

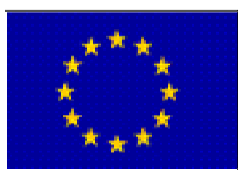
# Urban Transport Benchmarking Initiative Year Two



## Annex A1.1

### Common Indicator Discussion Paper and Data Collection Guide

July 2005



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## **1. INTRODUCTION**

This document represents Annex A1.1 of the Urban Transport Benchmarking Initiative's year two final reports.

Section 2 of this annex contains the data guide which participants received to assist them in the collection of the common indicators which contains full definitions for all of the indicators collected. Section 3 includes a copy of the common indicator discussion paper which was circulated to the participants in the initiative following the Year Two Launch Workshop, held in Brussels on September 28<sup>th</sup> 2005. This paper compiled the feedback received from participants in the initiative in order to set out the common indicators for year two of the benchmarking initiative. Finally, section 4 contains the review of other transport benchmarking projects which has been updated from year one of the Urban Transport Benchmarking Initiative to contain recent initiatives and others not encountered when the project was first launched.

## 2. COMMON INDICATOR DATA COLLECTION GUIDE

This document aims to support the collection of common indicator data for year two of the Urban Transport Benchmarking Initiative. The majority of the common indicators successfully collected in the first year of the initiative have been retained and in many cases the definitions have been revised for greater clarity. The indicators which were harder to collect in the first year of the initiative, and could not be improved through better definition, have been removed from the list of common indicators.

The data collected in year one of the Urban Transport Benchmarking Initiative permitted a number of comparisons and the identification of general trends to be made. It was suggested at the Year Two Launch Workshop and in subsequent feedback that the data collected would benefit from greater context, rather than solely being a quantitative data set. Taking these points on board, the common indicators have been revised in order to broaden the scope of the information collected.

Below are a few general notes which are relevant to the collection of the data:

- The project team acknowledges that differences in the definitions and collection methods used to obtain data are certain to vary between cities. It is therefore very important that where pre-existing definitions for data indicators are used (as opposed to those stated in this document) the cities define what the figures mean; otherwise the data collected will be of no use.
- Please support data referring to geographical area (e.g. Surface area of the city and region) with maps showing the area being benchmarked. This provides useful context when analysing the data and also enables someone reading the reports to visualise the areas under consideration.
- The study year for the project is 2003 (last year it was 2002). It is recognised that, for participants involved in year one of the initiative, it will be a case of updating the data collected last year, rather than re-collecting all of the information again.
- The project team is aware that everyone will have varying levels of data. Where cities do not have data for 2003 please supply data for the available year. Where time series data is available please make it available and state which year each figure applies to.
- When submitting data please use the data collection form supplied by the project team and direct any enquiries relating to data collection issues to [benchmarking@ttr-ltd.com](mailto:benchmarking@ttr-ltd.com).

The remainder of this document is segregated into the sub-topics of the common indicators.

## **2.1 The Region and the City**

### a) Area of Region

The size in square Kilometres (Km<sup>2</sup>) of the regional administrative area. Please name the regional area that is being measured and, where relevant, include the names of the administrative districts that are being measured. Please also provide a map illustrating the area being measured.

### b) Area of City

The size in square Kilometres (Km<sup>2</sup>) of the urban administrative area (i.e. not including the suburbs). Please name the area that is being measured and where relevant include the names of the administrative districts that are contained in the area. Please also provide a map illustrating the area being measured.

### c) Population of region

This indicator is defined as the number of residents in the regional administrative area and the figures must relate to the area measured in indicator 1.1.

### d) Population of city

Please state the number of residents in the urban administrative area. These figures must relate to the same area as measured in indicator 1.2, because the figures will be used to calculate the average population density of the urban administrative area.

### e) Geographical context

Please provide a commentary on the area being measured. This should provide information about the area that has been chosen as the focus for the benchmarking exercise in terms of; the key features of the area covered, local socio-economic issues, transport policy context and any significant planned developments. If relevant please include pictures/plans to support this commentary.

## 2.2 Transport Network

### a) Fixed urban transport routes

Please state the total one-way length (in kilometres) of fixed urban transport routes (e.g. infrastructure) in the urbanised area of the city. This should be recorded for each mode separately and should include the length of road/rail/metro and tram networks.

### b) Flexible urban transport routes

Please record the total one-way length (in kilometres) of flexible urban transport routes in the urbanised area of the city. This should be recorded for each mode individually and should include bus & trolleybus and ferry route lengths.

### c) Public transport priority

This is the total one-way length (in kilometres) of bus lanes and segregated right of way for trams. Where bus lanes are shared with other vehicles such as cycles and taxis this should be noted and each mode should be recorded separately.

### d) Cycling space in the city

Please state the total one-way length (in kilometres) of the cycle network in the city and, if possible, please separate the data according to the one-way length of:

- Cycle lanes (on-road, immediately next to the carriageway, segregated by painted lines).
- On road cycle tracks (immediately next to the carriageway, segregated by separate pavement).
- Off road cycle tracks (immediately next to the carriageway, using existing pavement).
- Routes (off-road and away from the carriageway).

## 2.3 The Region and the City

### a) Private motorised vehicle ownership

Please provide data relating to the number of 2 and 4 wheeled private motorised vehicles owned by residents of the urban administrative area in 2003. Data should be submitted separately for both modes.

### b) Public transport fleet

Please state the total number of individual vehicles (for multiple units please count the number of coaches) for each public transport mode (bus/minibus/train/metro/tram/light rail/other-please list) operating in the urban administrative area during 2003.

### c) Accessibility of public transport vehicles

Please state the percentage of train, bus, tram and metro vehicles that were wheelchair accessible in the urban administrative area in 2003.

### d) Accessibility of public transport infrastructure

Please record the percentage of train, bus, tram and metro stops/stations that were wheelchair accessible in the urban administrative area in 2003.

## 2.4 Travel Characteristics

### a) Average speed of private transport

Please state the average speed of all motorised modes (in kilometres per hour) during the peak hour (the busiest daily transport hour e.g. 08:00-09:00).

### b) Average speed public transport

Please record the average speed of public transport modes (buses/trains/metros/trams) during the peak hour (the busiest daily transport hour e.g. 08:00-09:00). Please respond separately for each mode.

### c) Service intervals

This indicator asks for the typical service interval, in minutes, of the most frequent service for each public transport mode (buses, trains, metros and trams) during the peak hour (busiest daily transport hour e.g. 08:00-09:00). Please record each mode separately.

### d) Modal split – weekday

Please record the total number of one-way journeys by mode (walk/cycle/public transport/taxi/car/motorcycle) on an average weekday in the urban administrative area in 2003. Please state the number of trips (and not the modal split percentages) in order that the figures can be used for other statistical tests in the data analysis process.

Please state which trips are measured for the modal split figures. For example; are all trips included or are trips made on a regular basis or to places of work and education the ones being counted?

### e) Modal split – weekend

Please record the total number of daily one-way journeys by mode (walk/cycle/public transport/taxi/car/motorcycle) on a Saturday in the urban administrative area. Please state the number of trips (and not the modal split percentages) in order that the figures can be used for other statistical tests in the data analysis process.

### f) Total passengers carried by public

Please record the total number of passengers carried by all public transport modes (buses/trains/metro vehicles/trams) in 2003. Please separate your responses by mode.

g) Total passenger kilometres travelled

Please record the total distance of passenger kilometres travelled by all public transport modes (buses/trains/metro vehicles/trams) in 2003. Please record the passenger-distance travelled by each mode separately.

h) Total public transport farebox revenue

This indicator asks for the total farebox revenue (income from ticket sales), in euros, from all public transport modes (buses/trains/metros/trams) in 2003. Please separate the farebox revenue for each mode of public transport.

## 2.5 The Economy

### a) Cost of a single public transport trip

This indicator is the cost, in euros, of a single 1km and 5km public transport trip to the CBD (by mode) to a user in 2003. Please separate responses by the mode of public transport (bus/train/metro/tram).

### b) Cost of an annual public transport pass

Please state the cost, in euros, of an annual season pass for a 1km and 5km and 10km daily trip to the CBD (by mode) to a user in 2003. Please separate responses by the mode of public transport (bus/train/metro/tram).

### c) Cost of car use

This indicator records the average cost (in euros) of running a car for 15000km per year. If possible please include the total cost of petrol, tyres, servicing costs, replacement parts, parking and tolls in the calculations and state which have been included. Please also provide the cost of 1 litre of unleaded (95 octane) petrol and 1 litre of diesel in December 2004 and the cost of one hour's car parking in the central business district of your city in December 2004.

### d) Investment in public transport

Please state the amount of capital expenditure, in euros, by governments and operators on public transport, by mode, averaged over the last 5 years (from 1999-2003). Please give figures in € per annum for each public transport mode.

### e) Investment in roads

This indicator requires the capital expenditure, in euros, by governments and operators on road construction averaged over the last 5 years (from 1999-2003). Please give figures in € per annum.

### f) Gross Domestic Product (GDP) per capita

Please record the local figure for GDP per capita (per head of population) for 2003. If this is not possible then please use regional or national data. Figures should be displayed in €.

### g) Employment

This indicator is the number of people in employment and the number of jobs (total positions held) in the urban administrative area in 2003.

## 2.6 Road Safety

### a) Road Safety

Please state the number of injuries and fatalities on the road network in the urban administrative area during 2003. Please record these figures separately.

### **3. COMMON INDICATOR DISCUSSION PAPER**

The following discussion paper was circulated to participants in October 2004 in order to obtain views and feedback relating to the selection of common indicators for year two of the Urban Transport Benchmarking Initiative.

#### **3.1 Feedback received regarding the common indicators used in year one**

The following feedback was received from brainstorming sessions of the Year Two Launch Workshop held in Brussels on September 28<sup>th</sup> 2004, the year one working group reports and the experiences of the project team responsible for analysing the common indicators from year one of the Urban Transport Benchmarking Initiative.

The key issues identified in relation to the common indicators used in year one of the Urban Transport Benchmarking Initiative can be summarised as follows:

- The common indicators were generally useful, but could have been improved if some of the indicators were defined more clearly.
- Prioritisation of the common indicators would enable comparisons to be made more easily, by using data which is readily available.
- The common indicators could be reduced in number, with the least effective indicators from year one of the initiative being removed.
- The indicators relating to average service intervals in the peak hour and average vehicle occupancy were cited as examples of particularly difficult indicators to collect and analyse effectively.
- The indicators which focused upon the investment in public transport and roads in the urban administrative area were also identified as problematic. Many participants did not feel that they were able to provide accurate data for these indicators and in some cases confidentiality issues prevented them from doing so.

The aim of this discussion paper is therefore to review the year one indicators and suggest revisions, removals and additions which will improve the quality of the collected data and add greater context to the quantitative figures that have been collected. The remainder of the discussion paper therefore focuses upon ways to improve the indicators from year one and puts forward a proposed set of common indicators for year two of the Urban Transport Benchmarking Initiative.

#### **3.2 The Region and the City**

Five items of data were collected by every city involved in year one of the initiative and these are listed in Table 3.1.

Problems encountered with the data submitted for “Region and City” indicators included:

- Confusion regarding the area of the city which later became problematic when the population density of the city was calculated.
- Cities which had submitted both regional and city level figures later submitted data without explaining which of the geographic areas the data related to, which also made the analysis process more confusing.

**Table 3.1: Region and City indicators for year two of the benchmarking initiative**

N <sup>o</sup>	Indicator	Description
1.1	<b>Area of Region</b>	The size in square Kilometres (Km <sup>2</sup> ) of the regional administrative area. Please name the regional area that is being measured and where relevant include the names of the administrative districts that are being measured.
1.2	<b>Area of City</b>	The size in square Kilometres (Km <sup>2</sup> ) of the urban administrative area (i.e. not including the suburbs). Please name the area that is being measured and where relevant include the names of the administrative districts that are being measured.
1.3	<b>Population of region</b>	This indicator is defined as the number of residents in the region and need only be collected if the population differs from that given for indicator 1.4.
1.4	<b>Population of city</b>	This indicator is defined as the number of residents in the urban administrative area.
1.5	<b>Geography</b>	The geography indicator aims to obtain a general description of the key geographical features which have an influence upon transport in the city. Examples include Steep gradients, major rivers and extensive waterways.

All of the cities involved in the Urban Transport Benchmarking Initiative during its first year were able to provide data for these indicators and therefore no changes have been proposed for the second year of the initiative. The study year for the second year of the Urban Transport Benchmarking Initiative should be 2003 (because last year data was collected for 2002) and therefore each of these indicators relates to this study year.

In addition the reference area for each of the indicators is the urban administrative area. Where data submitted relates to another geographic area it is important that this is specified clearly.

### 3.3 Transport Network

For the transport network segment of the common indicators the participants were asked to collect data for four indicators which related to the size of the urban transport network in their city which are listed in table 3.2. The data collected in year one of the initiative for this section of the common indicators was reasonably straightforward. A small issue with the Transport Network data during year one of the project was due to poor definition of the indicator which measured the length of public transport network for each mode, because it did not distinguish

between routes and infrastructure. In addition it was not stated whether the figures should refer to two-way length or one-way length of transport routes.

**Table 3.2: Transport Network indicators from year one of the benchmarking initiative**

Indicator	Description
<b>Cycle paths</b>	The total length of segregated, dedicated cycle paths, in kilometres, in the urban administrative area for the year 2002.
<b>Public Transport Network</b>	The total length (in Kilometres) of the public transport networks, by mode, in the urban administrative area for 2002. Please record the total length of bus, tram, train, metro and tram networks in the urban administrative area.
<b>Roads</b>	The total length of road network in the urban administrative area for the study year of 2002. Please recode the figures in Kilometres.
<b>Public Transport Priority</b>	The total length of bus lanes, segregated tramways and segregated right of way for trams. Where bus lanes are shared with other vehicles such as cycles and taxis this should be noted. Please record each mode separately.

The suggested solution to the problem encountered with the transport network indicators during year one of the initiative involves redefining the indicators in order to:

- Establish that all route lengths are one-way to avoid double counting.
- Distinguish between the length of infrastructure and routes operated.

The infrastructure data is unlikely to change significantly over the course of the Urban Transport Benchmarking Initiative, the length of routes operated may change from year to year, but the length of infrastructure will probably be relatively static. It is therefore suggested that the cities could simply update any data that has changed from study year 2002 to study year 2003 when submitting their common indicator data. The revised indicators could be defined as displayed in Table 3.3:

**Table 3.3: Revised Transport Network indicators**

N <sup>o</sup>	Indicator	Description
2.1	<b>Fixed Urban Transport Routes</b>	The total one-way length of fixed urban transport routes (e.g. infrastructure) in the urbanised area of the city. To include cycle paths and the length of road/rail/metro/tram networks.
2.2	<b>Flexible Urban Transport Routes</b>	The total one-way length of flexible urban transport routes in the urbanised area of the city. To include total bus & trolleybus/ferry route lengths.
2.3	<b>Public Transport Priority</b>	The total length of bus lanes and segregated right of way for trams. Where bus lanes are shared with other vehicles such as cycles and taxis this should be noted.

### 3.4 Fleet Composition

The fleet composition data indicators collected in the first year of the Urban Transport Benchmarking Initiative were well collected by participants, although some definition issues created confusion over how to record the number of train, metro and tram vehicles which could have made the data less comparable. Participants collected data for the number of vehicles (carriages) that operated in the city for each public transport mode. In some cases the number of multiple units was submitted and thus the data did not accurately reflect the situation of each city. While most participants were able to submit good data for the number of cars registered, not all cities distinguished between cars and motorcycles. Only a small number of cities were able to provide separate figures for the number of cars and motorcycles and it is therefore likely that some figures relating to car ownership also included motorcycle ownership data. The indicators collected are described in Table 3.4.

**Table 3.4: Fleet Composition Indicators**

Indicator	Description
<b>Car and Motorcycle Ownership</b>	The number of cars and the number of motorcycles registered in the urban administrative area in 2002.
<b>Public Transport Fleet</b>	The total number of individual vehicles (NOT multiple units) for each public transport mode (bus/minibus/train/metro/tram/light rail/other-please list) operating in the administrative area during 2002.
<b>Accessibility</b>	The percentage of public transport vehicles which are accessible for wheelchair users.

In order to refine these indicators the definitions have been updated as shown in Table 3.5. As with the previous sections participants need only update their data where there have been changes between the study years of 2002 and 2003.

**Table 3.5: Suggested revisions to Fleet Composition Indicators**

N <sup>o</sup>	Indicator	Description
3.1	<b>Private motorised vehicle ownership</b>	Data should relate to the number of 2 and 4 wheeled private motorised vehicles owned by residents of the urban administrative area. Data should be submitted separately for both modes.
3.2	<b>Public Transport Fleet</b>	The total number of individual vehicles ( <u>for multiple units please count the number of coaches</u> ) for each public transport mode (bus/minibus/train/metro/tram/light rail/other-please list) operating in the urban administrative area during 2003.
3.3	<b>Accessibility of public transport vehicles</b>	The percentage of bus, tram and metro vehicles that are wheelchair accessible in the urbanised area and/or the metropolitan/regional area.
3.4	<b>Accessibility of public transport infrastructure</b>	The percentage of bus, tram and metro stops/stations that are wheelchair accessible in the urbanised area and/or the metropolitan/regional area.

### 3.5 Travel Characteristics

The travel characteristics section of the common indicators proved to be more problematic in terms of the data collected and was less successfully analysed than other sections of the common indicators. Data collected for service intervals and vehicle occupancy was difficult to compare, because of the poor definition of the indicator which meant that variable data was collected for the participating cities. The five indicators collected for the travel characteristics section of the benchmarking initiative are listed in Table 3.6.

**Table 3.6: Travel Characteristics indicators**

Indicator	Description
<b>Average speed private transport</b>	The average speed of cars and motorcycles (in kilometres per hour) during the peak hour (the busiest daily transport hour e.g. 8:00-9:00).
<b>Average speed public transport</b>	The average speed of public transport modes (buses/trains/metro vehicles/trams) during the peak hour (the busiest daily transport hour e.g. 8:00-9:00).
<b>Service Intervals</b>	The typical service intervals, in minutes, for each public transport mode (buses, trains, metro vehicles and trams) during the peak hour (busiest daily transport hour).
<b>Modal Split</b>	The total number of daily one-way journeys by mode (walk/cycle/public transport/taxi/car/motorcycle) in the urban administrative area. Please supply data for whatever level of data is available, but ensure that data is quantified in person trips per day by mode.
<b>Vehicle Occupancy</b>	The average vehicle occupancy for each public transport mode in the urban administrative area during the peak hour (busiest daily transport hour). This can be calculated by dividing passenger kilometres by place kilometres for each of the modes (passenger Km/place Km by mode).

It is suggested that the indicators are re-defined to improve the comparability of collected data. The indicators covering the average speed of private and public transport modes were generally well collected, but not all cities were able to distinguish between the speed of cars and motorcycles. In reality these figures are unlikely to vary much during the peak hour when traffic flows would usually be high, so during year two of the benchmarking initiative it is suggested that these figures are collected together (e.g. average speed of all private motorised modes during the peak hour).

Poor definition of the service interval indicator made the submitted data difficult to compare. In order to simplify this indicator a new definition has been put forward in table 3.7. The modal split figures were very well collected by participants in the first year of the Urban Transport Benchmarking Initiative. To build upon this success it is suggested that in the second year of the initiative a distinction could be made between weekday and weekend modal share figures to see if any differences are evident.

The final suggestion for refining the Travel Characteristics section of the common indicators relates to the vehicle occupancy figures collected in the first year of the Urban Transport

Benchmarking Initiative. The poor definition of the indicator made it difficult to compare the submitted data. Instead it is proposed that data regarding the number of passengers carried by mode per annum and the total length of public transport passenger trips per annum:

**Table 3.7: Suggested revisions to the Travel Characteristics indicators**

<b>N°</b>	<b>Indicator</b>	<b>Description</b>
<b>4.1</b>	<b>Average speed private transport</b>	The average speed of all motorised modes (in kilometres per hour) during the peak hour (the busiest daily transport hour e.g. 8:00-9:00).
<b>4.2</b>	<b>Average speed public transport</b>	The average speed of public transport modes (buses/trains/metro vehicles/trams) during the peak hour (the busiest daily transport hour e.g. 8:00-9:00).
<b>4.3</b>	<b>Service Intervals</b>	The typical service interval, in minutes, of the <u>most</u> frequent service for each public transport mode (buses, trains, metro vehicles and trams) during the peak hour (busiest daily transport hour e.g. 8:00-9:00).
<b>4.4</b>	<b>Modal Split – weekday</b>	The total number of one-way journeys by mode (walk/cycle/public transport/taxi/car/motorcycle) on a weekday in the urban administrative area.
<b>4.5</b>	<b>Modal Split – weekend</b>	The total number of daily one-way journeys by mode (walk/cycle/public transport/taxi/car/motorcycle) on a <u>Saturday</u> in the urban administrative area.
<b>4.6</b>	<b>Passengers carried by public transport</b>	The total number of passengers carried by all public transport modes (buses/trains/metro vehicles/trams) in 2003.
<b>4.7</b>	<b>Passenger Km travelled</b>	The total distance of passenger kilometres travelled by all public transport modes (buses/trains/metro vehicles/trams) in 2003.
<b>4.8</b>	<b>Total public transport farebox revenue</b>	The total amount of farebox revenue for all public transport modes (buses/trains/metro vehicles/trams) in 2003.

### 3.6 The Economy

Data from The Economy section of the common indicators was reasonably well collected, although data for investment in roads and public transport proved difficult for many participants to collect. This was primarily attributed to issues of data confidentiality and also stems from the fact that many of the participants were only able to produce data for their own organisations. In addition the data relating to the cost of car use was difficult to collect and has been removed from the indicators for year two. Instead the project team will seek to use national data to make a more generalised comparison

The indicators collected in the economy section of the Urban Transport Benchmarking Initiative are listed in Table 3.8.

**Table 3.8: The Economy Indicators**

<b>Indicator</b>	<b>Description</b>
<b>Cost of car use</b>	The average cost in € of car use to a private car user. Please try to distinguish between the fixed costs and the variable costs per annum. This indicator can be based upon regional or national data.
<b>Cost of public transport</b>	The average cost of public transport (by mode) to a user in 2002 by giving the cost of a typical monthly season ticket (in €) and the cost of a typical single urban trip per kilometre (in €). Please give the figures by mode where there are significant differences in cost.
<b>Investment in public transport</b>	The capital expenditure by governments and operators on public transport, by mode, averaged over the last 5 years (from 1997-2002). Please give figures in € per annum for each public transport mode.
<b>Investment in Roads</b>	The capital expenditure by governments and operators on roads, averaged over the last 5 years (1997-2002). Please give figures in € per annum.
<b>Gross Domestic Product</b>	Use local figures to provide the GDP per capita (head of population) for 2002. If this is not possible then please use regional or national data. Figures should be displayed in €.
<b>Employment</b>	The percentage of the urban administrative areas' resident population currently employed.

To refine the data collected for the economy indicators some redefinition has been suggested and is illustrated in Table 3.9. During the process of data collection in year one of the project, some participants misunderstood whether the employment figures related to resident population or working population should be clarified. While most participants were able to supply figures for the percentage of the working population that are in employment, it would be more desirable to obtain data that indicates the number of people that reside in the urban administrative area that are in employment. In addition it would be very useful to know the number of jobs in the urban administrative area, because this could be used to infer the amount of commuting that takes place in each city.

The figures for Gross Domestic Product per capita were also very useful, although it would be more desirable if a more accurate indication of average wealth could be used. It is proposed that the measure of GDP per capita will therefore remain unchanged for year two of the initiative. The project team will attempt to find existing data for the average household income and average disposable household income in each of the participating cities. If this data is readily available for your city it would be very helpful if you could submit it along with the GDP per capita data requested.

The project team will also attempt to find readily comparable data relating to the cost of car use at a city/national level in order that comparisons can be made with public transport use. This aspect of year one was particularly difficult and, although it would be very useful to collect such figures for the Urban Transport Benchmarking Initiative, it may prove difficult because of the complexity of obtaining accurate data for the costs of car use in different countries. In any case if all of the participating cities could continue to try and provide some supporting data for the cost

of car use this would be very useful. As a result the indicator has been retained for year two of the benchmarking initiative.

**Table 3.9: Suggested revisions to the Economy indicators**

N <sup>o</sup>	Indicator	Description
5.1	<b>Cost of a single public transport trip</b>	The cost of a single 1km and 5km public transport trip to the CBD (by mode) to a user in 2003.
5.2	<b>Cost of an annual public transport pass</b>	The cost of an annual season pass for a 1km and 5km daily trip to the CBD (by mode) to a user in 2003.
5.3	<b>Cost of car use</b>	The average cost (in €) of running a car for 15000km each year. Please also include the cost of 1 litre of unleaded (95 octane) petrol and the cost of one hour's car parking in the central business district of your city.
5.4	<b>Investment in public transport</b>	The capital expenditure by governments and operators on public transport, by mode, averaged over the last 5 years (from 1998-2003). Please give figures in € per annum for each public transport mode.
5.5	<b>Investment in Roads</b>	The capital expenditure by governments and operators on road construction, by mode, averaged over the last 5 years (from 1998-2003). Please give figures in € per annum.
5.6	<b>Gross Domestic Product</b>	Local GDP per capita (head of population) for 2003. If this is not possible then please use regional or national data. Figures should be displayed in €.
5.7	<b>Employment</b>	Please state the number of people in employment <u>and</u> the number of jobs in the in the urban administrative area in 2003.

### 3.7 Road Safety

The road safety indicators collected during year one of the initiative were very useful, with the majority of cities providing data for the number of deaths and injuries on the road network each year. As shown by Table 3.10 this indicator should remain one of the common indicators for year two of the Urban Transport Benchmarking Initiative.

**Table 3.10: Suggested revisions to the Economy indicators**

N <sup>o</sup>	Indicator	Description
6.1	<b>Road Safety</b>	The number of injuries <u>and</u> deaths on the road network in 2003. Please report the figures separately.

### 3.8 Environment

The data collected for the air quality indicator was very incomparable, largely because of the different methods of data collection and the fact that air quality itself varies on a daily basis. The

difficulties in making accurate comparisons between the air quality figures collected in different cities means that it is proposed that these data will not be collected during year two of the Urban Transport Benchmarking Initiative.

### **3.8 Conclusions and Proposed Common Indicators for year two of the initiative**

The common indicators from year one of the Urban Transport Benchmarking Initiative have proved to be a useful means of making generalised comparisons of the urban transport situations in cities across Europe. Based upon the feedback received from participants and the lessons learned during the process of organising the collection and analysis of the common indicators in the first year of the project it has been possible to recommend a range of improvements to the data indicators for Urban Transport Benchmarking Year Two.

The proposed common indicators for year two of the benchmarking initiative are summarised in Table 3.11 (below). Any comments or suggested changes to the indicators should be submitted by e-mail to the project team at [benchmarking@ttr-ltd.com](mailto:benchmarking@ttr-ltd.com) no later than November 5th 2004. Following this a finalised version of the common indicators will be circulated along with a data collection form to assist the submission of data.

**Table 3.11: Proposed Year Two Common Indicators**

N <sup>o</sup>	Indicator	Description
1.1	<b>Area of Region</b>	The size in square Kilometres (Km <sup>2</sup> ) of the regional administrative area. Please name the regional area that is being measured and where relevant include the names of the administrative districts that are being measured.
1.2	<b>Area of City</b>	The size in square Kilometres (Km <sup>2</sup> ) of the urban administrative area (i.e. not including the suburbs). Please name the area that is being measured and where relevant include the names of the administrative districts that are being measured.
1.3	<b>Population of region</b>	This indicator is defined as the number of residents in the region and need only be collected if the population differs from that given for indicator 1.4.
1.4	<b>Population of city</b>	This indicator is defined as the number of residents in the urban administrative area.
1.5	<b>Geography</b>	The geography indicator aims to obtain a general description of the key geographical features which have an influence upon transport in the city. Examples include Steep gradients, major rivers and extensive waterways.
2.1	<b>Fixed Urban Transport Routes</b>	The total one-way length of fixed urban transport routes (e.g. infrastructure) in the urbanised area of the city. To include cycle paths and the length of road/rail/metro/tram networks.
2.2	<b>Flexible Urban Transport Routes</b>	The total one-way length of flexible urban transport routes in the urbanised area of the city. To include total bus & trolleybus/ferry route lengths.
2.3	<b>Public Transport Priority</b>	The total length of bus lanes and segregated right of way for trams. Where bus lanes are shared with other vehicles such as cycles and taxis this should be noted.
3.1	<b>Private motorised vehicle ownership</b>	Data should relate to the number of 2 and 4 wheeled private motorised vehicles owned by residents of the urban administrative area. Data should be submitted separately for both modes.
3.2	<b>Public Transport Fleet</b>	The total number of individual vehicles (for multiple units please count the number of coaches) for each public transport mode (bus/minibus/train/metro/tram/light rail/other-please list) operating in the urban administrative area during 2003.
3.3	<b>Accessibility of public transport vehicles</b>	The percentage of bus, tram and metro vehicles that are wheelchair accessible in the urbanised area and/or the metropolitan/regional area.
3.4	<b>Accessibility of public transport infrastructure</b>	The percentage of bus, tram and metro stops/stations that are wheelchair accessible in the urbanised area and/or the metropolitan/regional area.
4.1	<b>Average speed private transport</b>	The average speed of all motorised modes (in kilometres per hour) during the peak hour (the busiest daily transport hour e.g. 8:00-9:00).

<b>4.2</b>	<b>Average speed public transport</b>	The average speed of public transport modes (buses/trains/metro vehicles/trams) during the peak hour (the busiest daily transport hour e.g. 8:00-9:00).
<b>4.3</b>	<b>Service Intervals</b>	The typical service interval, in minutes, of the <u>most</u> frequent service for each public transport mode (buses, trains, metro vehicles and trams) during the peak hour (busiest daily transport hour e.g. 8:00-9:00).
<b>4.4</b>	<b>Modal Split – weekday</b>	The total number of one-way journeys by mode (walk/cycle/public transport/taxi/car/motorcycle) on a weekday in the urban administrative area.
<b>4.5</b>	<b>Modal Split – weekend</b>	The total number of daily one-way journeys by mode (walk/cycle/public transport/taxi/car/motorcycle) on a Saturday in the urban administrative area.
<b>4.6</b>	<b>Passengers carried by public transport</b>	The total number of passengers carried by all public transport modes (buses/trains/metro vehicles/trams) in 2003.
<b>4.7</b>	<b>Passenger Km travelled</b>	The total distance of passenger kilometres travelled by all public transport modes (buses/trains/metro vehicles/trams) in 2003.
<b>4.8</b>	<b>Total public transport farebox revenue</b>	The total amount of farebox revenue for all public transport modes (buses/trains/metro vehicles/trams) in 2003.
<b>5.1</b>	<b>Cost of a single public transport trip</b>	The cost of a single 1km and 5km public transport trip to the CBD (by mode) to a user in 2003.
<b>5.2</b>	<b>Cost of an annual public transport pass</b>	The cost of an annual season pass for a 1km and 5km daily trip to the CBD (by mode) to a user in 2003.
<b>5.3</b>	<b>Cost of car use</b>	The average cost (in €) of running a car for 15000km each year. Please also include the cost of 1 litre of unleaded (95 octane) petrol and the cost of one hour's car parking in the central business district of your city.
<b>5.4</b>	<b>Investment in public transport</b>	The capital expenditure by governments and operators on public transport, by mode, averaged over the last 5 years (from 1998-2003). Please give figures in € per annum for each public transport mode.
<b>5.5</b>	<b>Investment in Roads</b>	The capital expenditure by governments and operators on road construction, by mode, averaged over the last 5 years (from 1998-2003). Please give figures in € per annum.
<b>5.6</b>	<b>Gross Domestic Product</b>	Local GDP per capita (head of population) for 2003. If this is not possible then please use regional or national data. Figures should be displayed in €.
<b>5.7</b>	<b>Employment</b>	Please state the number of people in employment <u>and</u> the number of jobs in the in the urban administrative area in 2003.
<b>6.1</b>	<b>Road Safety</b>	The number of injuries <u>and</u> deaths on the road network in 2003. Please report the figures separately.

## 4. REVIEW OF PREVIOUS BENCHMARKING INITIATIVES

The Urban Transport Benchmarking Initiative has built upon the experience of the two previous Citizen's Network Benchmarking Initiatives which together ran from 1998 until 2002. In addition, there have been many other transport benchmarking projects and this document provides details of previous benchmarking initiatives.

### 4.1 Benchmarking European Sustainable Transport (BEST)<sup>1</sup>

BEST is a Thematic Network which has been reviewing benchmarking practices in a number of transport sectors. The six BEST conferences have been aimed at raising the profile of benchmarking for the transport sector via the use of presentations and reports from various contributors who have experience of the benchmarking process. Until its commencement in October 2000 there had been little research into how benchmarking could work for the transport sector. In particular the BEST project aimed to explore the potential for benchmarking techniques to be adapted to assist in the future implementation of sustainable transport policies across the EU. The three main objectives of the initiative are:

- To produce specific recommendations on the development of benchmarking as a practical tool to assist the European Commission, Member States and Accession Countries in effectively implementing sustainable transport policies in Europe.
- To create an innovative dynamic of exchange of experience between the different transport sectors and sub-sectors.
- To build consensus, at a European level, on the key requirements for a successful benchmarking process, and the benefits of applying benchmarking in the transport sector

The indicators reviewed by BEST represent the recommendations which emanated from the BEST conferences, most notably conference 3, which aimed to highlight the most effective and practicable criteria for successful transport benchmarking. The findings of the BEST project were very useful in establishing the indicators and processes for the Urban Transport Benchmarking Initiative.

### 4.2 Benchmarking Public Transport Emissions and Energy Use (BESTRANS)<sup>2</sup>

The aim of the BESTRANS project is the creation of an internal and external benchmarking methodology for energy and emission performance in the urban public transport sector and it follows up the RUBENS project. This methodology is then to be tested by a benchmarking exercise with European public transport operators. This project is also an exercise in awareness-raising, because despite a large number of energy saving and emissions related good practices,

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<sup>1</sup> BEST web reference: <http://www.besttransport.org>

<sup>2</sup> BESTRANS website: <http://www.tis.pt/proj/bestrans/index.htm>

the lack of a systematic approach to management and benchmarking in the sector means that the best practices are rarely shared.

The indicators used in the BESTRANS project focus particularly upon the efficiency, energy costs, average travel speeds and extent of route prioritisation for buses. The findings of the BESTRANS study were particularly relevant to the Urban Transport Benchmarking Initiative, because of the close links with the project's aim to develop more sustainable urban transport systems and promote alternative transport modes.

### **4.3 Commission for Integrated Transport (CFIT) – EU Best Practice in Integrated Transport Delivery<sup>3</sup>**

The Commission for Integrated Transport's study aimed to compare the UK's integrated transport delivery with that of other EU countries. The project aimed mainly to establish the progress achieved in:

- Reducing congestion without impinging upon economic competitiveness.
- Improving road safety, especially for children, pedestrian and cyclists.
- Reducing the environmental fallout of transport.
- Creating a more inclusive society.

The analyses all took place at the national scale and were largely a means of comparing the performance of the transport systems of EU cities. The datasets themselves were therefore incomparable with those collected by the Urban Transport Benchmarking Initiative, although may in future provide useful comparisons at a national level should this be required.

### **4.4 Citizen's Network Benchmarking Initiative<sup>4</sup>**

This project forms the basis for the current European Commission benchmarking exercise and it is therefore important to avoid repeating what has already been achieved by the Citizen's Network. The Citizen's Network initiative was actually two projects; an initial pilot project which ran from 1998 to 1999, the success of which prompted the European Commission to fund an expanded initiative in 2001. The three main questions which the indicators were seeking to answer are:

- How do people travel? What transport services do people prefer and how well is the system meeting these requirements?
- How accessible is the transport system? How congested are the roads? What information is available to motorist and transport users?
- What are the costs of transport? What is the impact of transport on the environment? How safe is it to travel?

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<sup>3</sup> Commission for Integrated Transport web reference: <http://www.cfit.gov.uk/>

<sup>4</sup> Citizen's Network Web reference: <http://www.eltis.org/benchmarking/>

The majority of the indicators collected by the Urban Transport Benchmarking Initiative have been based upon those collected by the Citizen's Network Benchmarking Initiative in order to allow comparisons to be drawn between the two schemes.

#### **4.5 CoMET & NOVA – Benchmarking of global Metro Systems<sup>5</sup>**

CoMET and NOVA are two different, but related, projects which aim to compare the urban transport systems of various cities from around the world. This involved using insight taken from other metro systems in order to attempt to improve internal working cultures and more specifically to improve on service levels. The initial step of these studies began in 1982 as a trilateral study between Paris, Hamburg and London. The CoMET benchmarking group began in earnest in 1994 and while the NOVA group has spun-off from the CoMET benchmarking group and is currently comparing medium sized metro systems. The CoMET and NOVA schemes have attracted cities from all over the world, not just in Europe and include the three global cities of London, New York and Tokyo.

The CoMET/NOVA projects are based around a set of core Key Performance Indicators (KPIs) from which best practices are established and then transferred among the group in the form of case studies. The indicators used in the CoMET/NOVA projects are focused mainly upon issues central to collective passenger transport. In addition the recommendations made in Adeney and Self's (2001) presentation for the 2<sup>nd</sup> BEST conference for the successful exchange of best practices have also been very useful.

#### **4.6 Danish Ministry for Environment: US Study Tour<sup>6</sup>**

This study tour to the US and Canada by the Danish Research Institute aimed to learn about performance planning and performance indicators used in the areas of transportation and the environment. The report is focused mainly upon the practices which have been adopted by the USA and Canada in order to integrate environmental and sustainability issues into the sphere of transportation. The indicators which the study was based upon are to be found in appendix B and appear to be focused upon very specific issues. The indicators relating to emissions and energy were of specific interest to the relevant working group involved in this benchmarking project. Beyond that there is little more the report had to offer the current benchmarking initiative owing to its focus upon the USA and Canada.

#### **4.7 ECMT Urban Travel Survey<sup>7</sup>**

As part of the European Council of Ministers for Transport (ECMT) and the Organisation for Economic Co-operation and Development's (OECD) 3 year project on "Implementing Sustainable Urban Travel Policies" an urban travel survey was undertaken involving 168 cities

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<sup>5</sup> CoMET/NOVA web reference: <http://155.198.91.3/rtsc/html/projectsCurrent/pts.htm> NB: This site under construction. See also the BEST website, particularly the section on conference 2, for William Adeney and John Self's presentation notes at: <http://www.besttransport.org/conference02/Adeney2.pdf>

<sup>6</sup> Document web reference: [http://www.dmu.dk/1\\_viden/2\\_Publikationer/3\\_arbrapporter/rapporter/AR148.pdf](http://www.dmu.dk/1_viden/2_Publikationer/3_arbrapporter/rapporter/AR148.pdf)

<sup>7</sup> ECMT Urban Travel Survey web reference: <http://www1.oecd.org/cem/UrbTrav/overview.htm>

from 32 different countries. This took place between 1999 and 2000 with the collaboration of the French transport institute CERTU. The survey took the form of a questionnaire which used two common indicator questions (population and employment) before asking questions about the traffic network in general. These questions focused upon several aspects of public transport provision, network capacities, trip patterns, the environment and travel safety. Finally, several questions were geared towards the policies which have already been implemented and those planned to be introduced to improve transport systems in the city.

The data which has been collected by the surveys is reviewed in the final report which is available at the Urban Travel Survey website. The approach of the ECMT travel survey was very influential in the process of defining indicators for the Urban Transport Benchmarking Initiative.

#### **4.8 EMTA Barometer<sup>8</sup>**

The European Metropolitan Transport Authorities (EMTA) Barometer involves 15 of the 26 metropolitan areas which are currently members of the association. The Barometer was designed to provide information on the public transport systems of the participant cities, therefore enabling comparisons to be made. The data refers to the year 2000, although it is stated that future versions of the Barometer study will use updated data and be harmonised in future versions.

The EMTA Barometer is based around three main areas:

- Basic facts of each metropolitan area (population, surface area etc)
- Public transport system data (supply, demand and quality)
- Financial data related to fares, revenues, expenditures, coverage and investments.

The main indicators used in the Barometer study provided useful guidance to the Urban Transport Benchmarking Initiative's selection of both common and thematic indicators.

#### **4.9 EQUIP – Extending the Quality of Public Transport<sup>9</sup>**

The EQUIP project had two core objectives:

- To develop a toolbox in the form of a handbook for the self assessment of the internal performance of local public transport operators.
- To ensure that potential users of the handbook are aware of its existence by means of awareness raising and liaison activities.

The project can therefore be seen as a similar sort of initiative as BEST (described above), in that a best practice review was followed by the dissemination of ideas and the promotion of benchmarking via the use of an information network. The initial phase of the EQUIP project involved a literature review of many EU projects and publications and the indicators that were

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<sup>8</sup> EMTA web reference: <http://www.emta.com/>

<sup>9</sup> EQUIP web reference: <http://www.europrojects.ie/equip/.com>

used in the project were useful for the definition of thematic indicators used by the public transport themed working groups.

#### **4.10 International Air Transport Association (IATA) – Part of BEST<sup>10</sup>**

This benchmarking project undertaken by the IATA was a case study presented at the second BEST conference. It involved comparing the positions of many airports in relation to strategic goals, regional competitors and industry leaders in order to gain a firmer understanding of overall performance levels. The study took place in 1999 and involved 57 airports and 60,000 passengers were surveyed. Copenhagen came out on top of the list of world airports and as a result was able to share its best practices with other airports. The main focus of the study was customer satisfaction and therefore was of little relevance to the current EC benchmarking initiative, although the Behavioural and Social Issues in Public Transport Working Group did focus upon customer satisfaction.

#### **4.11 International Railway Benchmarking – Part of “Benchmarking of Benchmarking” (BOB)<sup>11</sup>**

The BOB project was set up as part of the Benchmarking of Environmentally Sustainable Transport (BEST) initiative in order to test the recommendations of the BEST network. The railway working group collected data upon punctuality and contractual relationships between authorities and operators and focused particularly upon the conditions for passenger growth and institutional organisation. National railway operators predominantly from Europe were involved in the benchmarking working group, with some taking on observer status. There was also input from the Japanese national railway operator Kyushu as a non-European “best practice” railway.

The accelerated timescale of the BOB working groups meant that only a few indicators were subject to data collection and analyses. These focused primarily upon delays and punctuality and also to a lesser extent upon the rail infrastructure. The indicators were generally useful for the public transport working groups, but because data has been collected at the national or regional level there was limited scope for applying the findings to the current Urban Transport Benchmarking Initiative.

#### **4.12 Metis-Conseil Benchmarking – Part of BEST<sup>12</sup>**

This project was a benchmarking exercise undertaken in the Emilia-Romagna region of Italy and was also a BEST case study. The study was conducted by the Metis-Conseil consulting group and focused upon benchmarking the performance of public bus and train transport modes. As a

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<sup>10</sup> IATA Web reference: <http://www.besttransport.org/conference02/Morris2.pdf>

<sup>11</sup> BOB web reference: <http://www.besttransport.org/cadrebobwhat.html>

<sup>12</sup> Access via BEST website at: <http://www.besttransport.org/conference02/Carmeli2.pdf>

result the study and its findings are likely to interest the collective passenger transport working group.

The indicators used are intensely focused upon the costing and efficiency of the region's public transport network. The findings of the study were applied with tangible improvements in technical performance and economic results at both company and regional level owing to cost-cutting, increased productivity, revenue development and quality upgrading.

#### **4.13 Millennium Cities Database & Mobility in Cities Database<sup>13</sup>**

The Millennium Cities project involved the compilation of a database of data from 100 cities in order to compare their transport systems. The project was completed by UITP in conjunction with Murdoch University, Australia and focused particularly upon the issues of sustainability and public transport and therefore is highly relevant to the new EC benchmarking initiative. Data was collected for over 200 indicators for the cities and was for the year 1995. The indicators covered a range of the working group themes and are likely to provide useful common indicators as well being relevant to collective passenger transport, emissions and energy and demand management. The Millennium Cities database is now being extended by UITP and is being developed into the "Mobility in Cities Database", the summary results of which were published on the UITP website in June 2005<sup>14</sup>.

#### **4.14 NATCYP – Benchmarking National Cycling Policies<sup>15</sup>**

The NATCYP benchmarking initiative was another of the BEST network's case studies which involved a national level comparison of cycling policies which involved the Czech Republic, England, Finland, The Netherlands and Scotland. The indicators can be found in appendix B and they focus wholly upon cycling, with some small consideration for the intermodality of cycling.

The project was successful as an awareness raising exercise, because the priority of national cycling policies was previously low. In addition the development and delivery of national cycling policies was given much needed publicity, raising ministerial awareness of cycling's potential, particularly with regard to sustainable transport policies. This project has greatly influenced the cycling working group's selection of data indicators.

#### **4.15 NPF National Policy Frameworks for Urban Transport**

The National Policy Frameworks for Urban Transport project began in January of 2003. The project is being managed by a consortium of three partners including ISIS (Innovative Transport Solutions) of France, Dorsch Consult of Germany and the Institute for Transport Studies UK at Leeds University. The duration of the project is three years and it is therefore currently in its

<sup>13</sup> UITP Millennium Cities Database, available at <http://www.uitp.com/project/index4.htm>

<sup>14</sup> UITP Mobility in Cities Database II, available at <http://www.uitp.com/publications/MCD2/>.

<sup>15</sup> NATCYP web reference: [http://www.velomondial.net/page\\_display.asp?pid=14](http://www.velomondial.net/page_display.asp?pid=14)

infancy. The indicators appear to have been decided and data collection is due to begin in September 2003. The statistics are being obtained at national level for all urban areas, although no findings have been published to date.

#### **4.16 Parking Benchmarking Initiative<sup>16</sup>**

The Parking Benchmarking Initiative (PBI) is operated by TRL, a UK consultancy, and it is currently in its sixth year. The initiative involves members from 40 local authorities in the UK and enables the organisations involved to compare their data with that of others. The Initiative provides its local authority members with an opportunity to demonstrate that they are achieving or seeking to achieve best value in the operation of their parking service and is overseen by a Steering Group of local authorities who seek to ensure that the Initiative meets the needs of its members. The data being collected in year six of the initiative remains the same as previous years in order to enable members to compare their operational data from successive years.

#### **4.17 Scandinavian BEST<sup>17</sup>**

BEST, the Scandinavian Benchmarking Survey has been running since 1999 and was set up by the Stockholm public transport authority “SL”. It initially involved the four Nordic capitals of Oslo, Stockholm, Copenhagen and Helsinki and took the form of a survey of 36 questions based on 10 categories carried out in spring 2000. The idea was that for each of the 10 categories the city which displayed the best results would present a success story at a seminar. The initial problem with this approach was that the only “winning” cities were Helsinki and Copenhagen. All the cities did give presentations though and as a result four Common Interest Groups were chosen and each city is responsible for one of them. They are listed below:

- Integrated Public Transport and City Planning – Copenhagen
- Information at Traffic Disruptions - Helsinki
- Complaint Management - Oslo
- Systematic Branding - Stockholm

The second “round” of Scandinavian BEST included Turin, Munich, Barcelona and Vienna who were found through the UITP network. The project was not overtly quantitative in its approach and sought to provide the involved public transport authorities with a cost effective, usable benchmark forum which was task-oriented. The weaknesses of the project arose from differences in the expectations of stakeholders and varying company attitudes towards secrecy. Some worthwhile recommendations stemming from the project are that an agreement should be made concerning a press policy and that “less is more” when it comes to the number indicators and of participating cities.

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<sup>16</sup> Parking benchmarking Initiative, available at: [www.trl-pbi.co.uk](http://www.trl-pbi.co.uk)

<sup>17</sup> Scandinavian BEST web reference: <http://best2005.net/>

#### **4.18 TERM – Transport and Environment Reporting Mechanism<sup>18</sup>**

TERM was a European Environment Agency (EEA) project which used indicators to track transport and environment integration in the EU. The project is the first of its kind to specifically consider the forthcoming transport needs of the New Accession States and the environmental impact of an enlarged EU transport network. The TERM indicators provide ready made data sets for national level indicators. The TERM data have also been used to identify trends which are occurring in the New Accession States and the EU15, although the data for accession countries is somewhat limited.

#### **4.19 World Cities Research<sup>19</sup>**

The World Cities Research was undertaken for the UK's Commission for Integrated Transport (CFIT), which considered the common issues facing the world's principle cities and the range of responses provoked by these issues. The reports produced consider the range of policy responses to the common transport issues of; greater car use, ageing public transport infrastructure, traffic congestion and urban pollution, in order to provide input for UK transport policy formulation, specifically advocating greater car restraint measures and the integration of land use and transport planning. Some of the findings from the World Cities Research have been tested using the data collected by the Urban Transport Benchmarking Initiative and are reported in Annex A1 of the final reports.

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<sup>18</sup> TERM reports, available at: [http://reports.eea.eu.int/environmental\\_issue\\_report\\_2002\\_24/en](http://reports.eea.eu.int/environmental_issue_report_2002_24/en)

<sup>19</sup> Commission For Integrated Transport (CFIT) World Cities Research, available online at: <http://www.cfit.gov.uk/research/>,