received.

<table>
<thead>
<tr>
<th>Policy makers questionnaire</th>
<th>#</th>
<th>City</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>1</td>
<td>Amsterdam</td>
<td>Netherlands</td>
</tr>
<tr>
<td>#2</td>
<td>2</td>
<td>Barcelona</td>
<td>Spain</td>
</tr>
<tr>
<td>#3</td>
<td>3</td>
<td>Basel</td>
<td>Switzerland</td>
</tr>
<tr>
<td>#4</td>
<td>4</td>
<td>Birmingham</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>#5</td>
<td>5</td>
<td>Bucharest</td>
<td>Romania</td>
</tr>
<tr>
<td>#6</td>
<td>6</td>
<td>Burgos</td>
<td>Spain</td>
</tr>
<tr>
<td>#7</td>
<td>7</td>
<td>Eindhoven</td>
<td>Netherlands</td>
</tr>
<tr>
<td>#8</td>
<td>8</td>
<td>Ljubljana</td>
<td>Slovenia</td>
</tr>
<tr>
<td>#9</td>
<td>9</td>
<td>London</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>#10</td>
<td>10</td>
<td>Madrid</td>
<td>Spain</td>
</tr>
<tr>
<td>#11</td>
<td>11</td>
<td>Milton Keynes</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>#12</td>
<td>12</td>
<td>Munich</td>
<td>Germany</td>
</tr>
<tr>
<td>#13</td>
<td>13</td>
<td>Nottingham</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>#14</td>
<td>14</td>
<td>Rome</td>
<td>Italy</td>
</tr>
<tr>
<td>#15</td>
<td>15</td>
<td>Santander</td>
<td>Spain</td>
</tr>
<tr>
<td>#16</td>
<td>16</td>
<td>Zurich</td>
<td>Switzerland</td>
</tr>
</tbody>
</table>

The different positions held by the respondents are enumerated below:

- Head of Transport
- Head of Modelling and Simulation
- Executive Officer
- Senior Policy Officer
- Head of Working Group
- Transport Planner
- Transportation Policy Manager
- Responsible for Transport Planning in Spatial Plan
- Head of Mobility Division
- Head of Transportation
- Senior Policy Advisor
- Responsible of International Cooperation
- Director of Sustainability and Mobility
- Mobility Councilman
3.2 Questionnaire results

For each of the questions, a description sheet is provided, including 5 different sections:

- **Question number**: number of the question as it appears in the questionnaire.
- **Section**: name of the questionnaire section.
- **Question**: wording of the question.
- **Graph/table**: figures and tables summarising the results.
- **Description of the results**: brief description of the results obtained.
- **Key points/Conclusions**: relevant information extracted from the results.

The description sheets of the policy makers questionnaire are shown below. Note that question 1 (personal contact details) is omitted in order to keep the respondents anonymity.
### Question number: 2 / Section: Objectives

#### Question

Has your city established a specific list of objectives related to sustainable urban mobility?

#### Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, there is not a specific list</td>
<td>6.3%</td>
<td>1</td>
</tr>
<tr>
<td>No, there is not a specific list but some mobility objectives are taken into account in other areas such as energy or air quality</td>
<td>6.3%</td>
<td>1</td>
</tr>
<tr>
<td>Yes, there is a specific list of sustainable urban mobility objectives</td>
<td>87.5%</td>
<td>14</td>
</tr>
</tbody>
</table>

#### Description of results

The vast majority of the cities surveyed (87.5%) have a specific list of sustainable urban mobility objectives established. One of the cities points out that although no specific list of sustainable urban mobility objectives is established, mobility objectives are placed in other areas such as energy or air quality. Only one of the cities indicates that no specific list of mobility objectives is established.

#### Key points / Conclusions

Most of the European cities have established a specific list of sustainable urban mobility objectives.
**Question number: 3 / Section: Objectives**

**Question**

Which documents do formally establish the main urban mobility objectives of your city? More than one answer is possible.

**Graph/Table**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local air quality strategy</td>
<td>50%</td>
<td>8</td>
</tr>
<tr>
<td>Local energy use &amp; climate change strategy</td>
<td>43.8%</td>
<td>7</td>
</tr>
<tr>
<td>Local transport plan / Local mobility plan / Sustainable urban mobility plan / or similar</td>
<td>81.3%</td>
<td>13</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>31.3%</td>
<td>5</td>
</tr>
</tbody>
</table>

**Description of results**

Sustainable Urban Mobility Plans (SUMPs) or similar documents (local transport plan, local mobility plan, etc.) are the documents that formally establish the main urban mobility objectives in 13 of the cities surveyed (81.3% of cases). Six of these cities (6/13) have chosen the SUMP as the only document that contains the main urban mobility objectives. Five other cities (5/13) have some of their mobility objectives defined in the air quality strategy together with the local energy use & climate change strategy, in addition to the SUMP. One city (1/13) has mobility objectives included in its air quality strategy, and another city (1/13) in its local energy use & climate change strategy. There are only 3 cities without a SUMP (or equivalent). One of these cities (1/3) indicates that the documents that formally establish the main urban mobility objectives are the environmental law together with the spatial plan. The two other cities (2/3) have chosen the air quality strategy together with the local energy use & climate change strategy as the main documents. One of these two cities remarks that they are currently developing a SUMP which will contain the urban mobility objectives included in the air quality strategy and in the local energy use & climate change strategy.

**Key points / Conclusions**

The Sustainable Urban Mobility Plan (SUMP) or similar document is the most common document that establishes urban mobility objectives; however it has to be noted that other documents, such as the air quality strategy or the local energy use & climate change strategy, are also relevant.
**Question number: 4 / Section: Objectives**

**Question**
Could you share with us the three most important urban mobility objectives of your city?

**Graph/Table**

<table>
<thead>
<tr>
<th>Code</th>
<th>Number of responses</th>
<th>Percentage</th>
<th>Description of Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>8</td>
<td>50.00%</td>
<td>Modal shift from private car to more sustainable modes (public transport, bicycle, walk)</td>
</tr>
<tr>
<td>HW</td>
<td>5</td>
<td>31.25%</td>
<td>Ensure health and well-being</td>
</tr>
<tr>
<td>SS</td>
<td>4</td>
<td>25.00%</td>
<td>Ensure safety and security</td>
</tr>
<tr>
<td>AC</td>
<td>4</td>
<td>25.00%</td>
<td>Improve accessibility</td>
</tr>
<tr>
<td>AQ</td>
<td>4</td>
<td>25.00%</td>
<td>Improve air quality</td>
</tr>
<tr>
<td>CC</td>
<td>4</td>
<td>25.00%</td>
<td>Reduce climate change</td>
</tr>
<tr>
<td>EQ</td>
<td>3</td>
<td>18.75%</td>
<td>Ensure equity</td>
</tr>
<tr>
<td>SG</td>
<td>3</td>
<td>18.75%</td>
<td>Support economic growth</td>
</tr>
<tr>
<td>ET</td>
<td>3</td>
<td>18.75%</td>
<td>Support efficient and cost-effective transport system</td>
</tr>
<tr>
<td>AF</td>
<td>2</td>
<td>12.50%</td>
<td>Ensure affordability</td>
</tr>
<tr>
<td>GT</td>
<td>2</td>
<td>12.50%</td>
<td>Foster green technologies in public transport fleet</td>
</tr>
<tr>
<td>EC</td>
<td>2</td>
<td>12.50%</td>
<td>Improve energy efficiency</td>
</tr>
<tr>
<td>PT</td>
<td>2</td>
<td>12.50%</td>
<td>Improve public transport (fast, reliable, seamless and regular)</td>
</tr>
<tr>
<td>LUC</td>
<td>2</td>
<td>12.50%</td>
<td>Minimise land consumption</td>
</tr>
</tbody>
</table>

**Description of results**

Half of the cities surveyed (50.00%) point out that reducing private vehicle trips in favour of more sustainable modes is one of the three most important objectives. Almost 1 out of 3 cities (31.25%) consider health and well-being as one of their three main objectives. 25% of the cities consider safety and security, climate change or accessibility as priority objectives. Around 1 out of 5 cities (18.75%) consider supporting economic growth, equity or efficient and cost-effective transport system as one of their three main objectives. 12.5% of the cities consider affordability, the improvement of public transport, the use of green technologies in public transport.
fleet, energy efficiency and the reduction of land use consumption as one of their main urban mobility objectives.

**Key points / Conclusions**

Fourteen different objectives have been identified among the three most important objectives of the European cities surveyed. Objectives ordered from higher to lower frequency of appearance are shown below:

1. Modal shift from private car to more sustainable modes (public transport, bicycle, walk).
2. Ensure health and well-being
3. Ensure safety and security
4. Improve accessibility
5. Improve air quality
6. Reduce climate change
7. Ensure equity
8. Support economic growth
9. Support efficient and cost-effective transport system
10. Ensure affordability
11. Foster green technologies in public transport fleet
12. Improve energy efficiency
13. Improve public transport (fast, reliable, seamless and regular)
14. Minimise land consumption
**Question number:** 5 / **Section:** Indicators

**Question**
Does your city have a specific list of outcome indicators?

<table>
<thead>
<tr>
<th>Graph/Table</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Does your city have a specific list of outcome indicators?</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, there is not any list of indicators</td>
<td>6.3%</td>
<td>1</td>
</tr>
<tr>
<td>There is a list of indicators, but there is not distinction between outcome and intermediate indicators</td>
<td>18.8%</td>
<td>3</td>
</tr>
<tr>
<td>There is a list of outcome indicators but the relation with the corresponding objectives is not clear</td>
<td>37.5%</td>
<td>6</td>
</tr>
<tr>
<td>There is a specific list of outcome indicators clearly related with the objectives</td>
<td>37.5%</td>
<td>6</td>
</tr>
</tbody>
</table>

**Description of results**
Most of the cities (75%) have a specific list of outcome indicators, however half of them highlight that the relation with the corresponding objectives is not clear. Three cities point out that they have a list of indicators but they do not distinguish between outcome and intermediate indicators. Only one city has not defined any list of indicators.

**Key points / Conclusions**
A considerable number of cities (75%) have a list of outcome indicators, but they point out that the relation with the corresponding objectives is not clear. This result highlights that there is an important gap in the definition of proper outcome indicators to properly measure the achievement of urban mobility objectives.
Question number: 6 / Section: Indicators

Question
Does your city have a specific list of intermediate indicators?

Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, there is not any list of indicators</td>
<td>6.3%</td>
<td>1</td>
</tr>
<tr>
<td>There is a list of indicators, but there is not distinction between outcome and intermediate indicators</td>
<td>18.8%</td>
<td>3</td>
</tr>
<tr>
<td>There is a list of intermediate indicators but the relation with the outcome indicators is not clear</td>
<td>56.3%</td>
<td>9</td>
</tr>
<tr>
<td>There is a specific list of intermediate indicators clearly related with the outcome indicators</td>
<td>18.8%</td>
<td>3</td>
</tr>
</tbody>
</table>

Description of results
Most of the cities explain that they have a list of intermediate indicators but the relation with the outcome indicators is not clear. Only three of the cities have a list of intermediate indicators clearly related to the outcome indicators. Three cities point out that they have a list of indicators but they do not distinguish between outcome and intermediate indicators. Only one city has not defined a list of indicators.

Key points / Conclusions
Most of the cities have a list of intermediate indicators but they point out that the relation with the corresponding outcome indicators is not clear. This result highlights that there is an important gap in the definition of the relations between intermediate and outcome indicators.
Question number: 7 / Section: Indicators

Question
Do you use (even if in an informal way) any kind of comparative international indicator system about sustainable urban mobility?

Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>62.5%</td>
<td>10</td>
</tr>
<tr>
<td>Yes (Please indicate below which one/s)</td>
<td>37.5%</td>
<td>6</td>
</tr>
</tbody>
</table>

Description of results
One out of three cities (37.5%) use an international indicators system for comparison. The set of indicators or some sources used by the cities surveyed are shown below:

- International Urban Sustainability Indicators List (IUSIL)
- CIVITAS evaluation framework
- Agenda 21 indicators
- Research report and related material (e.g. comparative reference to international road casualty rates)
- Comparison with international information about mode share in other cities (especially concerning bicycle traffic, public transport and walking).
- ISO 9001 UNE 13816

Key points / Conclusions
One third of the cities (37.5%) use international set of indicators for comparison.
Question number: 8 / Section: Urban mobility policies

Question

Which of the following policies/measures related to urban mobility are implemented in your city? Please indicate the degree of implementation.

Table 1. Classification of the policies and measures according to the Score value.

<table>
<thead>
<tr>
<th>Response options</th>
<th>Not implemented</th>
<th>Implementation is planned</th>
<th>Partially implemented / Implementation in progress</th>
<th>High degree of implementation</th>
<th>Z-score</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Promoting and improving collective transport (e.g. smart card without contact, fares, etc.)</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>10</td>
<td>4,06</td>
<td>16</td>
</tr>
<tr>
<td>2 Parking management (e.g. parking meters, a parking policy that favours residents, electric and small vehicles)</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>9</td>
<td>4,06</td>
<td>16</td>
</tr>
<tr>
<td>3 Fostering cycling and walking (e.g. bicycle parking, extension of cycle tracks, expand pedestrian routes, etc.)</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>8</td>
<td>3,94</td>
<td>16</td>
</tr>
<tr>
<td>4 Traffic calming (e.g. narrower traffic lane, speed bumps, raised pedestrian crossings, etc.)</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>7</td>
<td>3,88</td>
<td>16</td>
</tr>
<tr>
<td>5 Car-sharing</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>3,88</td>
<td>16</td>
</tr>
<tr>
<td>6 Low-emissions and low-noise road vehicles</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>2,44</td>
<td>16</td>
</tr>
<tr>
<td>7 Access restriction for the most polluting vehicles</td>
<td>7</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>2,13</td>
<td>16</td>
</tr>
<tr>
<td>8 Car-pooling</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1,88</td>
<td>16</td>
</tr>
<tr>
<td>9 Urban freight management (e.g. last mile transportation)</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>1,69</td>
<td>16</td>
</tr>
<tr>
<td>10 Fostering teleworking</td>
<td>10</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>1,06</td>
<td>16</td>
</tr>
<tr>
<td>11 Urban road charging (e.g. congestion pricing, environmental pricing, etc.)</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0,94</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 2. Estimation of the classification of the policies and measures in the medium term.

<table>
<thead>
<tr>
<th>Response options</th>
<th>Not implemented</th>
<th>Implementation is planned</th>
<th>Partially implemented / Implementation in progress</th>
<th>High degree of implementation</th>
<th>Z-score</th>
<th>Position variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Traffic calming (e.g. narrower traffic lane, speed bumps, raised pedestrian crossings, etc.)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>5,00</td>
<td>+3</td>
</tr>
<tr>
<td>2 Fostering cycling and walking (e.g. bicycle parking, extension of cycle tracks, expand pedestrian routes, etc.)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>15</td>
<td>4,88</td>
<td>+1</td>
</tr>
<tr>
<td>3 Parking management (e.g. parking meters, a parking policy that favours residents, electric and small vehicles)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>15</td>
<td>4,88</td>
<td>+1</td>
</tr>
<tr>
<td>4 Promoting and improving collective transport (e.g. smart card without contact, fares, etc.)</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>13</td>
<td>4,63</td>
<td>-3</td>
</tr>
<tr>
<td>5 Car-sharing</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>4,44</td>
<td>=</td>
</tr>
<tr>
<td>6 Low-emissions and low-noise road vehicles</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>9</td>
<td>3,63</td>
<td>=</td>
</tr>
<tr>
<td>7 Access restriction for the most polluting vehicles</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>3,19</td>
<td>=</td>
</tr>
<tr>
<td>8 Car-pooling</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>3,19</td>
<td>=</td>
</tr>
<tr>
<td>9 Urban freight management (e.g. last mile transportation)</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>2,63</td>
<td>=</td>
</tr>
<tr>
<td>10 Fostering teleworking</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>2,38</td>
<td>=</td>
</tr>
<tr>
<td>11 Urban road charging (e.g. congestion pricing, environmental pricing, etc.)</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>2,06</td>
<td>=</td>
</tr>
</tbody>
</table>
Description of results

A Z-score value is calculated to easily evaluate which are the most and less implemented measures. The formula of the Z-score function is as follows:

\[ Z_{score} = \frac{0 \cdot (Not\,\,implemented) + 2 \cdot (Implementation\,\,is\,\,planned) + 3 \cdot (Partially\,\,implemented) + 5 \cdot (High\,\,degree\,\,of\,\,implementation)}{number\,\,of\,\,responses} \]

The Z-score value changes between 0 (Not implemented) and 5 (High degree of implementation). A higher and lower weight have been assigned to the extreme values (i.e. "Not implemented" and "high degree of implementation") in order to clearly identified the degree of implementation of the measures and policies.

There are clearly five measures and policies that present high Score values: promoting and improving collective transport, parking management, fostering cycling and walking, traffic calming and car-sharing. Promoting and improving collective transport has the largest number of cities with a high degree of implementation (10 cities). Regarding parking management and fostering cycling and walking policies, around half of the cities have a high degree of implementation and the other half are in an implementation process. Traffic calming is the only policy that is currently ongoing in all the cities surveyed. Additionally it is the policy with the largest number of cities in an implementation process. Finally, from the group of the most implemented policies, car-sharing presents six cities with high degree of implementation, six cities in the implementation stage, three cities which have decided to implement the policy in the medium term and only one city which has not implemented this measure yet.

The policies with the lowest degree of implementation (the ones with the lowest Z-score values) are: urban road charging, fostering teleworking and urban freight management. Urban road charging is the one with the largest number of cities that have not considered implementing this policy at least in the short term. Fostering teleworking is the only policy which has no city with a high degree of implementation, however one third of the cities are in an implementation process. Finally, urban freight management is the policy with the largest number of cities which have planned implementation in the medium term.

Between the lowest and highest Z-score values, a group of three policies is identified: access restriction for the most pollutant vehicles, low-emissions and low-noise road vehicles and car-pooling.

Table 2 presents an estimation of the degree of implementation of the measures and policies in the medium term. To estimate these values, it has been considered that the measures and policies that already have a high degree of implementation will also have it in the medium term. The policies which are in an implementation process will get a high degree of implementation and the policies whose implementation is currently planned will be in an implementation stage in the medium term. Finally it has been considered that the policies which are currently not implemented will be planned by 50% of the cities. From this simple estimation, important changes can be seen in the Z-score values of policies such as the important increase of the cities with a high degree of implementation of teleworking policies or the
A high number of cities that will be in an implementation process of urban freight policies.

Additionally, some cities have made clarifications or nuances about some of the mentioned policies or have added other policies. The responses of the cities are shown below:

- Improvements to local rail network.
- Transport-on-demand scheme.
- Park&ride system.
- Technologically advanced city buses.
- Improved safety on city buses for passengers, especially for the elderly.
- The introduction of bus arrival displays.
- At least 10 percent cleaner vehicles.
- Preparation of a comprehensive cycling strategy.
- Reducing speed limits in certain areas of town.
- Using vegetable oil for motor vehicles.
- Safe routes to school.
- Examination of possibilities for the introduction of fees for entry of vehicles into the narrow city centre.
- The strategy for the development of electromobility.
- Individualised mobility campaign and public involvement – permanent.
- Traffic calming by speed reduction (shared spaces, 30 kph-zones) all over the city (except main roads).
- High quality public transport (dense network, high frequency, night services on weekends, etc.).
- Foster intermodality.

**Key points / Conclusions**

There are clearly five measures/policies that present a high degree of implementation in most of the cities surveyed: **promoting and improving collective transport**, **parking management**, **fostering cycling and walking**, **traffic calming** and **car-sharing**. The policies and measures that present the lowest degree of implementation are **urban road charging**, **fostering teleworking** and **urban freight management**. Other policies such as **access restriction for the most pollutant vehicles**, **low-emissions and low-noise road vehicles** and **car-pooling** have an intermediate degree of implementation.
**Question number:** 9 / **Section:** Governance and procedures  

**Question**  
Which department(s) is (are) in charge of urban mobility policies?  

**Graph/Table**  
Not Applicable  

**Description of results**  
The different departments identified by the cities are shown below:

- Planning and Transport.
- Mainly the Civil Engineering Office, but to some extent also the Division of Transport (e.g. prioritisation of public transport in traffic control).
- Transports, Roads and Traffic Planning Department.
- Transport Department.
- Transport Strategy.
- Transportation Division.
- Department for Commercial Activities and Traffic in cooperation with Department for Spatial Management and Vicemajor.
- Department for Public Works and Transport.
- Department for Infrastructure Traffic and Transport.
- Accessibility, mobility and transport area.

**Key points / Conclusions**  
Not Applicable
### Question number: 10 / Section: Governance and procedures

**Question**

At local level: which kind of integration/coordination exists between mobility and land-use policy areas? More than one answer is possible.

### Graph/Table

At local level: which kind of integration/coordination exists between mobility and land-use policy areas? More than one answer is possible.

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Fluent daily interaction (informal, horizontal, case by case)</td>
<td>62.5%</td>
<td>10</td>
</tr>
<tr>
<td>Coordination through hierarchical structures (&quot;Councillors Board&quot;)</td>
<td>50.0%</td>
<td>8</td>
</tr>
<tr>
<td>Formal coordination through some management tools (indicator systems)</td>
<td>25.0%</td>
<td>4</td>
</tr>
<tr>
<td>Formal coordination through some steering group</td>
<td>37.5%</td>
<td>6</td>
</tr>
<tr>
<td>Integration in the same department</td>
<td>37.5%</td>
<td>6</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>18.8%</td>
<td>3</td>
</tr>
</tbody>
</table>

### Description of results

Urban mobility and land use policies are coordinated mainly through fluent daily interaction (informal, horizontal, case by case). Other option which is also quite common is the coordination through hierarchical structures (50.0%). Coordination through steering groups and the integration in the same department occurs in more than one third of the cities. Coordination through management tools is the option less used by the cities. None of the cities has indicated an absence of coordination between both areas.

### Key points / Conclusions

The most common way (62.5%) of coordinate mobility and land-use policies is through daily interaction (informal, horizontal, case by case), although other options such as coordination through hierarchical structures, the integration of both areas into the same department or formal coordination through steering groups are also relatively common.
Question number: 11 / Section: Governance and procedures

Question
Concerning coordination-alignment between different administrations (regional, national, European): is there any kind of collaborative process or structure in place with the following institutions? More than one answer is possible

Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbour City Councils</td>
<td>56.3%</td>
<td>9</td>
</tr>
<tr>
<td>Regional Government</td>
<td>50.0%</td>
<td>8</td>
</tr>
<tr>
<td>National Government</td>
<td>37.5%</td>
<td>6</td>
</tr>
<tr>
<td>European Commission</td>
<td>12.5%</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>12.5%</td>
<td>2</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>37.5%</td>
<td>6</td>
</tr>
</tbody>
</table>

Description of results
Most of the cities have some kind of collaborative process or cooperation structure in place with the neighbour city councils (56.3%) and the regional government (50.0%). Collaboration with the European Commission is rather uncommon (only two of the cities affirm that they have this kind of collaboration in place). Only two of the cities state that they do not have any kind of collaborative process or structure in place with any institution. Almost half of the cities point out that they have other collaborative processes apart from those proposed. Some of these additional institutions are:
- Agency for Regional Development
- Core Cities, Local Enterprise Partnership D2N2
- Regional Transport Consortium

Key points / Conclusions
Most of the cities have a collaborative process or structure in place with the neighbour city councils and the regional government. The coordination/collaboration with other institutions decreases with the hierarchical level of the institution, i.e. the higher the geographical coverage of the institution, the less relation with the city.
**Question number:** 12 / **Section:** Governance and procedures

**Question**

Is there any collaborative process in place with stakeholders (i.e. citizen associations, environmental associations, transport companies, etc.), such as stakeholder consultations, round tables, task forces, etc.?

**Graph/Table**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>12.5%</td>
<td>2</td>
</tr>
<tr>
<td>Yes. Please specify which kind of collaborative process and which stakeholders are involved</td>
<td>87.5%</td>
<td>14</td>
</tr>
</tbody>
</table>

**Description of results**

The vast majority of the cities (87.5%) point out that they have collaborative processes in place with stakeholders. The main comments received are shown below:

- Transport partnership executive and sub groups on specific topics (e.g. parking, highways, sustainable travel).
- That depends on the project type and the amount of the credit needed. It can range from collaboration in little project teams to bigger organisations with steering boards up to consultations of the parliament or the public by vote.
- Audiences to the General Mayor, General Councillors; prior public consultation via the Municipality's website (for the drafts of public Decisions submitted for approval of the City's General Council).
- In a city large and complex, there are a wide range of collaborative processes, including meetings between the Mayor and citizen associations, e.g. City Citizens, a Roads Task Force, and numerous stakeholder consultations e.g. recently for a new Road Safety Plan.
- Frequent consultations and strong partnership working.
- Partnership working at a range of levels, particularly project specific. Consultation on strategic objectives.
- In the process of the preparation and implementation of all documents (depending on the importance of the document more or less consultations) - stakeholders: professionals, journalists, etc.
- Regular meetings on a high level. Formal and informal consultation processes.
- Traffic policy with companies, citizens, industry, universities, etc.
- Chamber of Commerce
- Cyclist organisation.
- Mobility table (Parties, NGOs, neighbourhood associations...).
- Neighbourhood associations, cyclist groups, disabled people associations, universities, etc.

Key points / Conclusions

The vast majority of the cities carry out collaborative processes with stakeholders
Question number: 13 / Section: Governance and procedures

Question
How often do stakeholders directly participate in policy making?

Response options

<table>
<thead>
<tr>
<th>Citizen associations</th>
<th>Never</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Frequently</th>
<th>Very Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 %</td>
<td>6.67%</td>
<td>26.67%</td>
<td>53.33%</td>
<td>6.67%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Environmental associations</td>
<td>0 %</td>
<td>6.67%</td>
<td>33.33%</td>
<td>53.33%</td>
<td>6.67%</td>
</tr>
<tr>
<td>Transport companies</td>
<td>0 %</td>
<td>6.67%</td>
<td>6.67%</td>
<td>73.22%</td>
<td>13.33%</td>
</tr>
</tbody>
</table>

Description of results

In most of the cities, stakeholders have a frequent or very frequent participation in policy making. Transport companies are the stakeholders with the highest level of participation in policy making. 86.67% of the cities have a frequent or very frequent collaboration with transport companies. 66.67% of the cities have a frequent or very frequent collaboration with citizens associations. Likewise, 60% of the cities have a frequent or very frequent collaboration with environmental associations.

Cities have also pointed out the participation of other stakeholders. The list of the additional stakeholders highlighted by the cities is shown below:

- Health providers
- Educational providers
- Business engagement
- Bicycle associations
- Business organisations (Business Improvement Districts and Chamber of Commerce)
- Economy and trade associations (chamber of commerce, retail confederation)

Key points / Conclusions

Transport companies are the stakeholders that more frequently participate in policy making. Other important stakeholders such as citizen or environmental associations have also a significant participation, although the participation of transport companies is clearly predominant.
Question number: 14 / Section: Governance and procedures

Question
Does your city belong to any cities network/platform/association dealing with urban mobility? More than one answer is possible.

Graph/Table

<table>
<thead>
<tr>
<th>networks/platforms/associations</th>
<th>% cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVITAS</td>
<td>62.5%</td>
</tr>
<tr>
<td>POLIS</td>
<td>50.0%</td>
</tr>
<tr>
<td>COVENANT OF MAYORS</td>
<td>50.0%</td>
</tr>
<tr>
<td>EUROCITIES</td>
<td>43.8%</td>
</tr>
<tr>
<td>URBACT</td>
<td>12.5%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>31.3%</td>
</tr>
</tbody>
</table>

Description of results
CIVITAS is the network which has more cities associated (10 cities). Half of the cities belong to POLIS and COVENANT OF MAYORS. Almost half of the cities (43.8%) belong to EUROCITIES. Two of cities surveyed are members of URBACT. In average, cities belong to more than 2 of the mentioned networks. Cities have also point out that they are membership of other networks/platforms/associations. The additional networks highlighted by the cities are listed below.

- UITP.
- IMPACTS Europe.
- CIVINET.
- Cities for mobility.
- The mobility group (Bucharest).
- The Spanish network of smart cities.
- The Spanish network of digital cities.
- Urban collective transport association (A.T.U.C.)

Key points / Conclusions
Around half of the cities surveyed belong to at least one of the following networks: CIVITAS, POLIS, EUROCITIES and COVENANT OF MAYORS. In average, cities belong to more than 2 of the mentioned networks.
Question number: 15 / Section: Governance and procedures

Question:
To what degree do you find each of the following stages problematic in the delivery of sustainable urban mobility strategies?

<table>
<thead>
<tr>
<th>Stages</th>
<th>Not at all problematic</th>
<th>Not very problematic</th>
<th>Fairly problematic</th>
<th>Very problematic</th>
<th>Z-Score</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem/opportunity identification</td>
<td>3</td>
<td>10</td>
<td>2</td>
<td>0</td>
<td>1.73</td>
<td>15</td>
</tr>
<tr>
<td>Objective setting</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>1.87</td>
<td>15</td>
</tr>
<tr>
<td>Selection of proper indicators</td>
<td>1</td>
<td>4</td>
<td>9</td>
<td>1</td>
<td>2.67</td>
<td>15</td>
</tr>
<tr>
<td>Generation of possible policies or measures</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>2.93</td>
<td>15</td>
</tr>
<tr>
<td>Modelling</td>
<td>1</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>2.40</td>
<td>15</td>
</tr>
<tr>
<td>Appraisal against existing objectives/strategies</td>
<td>2</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>1.80</td>
<td>15</td>
</tr>
<tr>
<td>Stakeholder consultation</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>2.53</td>
<td>15</td>
</tr>
</tbody>
</table>
Description of results

A Z-score value has been defined to easily evaluate which are the most and less problematic stages. The formula of the Z-score is as follows:

\[
Z_{score} = \frac{0 \cdot \text{(Not at all problematic)} + 2 \cdot \text{(Not very problematic)} + 3 \cdot \text{(Fairly problematic)} + 5 \cdot \text{(Very problematic)}}{\text{number of responses}}
\]

The Z-score value changes between 0 (Not at all problematic) and 5 (very problematic). Higher and lower weights have been assigned to the extreme values (i.e. "Not at all problematic" and "very problematic") in order to clearly identify which are the more and less problematic stages.

There are four stages that present high Z-score values, these stages are: generation of possible policies and measures, selection of proper indicators, modelling and stakeholder consultation. One out of five cities considers the generation of possible measures or policies as very problematic and the majority of the cities (60%) consider the selection of proper indicators as fairly problematic. Additionally, almost half of the cities consider the stakeholder consultation stage as fairly problematic and the modelling stage is considered fairly problematic or very problematic by 40% of the cities. At least one of the cities considers the generation of possible measures or policies, the selection of proper indicators, modelling or consultation with stakeholders as very problematic stages.

The stages with the lowest Z-scores are appraisal against existing objectives/strategies, problem/opportunity identification and objective setting. Most of the cities consider these stages as not very problematic.

Key points / Conclusions

Most of the cities consider the generation of possible policies and measures, selection of proper indicators, modelling and stakeholder consultation stages as the most problematic stages. On the other hand, appraisal against existing objectives/strategies, problem/opportunity identification and objective setting are considered as the least problematic stages.
Question number: 16 / Section: Policy models / Planning and decision support tools

Question

How often are simulation models used in your city to evaluate the impact of future mobility policies?

Graph/Table

How often are simulation models used in your city to evaluate the impact of future mobility policies?

<table>
<thead>
<tr>
<th>Never</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Frequently</th>
<th>Very Frequently</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>16</td>
</tr>
</tbody>
</table>

Description of results

Most of the cities (62.50%) use simulation models frequently or very frequently to evaluate the impact of future mobility policies. Four of the cities use simulation models occasionally and three other cities rarely. Some of the cities have made additional comments about when models are used and some examples of policies that have been evaluated by using simulation models:

- Highway investment strategy, PT network development.
- LTS model, highway assignment models, public transport modelling through Railplan.
- Air quality, specific schemes, strategic transport models used to evaluate all relevant policy interventions.
- Strategic spatial plan, detailed spatial plans, implementing road projects.
- All major projects implying a notable change in transport infrastructure; examples: construction of a highway tunnel, design of an intersection following the construction of a new tramway link, redesign of a road in order to offer more space for cyclists and pedestrians, etc.
- Structure plan, Air Quality Scheme, mobility scheme
- Sustainable Urban Mobility Plan, Air Quality yearly status Local or general Mobility projects.
- Examples: mobility measures aiming to reduce NO2 levels, modification of existing infrastructure (new pedestrian areas, reduce road section, etc.) with the objective to reduce traffic levels.
- Access restriction to the city centre.
- Design of public transport stops
- Pedestrianisation of streets.

One of the cities points out that modelling is used only to assess the impact of infrastructure changes but not for policy development.

Key points / Conclusions

Most of the cities use simulation models frequently or very frequently to evaluate the impact of future mobility policies.
**Question number: 17 / Section: Policy models / Planning and decision support tools**

**Question**
Do you think simulation models are useful tools for the assessment of mobility policies?

**Graph/Table**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not know</td>
<td>12.5%</td>
<td>2</td>
</tr>
<tr>
<td>No</td>
<td>6.3%</td>
<td>1</td>
</tr>
<tr>
<td>Yes. Could you share with us any practical case in which you missed the availability of a simulation model to assess a particular mobility policy?</td>
<td>81.3%</td>
<td>13</td>
</tr>
</tbody>
</table>

**Description of results**

The vast majority of the cities (81.3%) consider simulation models as useful tools for the assessment of mobility policies. Only one of the cities considers that they are not useful. Two of the cities do not have clear opinion on whether these models are useful to evaluate mobility policies. Additionally some of the cities have indicated some examples of practical cases in which they missed the availability of simulation models:

- Parking policy, development control issues at major developments.
- Evaluate new infrastructure impacts: Specific example: Close one of the main roads through the city centre and build a new bridge to connect two roads.
- Estimation of cross-border traffic flows.

**Key points / Conclusions**
The vast majority of the cities consider the simulation models as useful tools for the assessment of mobility policies.
Question number: 18 / Section: Policy models / Planning and decision support tools

Question
Based on your experience, specify the degree in which the modelling results influence policy decisions.

Graph/Table

Based on your experience, specify the degree in which the modelling results influence policy decisions

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>They are usually not taken into account.</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>They are taken into account but other criteria usually prevail.</td>
<td>42.9%</td>
<td>6</td>
</tr>
<tr>
<td>They are an essential part of the decision-making process.</td>
<td>57.1%</td>
<td>8</td>
</tr>
</tbody>
</table>

Description of results
Half of the cities (57%) consider that the modelling results are an essential part of the decision-making process and the other half (43%) exposes that the results are taken into account but other criteria usually prevail. All of the cities agree that modelling results are taken into account to a greater or lesser extent.

Key points / Conclusions
Half of the cities consider that the modelling results are an essential part of the decision-making process, while for the other half simulation results are taken into account but other criteria usually prevail.
**Question number:** 19 / **Section:** Policy models / Planning and decision support tools

**Question**

In your opinion, which are the main areas for improvement in relation to urban mobility modelling? (e.g. availability & accuracy of input information, speed of calculation, facilitate policy makers interpretation, visualisation of the results, etc.)

**Graph/Table**

Not applicable

**Description of results**

The responses of the cities are shown below:

- More effective, efficient data collection. Skills shortage.
- Availability & accuracy of input information, accurate simulation of traffic flows in big and complex networks with regard to effects of over-saturation.
- Lack of funds to sustain related studies in a professional manner; open-view and vision of the changes in assembly; the management of change and decisions, including behavioural changes; a good communication and good perception of the city's community needs; the motivation of good results.
- Would agree these are important: availability & accuracy of input information, facilitate policy makers interpretation, visualisation of the results, and would also add cost.
- Availability and accuracy of input information.
- Availability and usability of modelling tools.
- Availability & accuracy of input information, too much literal interpretation of results.
- Flexibility, speed of calculation, facilitate policy makers interpretation, price.
- Better take into account the complex behaviour of individuals, better integrate non-motorised traffic, better integrate freight traffic.
- Models should be used more for exploration, for example scenario surveys.
- Availability & accuracy of input information, facilitate policy makers interpretation.
- Be able to feed the tool with data from different data sources (traffic, cameras, commercial activity, etc.), improve quality of input data without a cost increase, take into account metropolitan area when urban area is analysed, improve visualization of the results by previous defining the relevant indicators for the decision-making process.
- Availability & accuracy of input information.

**Key points / Conclusions**

Most of the cities agree that the availability and accuracy of input data is one of the main areas for improvement in relation to urban mobility modelling. Facilitate policy makers interpretation and the visualisation of the results is also pointed out as an important improvements. Other improvements such as integrate non-motorised traffic and freight traffic or be able to feed the tool with data from different data sources are also mentioned.
**Question number: 20 / Section: Policy models / Planning and decision support tools**

**Question**
In your opinion, which are the principal barriers models have to face in order to be positioned as an effective policy support tool? (e.g. reticence of policy makers, cost of implementation, reliability of the output data, etc.)

**Graph/Table**
Not applicable

**Description of results**
The responses of the cities are shown below:

- Robust data to ensure they are accurate/believable. Skilled modellers to accurately interpret outputs.
- Political weights in the process of decision making.
- Wrong evaluation of situations and of the main risk and negative factors; lack of funds for good and real inputs; a lack/insufficient communication between decident factors and local community.
- Cost of implementation, and reliability of the output data.
- Clearness of the results especially for non-experts.
- Lack of awareness, cost of operation.
- Cost of implementation, reliability of the output data, and quality of input data.
- Flexibility, speed of calculation, facilitate policy makers interpretation, price.
- Better take into account the complex behaviour of individuals, better integrate non-motorised traffic and better integrate freight traffic.
- Models are considered as a black box, more transparency is needed.
- Cost of implementation, reliability of the output data.
- Lend credibility to the models through real examples.
- Hard interpretation of the results.
- Simplified models are needed when a specific problem (micro scale) is evaluated. The modelling process of a whole city is very time/cost consuming.

**Key points / Conclusions**
Most of the cities agree that the cost of implementation and the reliability of the output data are important barriers to position models as an effective policy support tool. Some of the cities point out that efforts have to be done in order to facilitate the interpretation of the model results, paying special attention to non-experts.
4. Urban modeller questionnaire results

First, this section presents a list of the participant cities and the position held by the respondents. Next, a detailed description of the questionnaire results is provided.

4.1 Characterisation of the respondents

35 urban modeller questionnaires were sent to the cities. A total of 16 valid urban modeller questionnaires were obtained, i.e. the response ratio was 46%. Table 2 shows the complete list of the questionnaires received, including the name of the city and the country.

Table 2. Urban modeller questionnaires received.

<table>
<thead>
<tr>
<th>#</th>
<th>City</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amsterdam</td>
<td>Netherlands</td>
</tr>
<tr>
<td>2</td>
<td>Barcelona</td>
<td>Spain</td>
</tr>
<tr>
<td>3</td>
<td>Berlin</td>
<td>Germany</td>
</tr>
<tr>
<td>4</td>
<td>Brussels</td>
<td>Belgium</td>
</tr>
<tr>
<td>5</td>
<td>Budapest</td>
<td>Hungary</td>
</tr>
<tr>
<td>6</td>
<td>Burgos</td>
<td>Spain</td>
</tr>
<tr>
<td>7</td>
<td>León</td>
<td>Spain</td>
</tr>
<tr>
<td>8</td>
<td>Lisbon</td>
<td>Portugal</td>
</tr>
<tr>
<td>9</td>
<td>Ljubljana</td>
<td>Slovenia</td>
</tr>
<tr>
<td>10</td>
<td>London</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>11</td>
<td>Madrid</td>
<td>Spain</td>
</tr>
<tr>
<td>12</td>
<td>Milan</td>
<td>Italy</td>
</tr>
<tr>
<td>13</td>
<td>Santander</td>
<td>Spain</td>
</tr>
<tr>
<td>14</td>
<td>Valencia</td>
<td>Spain</td>
</tr>
<tr>
<td>15</td>
<td>Warsaw</td>
<td>Poland</td>
</tr>
<tr>
<td>16</td>
<td>Zurich</td>
<td>Switzerland</td>
</tr>
</tbody>
</table>

The different positions held by the respondents are enumerated below:

- Urban planner
- International project manager
- Advisor of Deputy Mayor for Mobility
- Head of Modelling and Simulation
- Head of Planning
- Mobility Planning Director
- Senior project manager
- Senior Adviser at the Department for Urban planning - responsible for traffic
- Project manager
- Transport engineer
- Environmental technician
- Coordinator of innovation
- Head of transportation
4.2 Questionnaire results

For each of the questions, a description sheet is provided, including 5 different sections:

- **Question number**: number of the question as it appears in the questionnaire.
- **Section**: name of the questionnaire section.
- **Question**: wording of the question.
- **Graph/table**: figures and tables summarising the results.
- **Description of the results**: brief description of the results obtained.
- **Key points/Conclusions**: relevant information extracted from the results.

The description sheets of the urban modellers questionnaire are shown below. Note that question 1 (personal contact details) is omitted in order to keep the respondents anonymity.
Question number: 2 / Section: Urban models

Question
Which travel demand model is used in your city? More than one answer is possible.

Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>TransCAD</td>
<td>18.8%</td>
<td>3</td>
</tr>
<tr>
<td>CUBE</td>
<td>12.5%</td>
<td>2</td>
</tr>
<tr>
<td>MATSim</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>VISUM</td>
<td>62.5%</td>
<td>10</td>
</tr>
<tr>
<td>EMME</td>
<td>18.8%</td>
<td>3</td>
</tr>
<tr>
<td>Home grown model</td>
<td>12.5%</td>
<td>2</td>
</tr>
<tr>
<td>No model is used / Policy judgement (qualitative)</td>
<td>6.3%</td>
<td>1</td>
</tr>
<tr>
<td>I don’t know</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>43.8%</td>
<td>7</td>
</tr>
</tbody>
</table>

Description of results
Most of the cities (62.5%) use VISUM as their travel demand model. TransCAD, CUBE and EMME are used by 10-20% of the cities. Two cities indicate that they use a home grown model and only one of the cities points out that they do not use any model. Additionally cities have pointed out other models that they use and some comments in relation with the models previously mentioned. The responses of the cities are shown below:
- AIMSUN
- VISSIM
- VISUM / EVA
- We are testing Visum and for Microsimulation we use AIMSUN
- Dinamiq
- ESTRAUS
- Railplan

Key points / Conclusions
VISUM is the most used travel demand model.
Question number: 3 / Section: Urban models

Question
Which land-use or land-use transport interaction (LUTI) model is used in your city? More than one answer is possible.

Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>UrbanSim</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>PECAS</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>MEPLAN</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>TRANUS</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>MUSSA</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>DELTA</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>DRAM/EMPAL</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>GIS based (e.g. UPLAN)</td>
<td>37.5%</td>
<td>6</td>
</tr>
<tr>
<td>Home grown model</td>
<td>12.5%</td>
<td>2</td>
</tr>
<tr>
<td>No model is used / Policy judgement</td>
<td>43.8%</td>
<td>7</td>
</tr>
<tr>
<td>(qualitative)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I don’t know</td>
<td>6.3%</td>
<td>1</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

Description of results
Half of the cities (43.8%) point out that they do not use land use models and the other half indicate that they use GIS based models or home grown models.

Key points / Conclusions
Only half of the cities use land-use models. The cities that use land-use models use GIS based models or home grown models.
Please select the correct statement about the integration between land-use and travel demand models:

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>They are totally integrated</td>
<td>25.0%</td>
<td>2</td>
</tr>
<tr>
<td>They are NOT integrated, both are used separately</td>
<td>25.0%</td>
<td>2</td>
</tr>
<tr>
<td>I don’t know</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>50.0%</td>
<td>4</td>
</tr>
</tbody>
</table>

Description of results

Among the eight cities that have explained that they use travel demand models and land-use models, only two of the cities points out that the models are totally integrated. Two of the cities mention that models are not integrated and are used separately. The rest of the cities (50%) have replied that the correct answer would be between “totally integrated” and “not integrated”. The comments of these cities are shown below:

- They are integrated in a process that uses some different software.
- The answer is between first and second.
- Kind of iterative process, check one of them and then the other.
- I think somewhere between the top two options.

Key points / Conclusions

In most of the cases transport demand models and land-use models are not totally integrated, although the results of each model are taken into account by the other.
Question number: 5 / Section: Urban models

Question
Which approach is considered by your travel demand model?

Graph/Table

![Pie chart showing the percentage of responses for different travel demand models.]

Which approach is considered by your travel demand model?

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip-based four-stage approach</td>
<td>66.7%</td>
<td>10</td>
</tr>
<tr>
<td>Tour-based four-stage approach</td>
<td>6.7%</td>
<td>1</td>
</tr>
<tr>
<td>Activity-based approach</td>
<td>6.7%</td>
<td>1</td>
</tr>
<tr>
<td>I don't know</td>
<td>6.7%</td>
<td>1</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>13.3%</td>
<td>2</td>
</tr>
</tbody>
</table>

Description of results
Trip-based four-stage approach is the most common used by the cities (10 out of 14). Tour-based four-stage approach and activity-based approach are used by only one city each. The rest of the cities provide additional answers:
- VISEVA
- 4-stage traffic model based on supply and demand

Key points / Conclusions
Travel demand models used by the cities present mostly trip-based four-stage approaches.
Question number: 6 / Section: Urban models

Question
How are the models developed?

Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial software</td>
<td>6.7%</td>
<td>1</td>
</tr>
<tr>
<td>Consultant contracts</td>
<td>20.0%</td>
<td>3</td>
</tr>
<tr>
<td>In-house modellers</td>
<td>13.3%</td>
<td>2</td>
</tr>
<tr>
<td>In-house + consultants</td>
<td>46.7%</td>
<td>7</td>
</tr>
<tr>
<td>I don't know</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>13.3%</td>
<td>2</td>
</tr>
</tbody>
</table>

Description of results
Half of the cities (46.7%) develop the models through in-house modellers plus consultant contracts. One out of five cities develops its models only through consultant contracts. Only one of the cities uses commercial software without modifications, and only two cities develop their models only with in-house modellers. Two of the cities provides a more accurate answers:

- “The travel demand model is made by in house model while the traffic assignments are made with commercial software”.
- “A mixture of commercial software, consultants and in-house. I believe that the strategy is currently for more to be done in-house”

Key points / Conclusions
Most of the cities develop their models with the help of external consultant experts (66.7%). Among these cities, 70 % of them also have their own personal working on the development of the models.
Question number: 7 / Section: Urban models

Question
How are the models used?

Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant contracts</td>
<td>6.7 %</td>
<td>1</td>
</tr>
<tr>
<td>In-house modellers</td>
<td>33.3 %</td>
<td>5</td>
</tr>
<tr>
<td>In-house + consultants</td>
<td>60.0 %</td>
<td>9</td>
</tr>
<tr>
<td>I don’t know</td>
<td>0.0 %</td>
<td>0</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>0.0 %</td>
<td>0</td>
</tr>
</tbody>
</table>

Description of results
In the vast majority of the cities (93.3%) models are managed by in-house modellers. Among these cities, 64.3% of them are additionally supported by external consultants. Only one of the cities has not in-house modellers who manage the models.

Key points / Conclusions
In-house modellers are usually in charge of the management of urban models, in most cases supported by external consultants.
Question number: 8 / Section: Urban models

Question
Which are the main sources of data used to define/calibrate/validate the simulation models? More than one answer is possible.

Graph/Table

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic counts</td>
<td>100.0%</td>
<td>15</td>
</tr>
<tr>
<td>Surveys</td>
<td>100.0%</td>
<td>15</td>
</tr>
<tr>
<td>Statistics (Regional, National or European (e.g. Eurostat)).</td>
<td>93.3%</td>
<td>14</td>
</tr>
<tr>
<td>Other data (non-conventional data, e.g. mobile phone data)</td>
<td>20.0%</td>
<td>3</td>
</tr>
</tbody>
</table>

Description of results
All the cities use traffic counts and surveys to define/calibrate/validate their simulation models. Almost all the cities (14/15) additionally use statistics from the regional, national or European institutions. Some of the cities additionally provide other sources of data that they usually use. These sources are:
- Specific surveys addressed to a concrete group of inhabitants.
- Cameras, inductive loops.
- Data from public bike services.

Key points / Conclusions
Traffic counts, surveys and statistics are the main sources of data usually used by the cities to define/calibrate/validate their simulation models. Additionally, other sources of data such as the information received from cameras, inductive loops or public bike services are also used.
**Question number**: 9 / **Section**: Stakeholders and policy makers

**Question**

How often do stakeholders (i.e. citizen associations, environmental associations, transport companies, etc.) directly participate in the design/definition/calibration of the models?

**Graph/Table**

<table>
<thead>
<tr>
<th>Frequency of participation</th>
<th>Never</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Frequently</th>
<th>Very Frequently</th>
<th>Z-score</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen associations</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0,62</td>
<td>13</td>
</tr>
<tr>
<td>Environmental associations</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>1,23</td>
<td>13</td>
</tr>
<tr>
<td>Transport companies</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>2,23</td>
<td>13</td>
</tr>
<tr>
<td>Other. Please specify the frequency of participation after the response using brackets, e.g. bicycle associations (Frequently)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Description of results

A Z-score value is calculated to easily identify the frequency of participation of the different stakeholders in the design/definition/calibration of the models. The formula of the Z-score is shown below:

$$Z_{score} = \frac{0 \cdot (Never) + 1 \cdot (Rarely) + 2 \cdot (Occasionally) + 3 \cdot (Frequently) + 4 \cdot (Very~Frequently)}{number~of~responses}$$

The Z-score value changes between 0 (Never) and 4 (Very frequently).

Transport companies are clearly the group of stakeholders with the highest level of participation in the construction of the models. Eight out of twelve cities point out that transport companies participate frequently in this task. Regarding environmental associations, half of the cities (46%) indicate that this group participates occasionally and one third of the cities (38.4%) point out that they never collaborate with environmental associations to construct the models. Most of the cities (8/13) remark that citizen associations never participate in this process. Only in one of the cities citizen associations participate frequently in model construction, while in another city they participate occasionally.

Some of the cities have additionally highlighted collaborations with other stakeholders:

- For the development of a new model we’ve got an advisory board with representatives from research units/universities, the chamber of commerce and trade, the transport companies, etc.
- Public transport organisers: City Transportation Administration (very frequently); public roads administration (occasionally)
- Bicycle associations (occasionally)

Key points / Conclusions

Transport companies usually participate in the design/definition/calibration of the models. However, other important associations such as environmental associations only participate occasionally and citizen associations participate rarely or never. Apart from the groups mentioned before, other stakeholders such as universities, bicycle associations and different department of the administration also participate to greater or lesser extent.
Question number: 10 / Section: Stakeholders and policy makers

Question

Please specify if the following policies/measures/schemes are taken into account by your models.

Graph/Table

- Traffic calming (e.g. narrower traffic lane, speed bumps, raised pedestrian crossings, etc.)
- Fostering cycling and walking (e.g. bicycle parking, extension of cycle tracks, expand pedestrian routes, etc.)
- Urban road charging (e.g. congestion pricing, environmental pricing, etc.)
- Promoting and improving collective transport (e.g. smart card without contact, fares, etc.)
- Access restriction for the most polluting vehicles
- Parking management (e.g. parking meters, a parking policy that favours residents, electric and small vehicles)
- Low-emissions and low-noise road vehicles
- Urban freight management (e.g. last mile transportation)
- Car-sharing
- Car-pooling
- Teleworking

- This policy has been modelled with our tool(s).
- This policy is currently not modelled but the tool(s) would be able to model it.
- This policy cannot be modelled with our tool(s).
Description of results

Most of the cities point out that the following policies or measures cannot be modelled with their tools: low-emissions and low-noise road vehicles, car-sharing, car-pooling and teleworking. Fostering cycling and walking and urban freight management are also policies that cannot be modelled by many cities (5 cities). The policies which have been modelled by the largest number of cities are promoting and improving collective transport (6 cities), traffic calming and parking management (5 cities). Access restriction for the most polluting vehicles, low-emissions and low-noise road vehicles, car-sharing, car-pooling and teleworking have only been modelled by one or two of the cities.

Key points / Conclusions

There are relevant urban mobility policies such as low-emissions and low-noise road vehicles, car-sharing, car-pooling and teleworking that cannot be modelled by most of the cities surveyed using their current tools. The policies which have been modelled by the largest number of cities are promoting and improving collective transport and parking management.

---

<table>
<thead>
<tr>
<th>Response options</th>
<th>This policy cannot be modelled with our tool(s)</th>
<th>This policy is currently not modelled but the tool(s) would be able to model it</th>
<th>This policy has been modelled with our tool(s)</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic calming (e.g. narrower traffic lane, speed bumps, raised pedestrian crossings, etc.)</td>
<td>1</td>
<td>8</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Fostering cycling and walking (e.g. bicycle parking, extension of cycle tracks, expand pedestrian routes, etc.)</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Urban road charging (e.g. congestion pricing, environmental pricing, etc.)</td>
<td>1</td>
<td>9</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Promoting and improving collective transport (e.g. smart card without contact, fares, etc.)</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Access restriction for the most polluting vehicles</td>
<td>3</td>
<td>8</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Parking management (e.g. parking meters, a parking policy that favours residents, electric and small vehicles)</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Low-emissions and low-noise road vehicles</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Urban freight management (e.g. last mile transportation)</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Car-sharing</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Car-pooling</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Teleworking</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>
**Question number: 11 / Section: Stakeholders and policy makers**

**Question**

Based on your experience, specify the degree in which the modelling results influence policy making.

**Graph/Table**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Percentage of response</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>They are usually not taken into account.</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>They are taken into account but other criteria usually prevail.</td>
<td>60.0%</td>
<td>9</td>
</tr>
<tr>
<td>They are an essential part of the decision-making process.</td>
<td>40.0%</td>
<td>6</td>
</tr>
</tbody>
</table>

**Description of results**

Most of the cities (60.0%) agree that the modelling results are taken into account in policy making but other criteria usually prevail. The rest of the cities consider modelling results as an essential part of the decision-making process.

**Key points / Conclusions**

All the cities take into account the modelling results in greater or lesser extent, although other criteria usually prevail.
**Question number: 12 / Section: Stakeholders and policy makers**

**Question**

In your opinion, which are the main areas for improvement in relation to urban mobility modelling? (e.g. availability & accuracy of input information, speed of calculation, visualisation of the results, etc.)

**Graph/Table**

Not Applicable

**Description of results**

The responses of the cities are shown below:

- Possibility of simulating scenarios that cannot be done in the reality or they are expensive to do, and seeking the best solution to a problem of mobility.
- Availability & accuracy of input information, accurate simulation of traffic flows in big and complex networks with regard to effects of over-saturation.
- Interface between GIS-data and traffic demand models.
- Availability & accuracy of input information, quantity of professionally smart experts.
- Availability of input information such as countings, surveys and population and land use data; difficulty of representing all urban aspects such as traffic lights system, main trips and roads utilisation, etc.; micro simulation only possible at a small scale.
- We need more and more to have an accuracy of traffic data, in order to calibrate our models. We would like to have the data continuously.
- 1) better description of trips and improving origin-destination matrix quality; 2) use of scenarios and forecasts with bandwiths (minimum-maximum scenario); 3) implementing tourist trips, because these are a major percentage of urban trips.
- Flexibility, speed of calculation, visualisation of the results, availability & accuracy of input information, regular monitoring of the situation.
- Presentation of the results.
- Availability of social and economic input information, accuracy relative to congestion modelling, development of intermodality.
- Availability of input information and easy way to use these data.
- Mainly input information.
- Data update.

**Key points / Conclusions**

Most of the cities highlight the availability & accuracy of input data (e.g. availability of population and land-use data, better description of trips, improve OD matrices quality) as one of the main areas for improvement in relation to urban mobility modelling. Some of the cities remark the importance of updating the data more regularly. Other specific improvements such as simulation of traffic flows in big and complex networks or the implementation of tourist trips are pointed out.
### Question number: 13 / Section: Stakeholders and policy makers

**Question**
In your opinion, which are the principal barriers models have to face in order to be positioned as an effective policy support tool? (e.g. reticence of policy makers, cost of implementation, reliability of the output data, etc.)

**Graph/Table**
Not Applicable

**Description of results**
The responses of the cities are shown below:

- The model simulation depends on the modeller’s skill and experience.
- Political weights in the process of decision making.
- The complexity of the tools and the results, the possibility of unwanted results and the acceptance of the methodology and the results, the willingness to pay for travel demand models.
- Cost of implementation, reliability of the output data, cost of software; reticence of policy makers.
- Availability of input data and correct adequacy to reality; small knowledge at Municipality and by stakeholders of models options and capability; difficulty of technical knowledge and personal ability to create and use the models in different situations.
- Reliability of the input data.
- 1) learning to cope with the uncertainty which is inherent to transport modelling; 2) high initial costs and long development and implementation time of improved models; 3) resisting the demand for ever increasing detail.
- Flexibility, price.
- Cost of implementation and upgrades.
- Reliability of the input data. Understanding of the limitations of models.
- Cost of implementation and reticence of some policy makers who are not familiar with the tools.
- Reliability of the input data.

**Key points / Conclusions**
Reliability of input and output data and the cost of implementation are highlighted by most of the cities as important barriers in order position models as an effective policy support tool. Some of the cities additionally remark the difficulty of having well qualified experts able to manage the tools in different situations.
Annex I. References

http://www.distillate.ac.uk/outputs/reports.php


Annex II. Questionnaires
Policy makers questionnaire
Welcome to the EUNOIA stakeholder questionnaire. The EUNOIA consortium sincerely appreciates your participation.

EUNOIA (Evolutive User-centric Networks for Intraurban Accessibility) is a research project funded under the European Union's Seventh Framework Programme. The goal of EUNOIA is to take advantage of the opportunities brought by smart city technologies and the most recent advances in complex systems science to develop new urban simulation models and ICT tools empowering city governments and their citizens to design better mobility policies. More information about the project is available at www.eunoia-project.eu.

The results of the survey will be very valuable for the EUNOIA project to assess the need for improvement in urban mobility policy modelling, and the contribution of all involved stakeholders will be highly appreciated in this regard. We trust that this is an interesting and useful exercise for you, and that you will benefit from the results of the study. At the end of the questionnaire we will ask if you would like to have a copy of the final report containing the conclusions of the research. We hope that the findings of this research will be interesting for your city.

Questionnaire information:
- This questionnaire will require approximately 15 minutes of your time.
- Your identity will not be revealed.
- The questionnaire will be analysed by EUNOIA partners only.
- Written reports and publications will be prepared based on the analysis of the questionnaires.

If you have any question or any problem answering the questionnaire, please don’t hesitate to contact us:

Contact person: Miguel Picornell (Nommon Solutions and Technologies)
E-mail: miguel.picornell@nommon.es
<table>
<thead>
<tr>
<th>Contact details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Contact details</strong></td>
</tr>
<tr>
<td>Name:</td>
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<tr>
<td>Organization:</td>
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<td>Position:</td>
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<td>City/Town:</td>
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<tr>
<td>State/Province:</td>
</tr>
<tr>
<td>Country:</td>
</tr>
</tbody>
</table>
Sustainable urban mobility encompasses three main aspects: environmental sustainability, social welfare and economic efficiency. Within each of these three areas, a set of specific objectives can be defined. Some examples of objectives are shown in the table below.

<table>
<thead>
<tr>
<th>Economic</th>
<th>Social</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve transport system efficiency</td>
<td>Minimise risk of accidents</td>
<td>Reduce global warming emissions</td>
</tr>
<tr>
<td>Improve transport system integration</td>
<td>Support community cohesion</td>
<td>Reduce air pollution emissions</td>
</tr>
<tr>
<td>Minimise energy costs, particularly petroleum imports</td>
<td>Support physical fitness</td>
<td>Minimise transport facility land use</td>
</tr>
</tbody>
</table>

Considering the previous explanation please respond to the next questions:

2. Has your city established a specific list of objectives related to sustainable urban mobility?
   - [ ] No, there is not a specific list
   - [x] No, there is not a specific list but some mobility objectives are taken into account in other areas such as energy or air quality
   - [ ] Yes, there is a specific list of sustainable urban mobility objectives

3. Which documents do formally establish the main urban mobility objectives of your city? More than one answer is possible.
   - [ ] Local air quality strategy
   - [ ] Local energy use & climate change strategy
   - [ ] Local transport plan / Local mobility plan / Sustainable urban mobility plan / or similar
   - [ ] Other (please specify)

4. Could you share with us the three most important urban mobility objectives of your city?

   [ ]
   
   [ ]
   
   [ ]
Indicators are a useful tool to control and monitor processes. This questionnaire focuses on two types of indicators: outcome indicators and intermediate indicators. Outcome indicators measure progress towards an objective. Intermediate indicators provide information about the transport system (mode share, bus punctuality, etc.). In some cases, intermediate indicators can be used to calculate (or obtain a proxy of) outcome indicators. An example of the relation between objectives, outcome indicators and intermediate indicators is shown in the figure below.

For example, the mode share itself does not provide direct information about the quantity of NOx emissions, but if private vehicle use decreases, a reduction of NOx emissions would be expected.

Considering the previous explanation please respond to the next questions:

5. Does your city have a specific list of outcome indicators?

- No, there is not any list of indicators
- There is a list of indicators, but there is not distinction between outcome and intermediate indicators
- There is a list of outcome indicators but the relation with the corresponding objectives is not clear
- There is a specific list of outcome indicators clearly related with the objectives

Please indicate below the document in which these indicators are specified
6. Does your city have a specific list of intermediate indicators?

- No, there is not any list of indicators
- There is a list of indicators, but there is not distinction between outcome and intermediate indicators
- There is a list of intermediate indicators but the relation with the outcome indicators is not clear
- There is a specific list of intermediate indicators clearly related with the outcome indicators

Please indicate below the document in which these indicators are specified

7. Do you use (even if in an informal way) any kind of comparative international indicator system about sustainable urban mobility?

- No
- Yes (Please indicate below which one/s)

No
8. Which of the following policies/measures related to urban mobility are implemented in your city? Please indicate the degree of implementation

<table>
<thead>
<tr>
<th>Policy</th>
<th>Not implemented</th>
<th>Implementation is planned</th>
<th>Partially implemented / Implementation in progress</th>
<th>High degree of implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic calming (e.g. narrower traffic lane, speed bumps, raised pedestrian crossings, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fostering cycling and walking (e.g. bicycle parking, extension of cycle tracks, expand pedestrian routes, etc.)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-emissions and low-noise road vehicles</td>
<td></td>
<td></td>
<td></td>
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</tr>
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<tr>
<td>Car-sharing</td>
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</tbody>
</table>
### EUNOIA Stakeholder Consultation

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car-pooling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fostering teleworking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other. Please specify the degree of implementation after the response using brackets, e.g. transport-on-demand scheme (Implementation is planned)
Section 4: Governance and procedures

9. Which department(s) is (are) in charge of urban mobility policies?

10. At local level: which kind of integration/coordination exists between mobility and land-use policy areas? More than one answer is possible

- None
- Fluent daily interaction (informal, horizontal, case by case)
- Coordination through hierarchical structures (“Councillors Board”)
- Formal coordination through some management tools (indicator systems)
- Formal coordination through some steering group
- Integration in the same department
- Other (please specify)

11. Concerning coordination-alignment between different administrations (regional, national, European): is there any kind of collaborative process or structure in place with the following institutions? More than one answer is possible

- Neighbour City Councils
- Regional Government
- National Government
- European Commission
- None
- Other (please specify)
12. Is there any collaborative process in place with stakeholders (i.e. citizen associations, environmental associations, transport companies, etc.), such as stakeholder consultations, round tables, task forces, etc.?

- No
- Yes. Please specify which kind of collaborative process and which stakeholders are involved

13. How often do stakeholders directly participate in policy making?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Frequently</th>
<th>Very Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen associations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental associations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other. Please specify the frequency of participation of the stakeholder using brackets, e.g. bicycle associations (Rarely).

14. Does your city belong to any cities network/platform/association dealing with urban mobility? More than one answer is possible

- CIVITAS
- POLIS
- URBACT
- EUROCITIES
- Covenant of Mayors
- Other (please specify)
15. To what degree do you find each of the following stages problematic in the delivery of sustainable urban mobility strategies?

<table>
<thead>
<tr>
<th>Stage</th>
<th>Not at all problematic</th>
<th>Not very problematic</th>
<th>Fairly problematic</th>
<th>Very problematic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem/opportunity identification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objective setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selection of proper indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation of possible policies or measures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appraisal against existing objectives/strategies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stakeholder consultation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Urban simulation models are tools that enable virtual experimentation allowing the prediction of the impact of new policies and facilitate participatory processes for collaborative decision making with stakeholders. The figure below shows an imaginary example of how a set of policies is analysed with an imaginary model.

Considering the previous explanation please respond to the next questions:

16. How often are simulation models used in your city to evaluate the impact of future mobility policies?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Never</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Frequently</th>
<th>Very Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please specify some examples (if any) of policies in your city that have been evaluated using models.
17. Do you think simulation models are useful tools for the assessment of mobility policies?

- I do not know
- No
- Yes. Could you share with us any practical case in which you missed the availability of a simulation model to assess a particular mobility policy?

18. Based on your experience, specify the degree in which the modelling results influence policy decisions

- They are usually not taken into account.
- They are taken into account but other criteria usually prevail.
- They are an essential part of the decision-making process.

19. In your opinion, which are the main areas for improvement in relation to urban mobility modelling? (e.g. availability & accuracy of input information, speed of calculation, facilitate policy-makers interpretation, visualisation of the results, etc.)

20. In your opinion, which are the principal barriers models have to face in order to be positioned as an effective policy support tool? (e.g. reticence of policy-makers, cost of implementation, reliability of the output data, etc.)
21. Thank you again for your participation and contribution to the EUNOIA stakeholder consultation!!

Please indicate below if ...

☐ I would not mind if researchers contact me to collaborate in further studies related with the project.

☐ I would like to receive a copy of the EUNOIA technical report analysing the survey results.

If you have chosen any of the previous answers please specify an e-mail account to contact you.
Urban modeller questionnaire
Welcome to the EUNOIA stakeholder questionnaire. The EUNOIA consortium sincerely appreciates your participation.

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The results of the survey will be very valuable for the EUNOIA project to assess the need for improvement in urban mobility policy modelling, and the contribution of all involved stakeholders will be highly appreciated in this regard. We trust that this is an interesting and useful exercise for you, and that you will benefit from the results of the study. At the end of the questionnaire we will ask if you would like to have a copy of the final report containing the conclusions of the research. We hope that the findings of this research will be interesting for your city.

Questionnaire information:
- This questionnaire will require approximately 10-15 minutes of your time.
- Your identity will not be revealed.
- The questionnaire will be analysed by EUNOIA partners only.
- Written reports and publications will be prepared based on the analysis of the questionnaires.

If you have any question or any problem answering the questionnaire, please don't hesitate to contact us:

Contact person: Miguel Picornell (Nommon Solutions and Technologies)
E-mail: miguel.picornell@nommon.es
**1. Contact details**

<table>
<thead>
<tr>
<th>Name:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization:</td>
<td></td>
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<tr>
<td>Position:</td>
<td></td>
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<tr>
<td>City/Town:</td>
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<tr>
<td>State/Province:</td>
<td></td>
</tr>
<tr>
<td>Country:</td>
<td></td>
</tr>
</tbody>
</table>
Section 1: Urban models

2. Which travel demand model is used in your city? More than one answer is possible.

- TransCAD
- CUBE
- MATSim
- VISUM
- EMME
- Home grown model
- No model is used / Policy judgement (qualitative)
- I don't know
- Other (please specify)
3. Which land-use or land-use transport interaction (LUTI) model is used in your city? More than one answer is possible.

- UrbanSim
- PECAS
- MEPLAN
- TRANUS
- MUSSA
- DELTA
- DRAM/EMPAL
- GIS based (e.g. UPLAN)
- Home grown model
- No model is used / Policy judgement (qualitative)
- I don't know
- Other (please specify)
4. Which land-use or land-use transport interaction (LUTI) model is used in your city?  
More than one answer is possible.

- UrbanSim
- PECAS
- MEPLAN
- TRANUS
- MUSSA
- DELTA
- DRAM/EMPAL
- GIS based (e.g. UPLAN)
- Home grown model
- No model is used / Policy judgement (qualitative)
- I don't know
- Other (please specify)

[ ] Other (please specify)
Section 1: Urban models

5. Please select the correct statement about the integration between land-use and travel demand models:
   - They are totally integrated
   - They are NOT integrated, both are used separately
   - I don't know
   - Other (please specify)

6. Which approach is considered by your travel demand model?
   - Trip-based four-stage approach
   - Tour-based four-stage approach
   - Activity-based approach
   - I don't know
   - Other (please specify)

7. How are the models developed?
   - Commercial software
   - Consultant contracts
   - In-house modellers
   - In-house + consultants
   - I don't know
   - Other (please specify)
8. How are the models used?
- Consultant contracts
- In-house modellers
- In-house + consultants
- I don't know
- Other (please specify)

9. Which are the main sources of data used to define/calibrate/validate the simulation models? More than one answer is possible.
- Traffic counts
- Surveys
- Statistics (Regional, National or European (e.g. Eurostat)).
- Other data (non-conventional data, e.g. mobile phone data)
### Section 2: Stakeholders and policy-makers

#### 10. How often do stakeholders (i.e. citizen associations, environmental associations, transport companies, etc.) directly participate in the design/definition/calibration of the models?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Frequently</th>
<th>Very Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen associations</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Environmental</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
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</tr>
<tr>
<td>associations</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Transport companies</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Other. Please specify the frequency of participation after the response using brackets, e.g. bicycle associations (Frequently)
11. Please specify if the following policies/measures/schemes are taken into account by your models.

<table>
<thead>
<tr>
<th>Policy/Measure/Scheme</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic calming (e.g. narrower traffic lane, speed bumps, raised pedestrian crossings, etc.)</td>
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</tbody>
</table>
12. Based on your experience, specify the degree in which the modelling results influence policy-making.

- They are usually not taken into account.
- They are taken into account but other criteria usually prevail.
- They are an essential part of the decision-making process.

13. In your opinion, which are the main areas for improvement in relation to urban mobility modelling? (e.g. availability & accuracy of input information, speed of calculation, visualisation of the results, etc.)

14. In your opinion, which are the principal barriers models have to face in order to be positioned as an effective policy support tool? (e.g. reticence of policy-makers, cost of implementation, reliability of the output data, etc.)
15. Thank you again for your participation and contribution to the EUNOIA stakeholder consultation!!

Please indicate below if ...

☐ I would not mind if researchers contact to me to collaborate in further studies related with the project.

☐ I would like to receive a copy of the EUNOIA technical report analysing the survey results.

If you have chosen any of the previous answers please specify an e-mail account to contact you