

# TURN UP THE HEAT

## *Recommendations to increase the use of the World Health Organization's Health Economic Assessment Tool for Cycling across Europe*

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7/4/2016

The Health Economic Assessment Tool (HEAT) for walking and cycling enables users to estimate the societal value of reduced mortality that results from physical activity through regular walking or cycling. This report brings together findings from the literature on the HEAT; a survey of users; and interviews; to make recommendations for increasing its use across Europe.



ECF gratefully acknowledges financial support from the European Commission and from DG ENV for this report in particular.

The information and views set out in this report are those of the author(s) and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

## Acknowledgements

This work was co-funded under a LIFE+ grant to the European Cyclists' Federation from DG Environment, European Commission.

The authors very grateful for the support received by the WHO Regional Office for Europe (Christian Schweizer, Sophia Röckel and Pia Andersen, Division of Communicable Diseases, Health Security and Environment), in carrying out the HEAT user survey and with regard to different sources of information on the HEAT use.

The authors would like to thank all the people who gave their time to be interviewed as part of this research, and those who provided answers to the survey.

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## N. B.

This document is the complete and definitive report of the "Turn up the HEAT" printed (summary) publication .

This version contains The Survey and The Interview Guide.

It contains corrections to the interviewees' quotes etc according to comments received after the deadline for the publication of the version.

It also contains the entirety of the text and content of the original version. Only the layout and formatting has been modified for improved comprehension and legibility.

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## Foreword

Physical inactivity is associated with nearly one million of deaths per year in the 53 Member States of the WHO European Region, making it one of the leading risk factors for Europe's health. The Health Economic Assessment Tool (HEAT) for walking and cycling was designed to estimate the economic value of the health benefits that result from walking or cycling. In so doing, the WHO intended to advocate cycling and walking as healthy and environmentally friendly means of transportation, which can increase the levels of daily physical activity in the general population, and to facilitate their consideration and integration in policy and planning processes related to transport and urban planning.

Since its initial appearance in 2007, the HEAT has been applied by a variety of users, including policy makers, researchers, professionals and students from all over the world. Feedback on their experience in the use of the HEAT is of paramount importance to guide the further development of the tool, improve its relevance and usefulness to its target audience, and expand its application, particularly in the context of policy making.

This report, whose development was spearheaded by the European Cyclists' Federation, provides new, interesting insights on the impacts that the HEAT has had in policy making processes, and particularly on their integration into the planning, evaluation and assessments tools used across several EU Member States. We look forward to implement the useful lessons that have been derived from these analyses, which will help increasing the uptake and impact of the HEAT both in the countries where the tools are already used, and in new countries interested in investing into cycling and walking.

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## Executive Summary

The Health Economic Assessment Tool (HEAT) for walking and cycling has been developed by the World Health Organization Europe. It enables users to estimate the societal value of reduced mortality that results from physical activity through regular walking or cycling.

This report brings together findings from the literature on the HEAT; a survey of users; and interviews; to make recommendations for increasing its use across Europe. The study found the following **learning points**:

- National-level endorsement of the HEAT is increasing
- The HEAT is solid and respected; this is not a barrier to its wider use
- The use of the HEAT largely depends on an enthusiastic 'early adopter'.
- The most impressive thing about the HEAT are the numbers it produces.
- HEAT is more useful in countries with low levels of cycling.
- HEAT is more applicable in countries where economic appraisal is established.
- HEAT is often used to justify existing decisions.
- Communication and dissemination of HEAT and specific results – and its timing – can greatly influence its uptake.

### **Recommendations** for a strategy to increase the use of HEAT

- Focus on countries with the highest potential.
- Create a network of HEAT 'super-users'.
- Encourage key stakeholders to 'give it a try'.
- Encourage its use in larger-scale modelling and scenarios.
- Aim for the HEAT to be recommended for use by national transport administrations and the European Commission.
- Invest in data collection.
- Promote its use more generally.

# 1. Introduction to the HEAT

## 1.1. Origins

Coordinated by the World Health Organization Regional Office for Europe, the development of HEAT for walking and cycling was initiated and is being carried out under the umbrella of the Transport, Health and Environment Pan-European Programme (THE PEP). THE PEP is a unique intersectoral and intergovernmental policy framework to promote mobility and transport strategies that integrate environmental and health concerns. It involves the transport, health and environment sectors of 56 member States in the UNECE-WHO European region. First launched in 2007 as an Excel sheet for cycling and launched 2011 as an online tool for cycling and walking, the HEAT allows users to estimate the societal value of reduced mortality that results from physical activity through regular walking or cycling. It has been supported by over 60 scientists, practitioners and policy makers, and has received financial support from a number of governments, organisations and institutions, highlighting the broad intersectoral support HEAT has received so far<sup>1</sup>.

The HEAT for cycling and walking:

- is intended to be part of comprehensive cost–benefit analyses of transport interventions or infrastructure projects;
- complements existing tools for economic valuations of transport interventions, for example on emissions or congestion;
- can also be used to assess the current situation or past investment;
- is based on best available evidence, with parameters that can be adapted to fit specific situations and contexts. Default parameters are provided for the European context.

HEAT calculates the answer to the following question:

*if x people cycle or walk y distance on most days, what is the economic value of mortality rate improvements?*

A guidance book and summary addresses practitioners and experts, focusing on approaches to the economic valuation of positive health effects related to cycling and walking.

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<sup>1</sup> THE PEP; the European Union; the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management; the Swiss Federal Office of Public Health; the Swedish Expertise Fund, facilitated by the Karolinska Institute; Department of Health England; Environment Agency for England; the Countryside Council for Wales; Public Health Wales; the Physical Activity & Nutrition Networks for Wales; the Forestry Commission, England; the Scottish Government Public Health Directorate; Natural England; the French Ministry of Social Affairs, Health and Women's Rights and the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety.



## 1.2. Applications

HEAT can be applied in many situations, for example:

1. to plan a new piece of cycling or walking infrastructure: it models the impact of different levels of cycling or walking, and attaches a value to the estimated level when the new infrastructure is in place;
2. to value the mortality benefits from current levels of cycling or walking, such as benefits from cycling or walking to a specific workplace, across a city or in a country;
3. to provide input into more comprehensive cost–benefit analyses, or prospective health impact assessments: for instance, to estimate the mortality benefits from achieving national targets to increase cycling or walking, or to illustrate potential cost consequences of a decline in current levels of cycling or walking.

## 2. Introduction to this study

The HEAT has been carefully developed over a number of years and a great deal of effort has been put into ensuring it is technically accurate, and combines the best knowledge on the relationship between physical activity and mortality; with appropriate application of transport economics. It has been well received, and appears to be influential, but two key questions remain:

- To what extent is the HEAT used, and by which groups?
- How could the HEAT be more widely and effectively disseminated to facilitate greater policy influence?

This study aims to improve understanding of the potential for integrating HEAT for cycling into more European countries' national transport, health, and environment policy evaluations. It provides a detailed investigation into the factors that have led to its successful implementation in selected European countries. These factors are explored and analysed to provide recommendations for increasing its use across Europe.

### 2.1. Aim:

To explore the potential for increasing the use and influence on policy making of the HEAT for Cycling.

### 2.2. Objectives:

- To review the impact of the integration of HEAT in evaluation protocols in the UK, Austria and other European countries where it has been applied.
- To determine what lessons can be learned about integrating HEAT into transport infrastructure assessments in other European countries.
- To assess the potential for increased application and impact in those and other European countries.
- To provide input useful for a strategy to expand the number of European countries using HEAT type analyses when transport infrastructure planning decisions are made.

## 3. Methods

### 3.1. Overview of documentation to date on the HEAT's use and impact

Information on HEAT's use and impact to date was collected from a wide range of sources, including:

- applications saved in the HEAT online database by users;
- applications communicated to the HEAT core group by Email;
- invitations to report applications sent to the HEAT mailing lists from the WHO Regional Office for Europe in 2015;
- a collection of applications gathered on behalf of the WHO Europe by Cavill Associates Ltd in 2012;
- an online search using a search machine and the PubMed<sup>2</sup> literature database, carried out the by the WHO/Europe in summer 2015;
- responses of the EU HEPA Focal Points in a questionnaire on the monitoring framework for the implementation of policies to promote health-enhancing physical activity in the EU and WHO European Region (containing one question on HEAT) returned in April 2015; and
- the reference lists of 3 systematic reviews on health impact assessments<sup>3 4 5</sup>.

Web statistics<sup>6</sup> on the HEAT are available since its launch as an online tool in May 2011.

Furthermore, attendance of regular HEAT training webinars has been recorded by WHO/Europe since their first edition in November 2012. Upon registration for a session, users are asked to report on their main areas of work.

### 3.2. Identification of case study sites

To explore the factors that had led to successful implementation of the HEAT, we initially had to identify people who had used the HEAT and had fulfilled at least one of the following criteria:

- established the HEAT as a tool that was recommended (or mandated) for use by an authoritative body within their country or organisation
- reported that the HEAT had achieved a direct influence on policy or practice in their organisation or country

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<sup>2</sup> <http://www.ncbi.nlm.nih.gov/pubmed>

<sup>3</sup> Mueller N et al.: Health impact assessment of active transportation: A systematic review. *Preventive Medicine* 2015, 76 (July):103–114 doi:10.1016/j.ypmed.2015.04.010

<sup>4</sup> Brown V et al.: A systematic review of economic analyses of active transport interventions that include physical activity benefits. *Transport Policy* 2016, 45 (January): 190–208 doi:10.1016/j.tranpol.2015.10.003.

<sup>5</sup> Doorley R et al.: Quantifying the Health Impacts of Active Travel: Assessment of Methodologies. *Transport Reviews* 2015, 35(5): 559-582 DOI: 10.1080/01441647.2015.1037378.

<sup>6</sup> [google.com/analytics/](http://google.com/analytics/)

- reported other findings or thoughts that might lead to the above in the future

People were identified through a bespoke survey sent by email to 2,865 identified users of the HEAT, participants in HEAT webinar trainings as well as to mailing lists of the UNECE-WHO Transport, Health and Environment Pan-European Programme (THE PEP) and the European network for the promotion of health-enhancing physical activity (HEPA Europe). The full text of the survey is at Annex 1, and was designed to identify people who fulfilled the above criteria, and would agree to be interviewed.

The survey link was emailed to people by the WHO Regional Office for Europe (the owners of the HEAT) in order to give the survey maximum credibility and boost the response rate. Two weekly reminders were issued to non-respondents.

In addition, the researchers scrutinised all the above sources in order to find people with valuable learning about the HEAT, who might not respond to the survey.

### 3.3. Semi-structured interviews

The results from the above process were used to identify people who could offer further valuable learning about the HEAT. These people were contacted and asked to participate in a semi-structured interview by phone or Skype. The interview followed the schedule set out in Annex 2 but was flexible to allow a natural conversation to develop. The conversations were either audio-recorded and transcribed (with the participants' permission), or detailed notes were taken.

Some interviewees were unavailable for a phone call and so were asked similar questions by email.

In total 6 interviews were conducted by phone/Skype and a further 5 contributed thoughts by email. Names of respondents are at Annex 3

Findings were analysed thematically and presented as case studies (section 4.5) and findings synthesised in the conclusions in the discussion points (section 5).

## 4. Results

### 4.1. Overview of documentation to date on the HEAT's use and impact

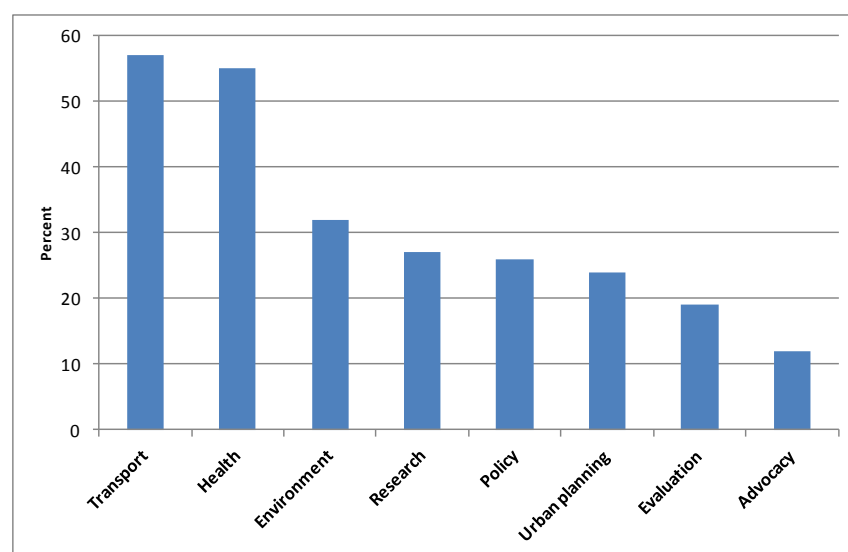
The HEAT website was launched in May 2011. Since then, it has received almost 600.000 page views<sup>7</sup> by over 34.000 users, or a weekly average number of visitors of about 170. While developed for the European region, the HEAT use is global, with the top countries being the United Kingdom and the United States, followed by Italy, Germany, Canada, France, Australia, Finland, Spain and Belgium. Uses are recorded by countries as far away as New Zealand, India or Mexico. However, 17 of the top 25-use countries are within the European Region.

The average session time of about 5.5 minutes and the average number of pages per session of more than 11 is remarkable and points to many of the slightly more than half of the users that get past the first page actually reading through the introductory pages or going through an actual assessment.

Since November 2012, WHO/Europe offers regular HEAT training webinars in English and German; since late 2014, some of the English editions have been run in collaboration with the ECF. To date, over 600 people have been trained. In addition, the ECF and local experts also run training sessions; however, there is no comprehensive overview of these sessions and to our knowledge, attendance is not systematically recorded.

All users are asked to specify their main area of work. Figure 1 below gives an overview of the responses.

*Figure 1: Main area of work of HEAT training webinar subscribers*



November 2012 – October 2015, N = 994, multiple answers were possible

<sup>7</sup> May 2011- October 2015

As to be expected, transport and health as well as environment were the most frequently mentioned main areas of work. This is followed by comparable shares of research-related and policy-related users, while users active in evaluation or advocacy seemed to attend the webinars less frequently.

## 4.2. Documented applications

The information from the different information sources described above yielded a total of 124 applications (not including requests for technical support sent by Email without a full description of the application). From these, 28 did mention HEAT but not apply it in practice and 4 were incomplete draft reports.

The remaining 92 applications were of the following types:

Table 1: Overview of documented HEAT applications		
Type	Number	Percent
Reports	51	47%
English	30	28%
Non-English	21	19%
Academic paper/abstract	28	26%
Government papers/guidance	14	13%
Other (slides, website etc.)	7	6%
<b>Total</b>	<b>92</b>	<b>100%</b>

An initial analysis of these applications has been carried out outside of the realm of this project<sup>8</sup>, showing the following indicative results:

<b>Table 2: Overview of the documented HEAT applications: sectors, use case and HEAT version</b>		
	<b>Number</b>	<b>Percent</b>
<b>Author sectors*</b>		
Transport	45	49%
Health	21	23%
Environment	8	9%
Urban planning	8	9%
Economics	2	2%
Other	6	7%
Not Available	10	11%
<b>Use case</b>		
Real situation	46	50%
Scenarios	27	29%
Both	5	5%
Review	6	7%
Guidance	5	5%
Missing	3	3%
<b>HEAT version</b>		
Cycling	43	47%
Walking	14	15%
Both	26	28%
Missing/not applicable	9	10%

\*more than one category may apply

Within the scope of this study, the most interesting applications are the government papers, i.e. documents issued by a part of an administration, and/or guidance documents that promote the use of HEAT. These 11 documents from the European

Region (including 2 report type documents) are presented in more detail in the next table.

There are also several reports from academic institutions or consultancies that were developed on behalf of administrative bodies and research reports, in particular by local administrations. As they were not issued as official documents by national governments and/or were of a more technical nature less conducive to have an impact on policy or practice, they were of less interest for this study.

<sup>8</sup> A complete, detailed content analysis was beyond the scope of this study.

Table 3: Government and guidance papers referring to HEAT in Europe

Authors, institution	Year	Title	Type	Use case	Purpose
Austrian Ministry for Agriculture, Forestry, Environment and Water Management	2013	National Cycling Promotion Masterplan for Cycling and Action Programme klima: aktiv mobil <sup>9</sup>	Government paper	scenario	to estimate the value of reaching the national goal of 10% modal split cycling
Federal Ministry of Agriculture, Forestry, Environment and Water Management, Austria	2015	Cycling Master Plan 2015–2025 <sup>10</sup>	Government paper	guidance	National Masterplan, HEAT promoted under Priority 2: Cycling As An Economic Factor (p. 24)
Swedish Road Administration	2015	Forecasting, analysis and calculation tool <sup>11</sup> .	Report	guidance	adopted HEAT for cycling as part of their official toolbox for the economic assessment of cycling infrastructure
Cavill N, Rutter H, Gower, Natural Resources Wales, United Kingdom	2014	Economic assessment of the health benefits of walking on the Wales Coast Path <sup>12</sup>	Government paper	real situation	to conduct an economic assessment of the health benefits arising from people walking the Wales Coast Path
Norwich City Council, United Kingdom	2013	Norwich cycle city ambition bid <sup>13</sup>	Government paper	real situation	to estimate the health benefits of the bid packages

<sup>9</sup> <http://www.unece.org/fileadmin/DAM/thepep/en/workplan/urban/documents/Pruhonice-Prague/No.23.pdf>

<sup>10</sup> [file:///Users/nick/Downloads/43\\_MP-Radfahren\\_englisch\\_web.pdf](file:///Users/nick/Downloads/43_MP-Radfahren_englisch_web.pdf)

<sup>11</sup> <http://www.trafikverket.se/GCkalk>

<sup>12</sup> <http://www.walescoastpath.gov.uk/media/1143/economic-assessment-of-the-health-benefits-of-walking-on-the-wales-coast-path.pdf>

<sup>13</sup> <http://www.norwich.gov.uk/TransportAndStreets/Transport/Cycling/Pages/CycleCityAmbitionGrant2015.aspx>



Table 3: Government and guidance papers referring to HEAT in Europe

Authors, Institutions	Year	Title	Type	Use case	Purpose
Transport Appraisal and Strategic Modelling (TASM) Division, Department for Transport, England, United Kingdom	2008	Transport Analysis Guidance (TAG) UNIT A4.1 Social Impact Appraisal (Nov 2014) <sup>14</sup>	Guidance	guidance	adopted HEAT as part of their official toolbox for the economic assessment of transport infrastructure
Bristol City Council, United Kingdom	2011	Walking Strategy for Bristol <sup>15</sup>	Government paper	guidance	city walking strategy
Transport for London, United Kingdom	2014	Cycling Vision Portfolio <sup>16</sup>	Government paper	scenario	to justify grant additional investment in two key programmes including two Cycle Superhighways
Transport for London, United Kingdom	2014	Improving the health of Londoners - Transport action plan <sup>17</sup>	Guidance	guidance	transport action plan
National Institute for health and clinical excellence, United Kingdom	2012	Walking and cycling: local measures to promote walking and cycling as forms of travel or recreation <sup>18</sup>	Report	guidance	Promote the use of Use an appropriate tool to establish the cost effectiveness of initiatives, for example HEAT
Fit for Life programme/LIKES foundation for sport and health sciences	2015	HEAT user guide (Finnish version) <sup>19</sup>	Government paper	guidance	Translation of the HEAT user guide and details on Finnish data sources

<sup>14</sup> <https://www.gov.uk/government/publications/webtag-tag-unit-a4-1-social-impact-appraisal-november-2014>

<sup>15</sup> [http://www.persona.uk.com/ashton/Core\\_docs/New/C37.pdf](http://www.persona.uk.com/ashton/Core_docs/New/C37.pdf)

<sup>16</sup> <http://content.tfl.gov.uk/stp-20151022-part-1-item07-mayors-cycling-vision.pdf>

<sup>17</sup> <http://content.tfl.gov.uk/improving-the-health-of-londoners-transport-action-plan.pdf>

<sup>18</sup> <https://www.nice.org.uk/guidance/ph41>

<sup>19</sup> [http://www.suomimies.fi/filebank/1290-heat\\_raportti\\_netiversio.pdf](http://www.suomimies.fi/filebank/1290-heat_raportti_netiversio.pdf)

The large number of officially published applications both by academia, governments, NGOs and consultancies does demonstrate a wide recognition of the HEAT as an established and credible tool to calculate health benefits from transport interventions.

However, as becomes apparent from the above overview, despite the wide-ranging searches and repeated invitations to report applications, there is to date still only a limited number of documented uses of HEAT by government agencies, and a majority of those come from the United Kingdom. This may be due to an English language bias, but as the HEAT user guide has also been translated into German, French, Spanish, Finnish and Polish, this seems to be only a partial explanation. It is more likely that this reflects the differential uptake of the HEAT by certain countries (as explained in the case study section 4.4).

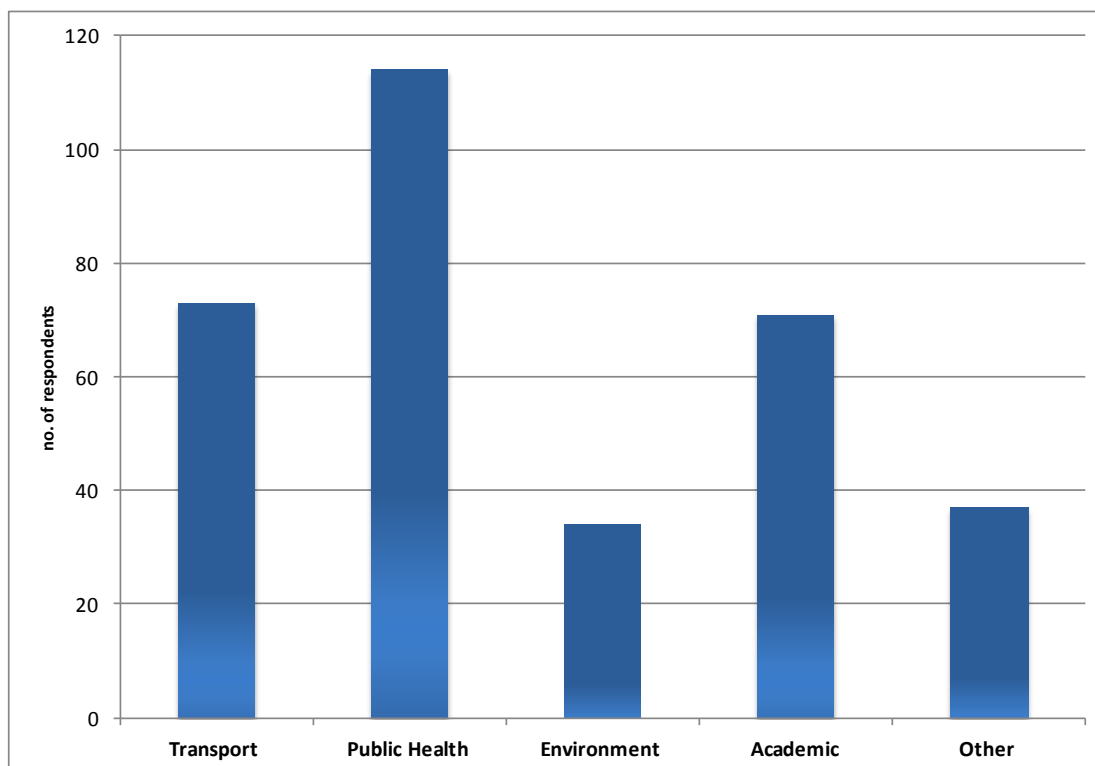
### 4.3. Results from the survey

By 1 December 2015 there were 263 responses in total, of which 212 were complete (representing 9% of the total sample).

#### Work background of respondents

The majority of respondents came from public health with similar numbers of responses from transport and academic sectors. This is interesting when it is considered that the HEAT was aimed at the transport sector, but the subject matter is clearly of interest to public health.

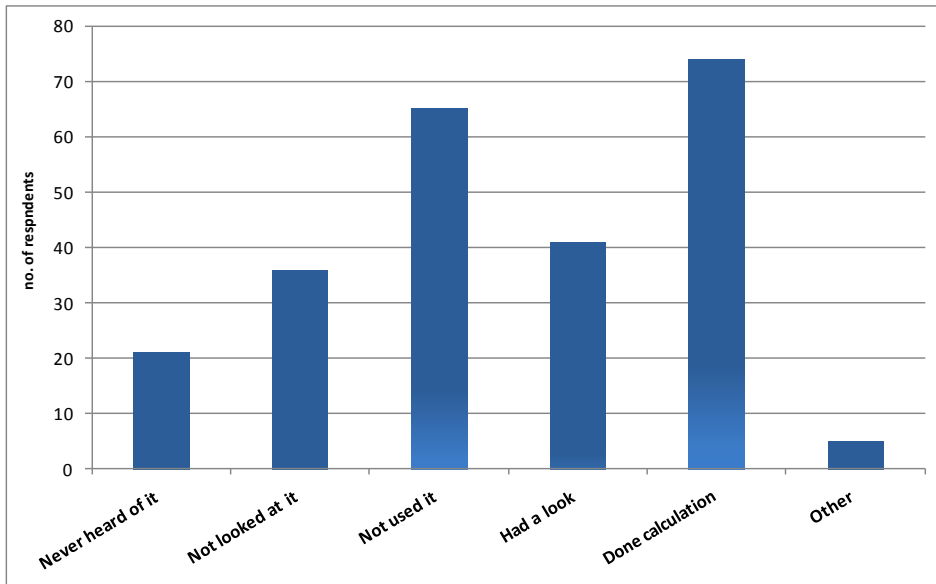
*Fig 2. Main work sector of survey respondents (n=263)*



### Experience of using the HEAT

74 respondents (28%) reported having performed one or more full calculations using the HEAT, while 101 people had either not looked at the HEAT or just looked at the website.

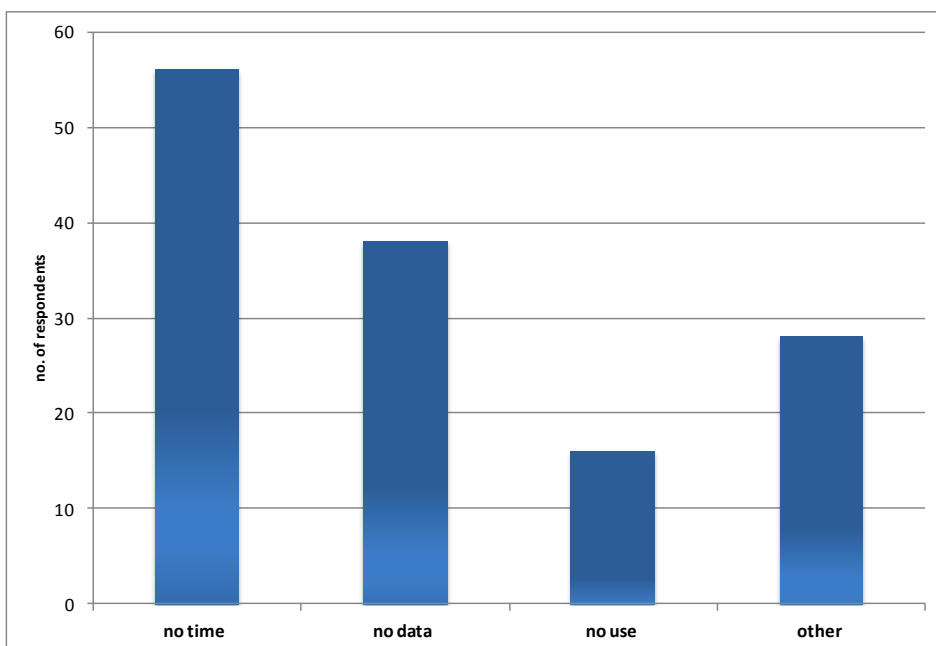
*Fig 3. Experience of using the HEAT*



### Reasons for not using HEAT

Those respondents who had not used the HEAT were asked the main reasons why not. 56 people (41%) claimed lack of time while 38 (28%) said they did not have the right data. 16 people said they did not think it would produce results that they could use.

*Fig 4. Main reasons for not using the HEAT (n=138)*



The following more detailed data (Question 4 onwards) therefore comes only from the 74 people who had carried out a full calculation.

61 people said they thought the HEAT calculation they had carried out had some impact on their target audience. Of these, 6 people reported a negative impact, one a neutral impact, and the vast majority of respondents (54) reporting a positive impact.

*Table 4. Examples of impacts claimed for the HEAT*

• Examples of positive impacts	• Examples of negative impacts
<p><b><i>They highlighted the impact of investment in active travel and the cross cutting benefits</i></b></p> <p><b><i>This presentation of results will be useful with long range transportation planning</i></b></p> <p><b><i>The results provide some financial basis to planning future infrastructure.</i></b></p> <p><b><i>It added evidence to a report that helped get us funding for a health walk scheme.</i></b></p> <p><b><i>They were stunned. But also had the idea the HEAT-model was not suited for a country with already high levels of cycling.</i></b></p> <p><b><i>Major confidence boost. Wide distribution of results via their social media accounts. Confidence in planning future infrastructure.</i></b></p> <p><b><i>They were amazed at it.</i></b></p>	<p><i>I think most recipients thought that the results were "too good to be true" and were therefore not helpful in making the case for additional investment in walking and cycling.</i></p> <p><i>It was a pilot program and it hasn't been renewed.</i></p> <p><i>Favourable, although I think HEAT calculations played second fiddle to the MOVES calculations we provided at the same time (as these were presented in terms of QALYs and NHS savings which were more useful for the audience)</i></p>

### The HEAT as a voluntary or mandatory tool

Five respondents reported that the HEAT is a mandatory part of transport assessments. These were all from the United Kingdom. As discussed later, this is not actually the case; HEAT is formally recommended by the Department for Transport but is not mandatory.

Twelve respondents stated that the HEAT was formally encouraged by their government or key organisation. 8 of these were from the United Kingdom, referring to the DfT's *webTAG* guidance. Others included:

- **Finland** (2 mentions) where the HEAT has been promoted by the national transport authority and used in a number of cities
- **France** where the HEAT was promoted by the WHO Healthy Cities network
- **USA** (outside the scope of this study)

The remainder (47) reported that the use of the HEAT was voluntary. Some had discovered it through academic routes, others had used it for occasional calculations or to demonstrate the tool to others.

## Influence on policy

Finally the survey asked about influence of HEAT results on policy. 41 people (58%) said they thought it had had an influence while 33 people (46%) said it had not. Examples of responses are shown below:

Table 5. Examples of impacts on policy claimed for the HEAT

• Examples of positive impacts	• Examples of negative impacts
<p><b><i>It has made active travel have an evidence based presence within the transport sector</i></b>  <b><i>I think it increased the awareness of the value of physical activity.</i></b>  <b><i>Forms the largest proportion of benefits</i></b>  <b><i>We used it to provide evidence to secure government funding for walking</i></b>  <b><i>It's helped to level the playing field so that different transport improvements can be objectively compared.</i></b></p>	<p><i>It could have if it would be used more, but until now it has been used very little.</i>  <i>Too early to tell, I am currently getting conflicting messages from one of the municipalities</i>  <i>Too much disbelief.</i>  <i>Lack of commitment to investing in cycling and walking. Everyone at all levels knows it makes sense, financially and socially, but Public health think Transport departments should foot the bill and Transport departments think Public Health should foot the bill. Short term thinking and savings reign at present sadly.</i></p>

## 4.4. Findings from the interviews

### 4.4.1. Department for Transport, England, United Kingdom

England's Department for Transport (DfT) was one of the first national government departments to use and endorse the HEAT. The HEAT method is a core component in the DfT's *webTAG* (Transport Appraisal Guidance) methodology. Its national support has gone on to encourage many others in the England and other parts of United Kingdom to use it.

#### Origins of HEAT in England

The DfT began using the HEAT very soon after it was first published in 2007. They had previously been using a more basic appraisal system that was mainly concerned with counting the number of people affected by a road or new infrastructure.

*"We thought: 'that's not good enough'. There's a lot of interest in cycling and walking policy, so we wanted to make the whole methodology better...we are not just looking at highway schemes we are also now looking at cycling schemes.*

*We commissioned research that looked into these kind of methods and obviously HEAT was very sensible and a natural choice to adopt."*

The use of the HEAT complemented other approaches in *webTAG* including the appraisal of social and environmental impacts, and meant that health benefits of cycling and walking could be properly included in transport appraisals for the first time.

## Reasons for inclusion

The HEAT was included in webTAG for three main reasons:

1. There was political will to support cycling and walking. Ministers were increasingly supporting cycling and walking initiatives, including demonstration towns and pilot programmes. To a large extent this may have been for environmental reasons rather than health, but it seems that the health arguments have helped to support the environmental aspects.

*"It has helped the debate shift from environment to health. Previous administrations thought this was the magic bullet and everyone was going to stop driving and this is our answer to carbon. But it is a drop in the ocean compared to the health benefits that have come out."*

Officials in the DfT therefore wanted to make sure that their appraisal systems were able to reflect the increased focus on walking and cycling and respond to ministers' demands.

2. There was a strong tradition of economic appraisal in the United Kingdom. The appraisal system was well established, and transport authorities expected to have to put any proposal through some sort of assessment. This then meant that the health component embodied in the HEAT became just another module that they could add in if it could be justified. And as more and more cycling (and to a lesser extent walking) schemes were being proposed, the more it became used.
3. There was enthusiasm to include the health benefits. There seemed to be an increasing appreciation of the magnitude of the health benefits; a desire to demonstrate 'joined up working' between transport and health departments, and a desire to move from vague assessments of the benefits to health, towards quantification:

*"If you didn't have that number, if you just said 'Oh and by the way cycling and walking are healthy' – that would get you nowhere. (The previous form of assessment)... would just say 'strong positive' – that would get completely ignored. But if you can say 'and this makes 60% of the benefit and the benefit is £5 for every £1 invested so £3 per £1 invested is the health benefit' then that gets people thinking. So if you didn't have the number I don't think you would get the attention."*

HEAT was chosen specifically because it took an evidence-based approach, and had been considered carefully. While the WHO 'badge' was a consideration, of more importance was the approach that had been taken, including use of evidence and consensus.

Use of the HEAT is still technically advisory, as is *webTAG*. The DfT issues detailed guidance on how to conduct appraisals but says that if transport authorities have better evidence or methods then they are welcome to use them, as long as they can be justified. However in reality practice, the vast majority of transport appraisals in the United Kingdom are *webTAG*-compliant, and many transport planners view it as a mandatory part of the approval process. Also, it has become an established part of the transport consultancies' approaches, so they tend to prefer to use the established methods. This has led to an interesting situation where it seems that in some

cases where transport authorities know that the health benefits are likely to dominate the appraisal, they tend to use HEAT in place of a full *webTAG* appraisal.

### Benefit-cost ratios

One key issue in the England is the extent to which the inclusion of health outcomes in cycling and walking appraisals (and the use of the HEAT in particular) has influenced thinking about the role and importance of cycling and walking. Initial appraisals were coming out with benefit-cost ratios of 5:1 or higher, 60% of which were coming from the health benefits.

*“When they (the Treasury) first saw it they were quite impressed and said they hadn’t quite understood before the link between a transport mode and health benefits... whenever I have presented BCRs they say ‘that is too high, that cannot be right’ but they definitely get the discussion starting.”*

It seems that the size of the health benefits (and the resultant high BCRs) has been a key component in helping to shift the debate in the United Kingdom in favour of active travel modes. This is hard to quantify, along with the impact on policy decisions, but there are hints at policy influence. One example is the first round of Cycle Ambition Grants that were awarded to local authorities, and subjected to economic appraisals. These came up with an average BCR of 5.5, which led to some debate, and subsequent approval for a further £110m to be awarded for cycling. It seems unlikely that this would have happened without the economic case being made so strongly.

### Advice to other countries?

*“[If the countries are] starting having to convince decision makers of the value of cycling then I think HEAT is extremely powerful. Just being able to put a number on it... gets people talking.”*

#### 4.4.2. Sweden: Swedish Transport Administration

Along with Austria, the Swedish Transport Administration (STA) has been involved in the HEAT development since the first consensus meeting in 2007.

The use of the HEAT has been recommended by the Swedish Transport Administration in its assessment tool *GC-kalk*<sup>20</sup> since 2008. *GC-kalk* is used to make economic calculations of profitability of pedestrian and cycling infrastructure investments and other pedestrian and bicycle promotion. The tool contains the core aspects of the HEAT calculations and integrates them into the national guidance. The current 2015 version uses the updated figures from the latest version of the HEAT.

The Swedish Transport Administration has made one interesting modification to the HEAT methods: when computing the benefits occurring in the future, they take into consideration the

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<sup>20</sup> Forecasting, analysis and calculation tool. <http://www.trafikverket.se/GCkalk>

annual growth of cycle traffic when computing future benefits. They also use a value of a statistical life that increases annually equivalent to the increase of real income.

An official in the STA said:

*“We found that the HEAT approach is the best one considering the health aspect. There are other components/benefits in addition to health that are considered in the GC-kalk tool. Traffic safety, ambience/time, external effects, sickness absence are among the major components. Thus the tool is designed to handle all these components.*

*The health benefits of cycling can be considerable. So it is good to value them. And even if the valuation is uncertain, it is better than not evaluate at all.”*

#### 4.4.3. Transport for London (United Kingdom)

Transport for London (TfL) is the transport authority responsible for planning and delivering transport schemes across London.

In their 2014 transport and health action plan<sup>21</sup>, TfL made the following commitments:

- We will quantify and where possible monetise the health impacts of our projects and policies.
- We will use the World Health Organization Health Economic Assessment Tool (WHO HEAT) in our business case development processes
- We will support our partner agencies in using WHO HEAT to assess proposals and evaluate activities

This follows on from the HEAT being used to quantify large-scale investments in cycling across the capital.

The use of the HEAT within TfL has been largely driven by a public health specialist seconded to the organisation, who saw HEAT as having a lot of untapped potential:

*“It was one of the few tangible things that I could get traction on with people. They don’t want to just hear that what they are doing is good for health; they want to have something specific that they can link to.”*

The HEAT has been promoted specifically for use in the organisation’s business cases. These have to be drafted by anyone developing a plan for investment in the city’s transport infrastructure. They contain detailed proposals for the new work going ahead, but also contain an economic analysis. This includes a critical figure that is always scrutinised by the decision-makers: the benefit:cost ratio (BCR).

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<sup>21</sup> Transport for London. 2015. Improving the Health of Londoners Transport action plan. <http://content.tfl.gov.uk/improving-the-health-of-londoners-transport-action-plan.pdf>



*“The trouble they were facing is the trouble that a lot of transport planners in the UK face which is that the people who read business cases tend to focus a lot on the benefit:cost ratio and if you are proposing to take road space away from vehicles, because of the way that they quantify time savings that are lost by delaying cars at junctions, putting in cycle infrastructure that takes space away from cars comes out with a bad BCR.”*

As a result of this imbalance, transport planners within TfL were looking for other ways to quantify health benefits within their cycling proposals in order to boost the BCRs. The Mayor had already committed to invest in cycling so TfL’s planners felt they had to find the means to deliver this with a viable business case. The HEAT helped them do this. TfL’s transport planners were surprised when they used the HEAT to see how much the results were enhanced by inclusion of the health benefits in the BCR. Even using conservative estimates within their calculations they found that health made up around 2/3 of the benefits, and the resultant BCRs were much higher.

Following this initial phase, the HEAT is used much more across TfL. It is still not used routinely, and some business cases continue to be made without it. Training is now being delivered across the organisation and the public health specialist makes sure she is available to support people in its use and to answer questions on specific problems they may have. The focus is not so much on the specific technical aspects of the HEAT, but making sure people have the confidence to use it, and to defend its outputs.

The critical aspects of the HEAT that helped its spread of use in London included:

- It is recommended by the United Kingdom Department for Transport in its transport appraisal guidance<sup>22</sup>. This gives it credibility and gives transport planners the confidence that they are using the right tool.
- The WHO ownership adds significant credibility.
- The HEAT was found to boost BCRs and so helped to justify investment in projects that planners (and politicians) wanted to go ahead.
- It is tangible and produces understandable figures.
- There is training available, and someone available in TfL to help people use it.

The next steps within TfL are to produce and publicise a local HEAT manual. This will provide data tables with standard input data for London, such as average bike ride times. This will make the application in London much easier, and help to standardise outputs.

It is hard to pinpoint clear examples where the HEAT has had a direct influence on policy decisions, but it does seem that its use in London has helped to emphasise the role of health in transport decisions. Some new large-scale projects are now being approved even though the BCRs are not very favourable. This seems to be because people are adding in other benefits and reading the social and environmental cases for investment, alongside the health case.

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<sup>22</sup> Section 3.2.1 in [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/427098/webtag-tag-unit-a5-1-active-mode-appraisal.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427098/webtag-tag-unit-a5-1-active-mode-appraisal.pdf)

The other benefit of the HEAT has been that once people decide to use it, they then tend to discover that they haven't counted walkers and cyclists properly in the past. This has then led to improvements in data collection for walking and cycling, meaning that the benefits can also be appraised.

*"Increasingly the things that mayors want in cities to make their city more liveable are all about improving quality of life and largely about reallocating space away from cars and creating nice public spaces. The tools that we have for putting together the business case for these things was built upon a world where the most important thing was getting as many vehicles through the junction as fast as possible. If you don't add in the HEAT tool into your business case then you end up with a terrible BCR and you can't make the case for it."*

#### 4.4.4. Austrian Ministry for Agriculture, Forestry, Environment and Water Management

The Division Mobility, Transport, Noise at the Ministry has been involved in the development of HEAT since the very beginning and sponsored the first HEAT consensus meeting in Graz in May 2007 in Graz, Austria. HEAT is currently promoted in three ways:

they translated HEAT and the user guide into German when it was launched as an online tool in 2009; both are available on the ministries' website<sup>23</sup>

they applied HEAT with Austrian values and published the results in 2009 and again in 2014<sup>24</sup>; and

they included a mention of the HEAT into the National Masterplan Cycling<sup>25</sup>.

The HEAT results are also used regularly in presentation and communications of the ministry, e.g. in relation to a cycling tour of the former Minister of Environment.

*"It was important and a huge support that HEAT gave us the numbers and the opportunity to communicate not only on pollution or other environmental issues but that we could also show the health co-benefits of cycling."*

While earlier there was not much exchange with the Ministry of Health, since 2 years the process is ongoing to develop national health goals. One of them is on physical activity<sup>26</sup>, and the implementation of the National Masterplan Cycling and the National Masterplan Walking are included into the plans. This is the first time that there is close collaboration by all three Ministries of Health, Environment and Transport in a national policy.

<sup>23</sup> <http://www.klimaaktiv.at/tools/mobiltaet/HEATforCycling.html>

<sup>24</sup> See footnote above

<sup>25</sup> Austrian Ministry for Agriculture, Forestry, Environment and Water Management. 2015. Cycling Master Plan 2015–2025 ([https://www.google.ch/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwj3m86j\\_L\\_JA\\_hUBiiwKHdZFAIEQFggdMAA&url=http%3A%2F%2Fwww.bmlfuw.gv.at%2Fdam%2Fjcr%3A31c55ed8-0ca1-4e48-a255-040444c1c399%2F43\\_MP-Radfahren\\_englisch\\_web.pdf&usq=AFQjCNFMFTz5VMUDwFZ1cfG9T8M-C-YYLA](https://www.google.ch/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwj3m86j_L_JA_hUBiiwKHdZFAIEQFggdMAA&url=http%3A%2F%2Fwww.bmlfuw.gv.at%2Fdam%2Fjcr%3A31c55ed8-0ca1-4e48-a255-040444c1c399%2F43_MP-Radfahren_englisch_web.pdf&usq=AFQjCNFMFTz5VMUDwFZ1cfG9T8M-C-YYLA), p. 24).

<sup>26</sup> <http://www.gesundheitsziele-oesterreich.at/health-targets-for-austria/> and <http://www.gesundheitsziele-oesterreich.at/arbeitsgruppen/>

The Ministry of Transport does not use HEAT much yet for official communications, mainly because it is not part of the national economic assessment guidelines<sup>27</sup>. These guidelines are updated about every 5 years and that has not taken place since HEAT was launched. So there has not been the opportunity yet to foster its inclusion.

*“Integration into the national guidelines is very important. We get feedback from the local governments and communities that if they do assessments of local infrastructure, they always have the problem that cycling is not supported because the economic impact of travel time based on the national guidelines often leads to negative benefit-cost-ratios because the health benefits of cycling are not included in the calculation. And that is a problem for local implementation. So it is very important that we also include the health benefits into such analyses because then the benefit-cost-ratios will definitely change.”*

*“The local communities could use HEAT also unofficially but it is not current practice because most of them don’t know the HEAT tool even though it is mentioned in the national Masterplan Cycling. Most assessments are done by consultancy firms, and they only use what is in the national economic assessment guidelines.”*

It was felt that the current function and features of already HEAT makes it fit for inclusion into official national guidelines or toolboxes.

*“The methodology and proof of concept is very good and one can use HEAT as it is now for the national guideline. The HEAT is very clear and simple and when you use it, you understand it in 15 minutes. Nevertheless, the local governments don’t have the resources to take the time to use HEAT and to understand its usefulness [unless it is included in the national guidelines].”*

The official interviewed had the following advice for countries that might be considering using the HEAT:

*“The most important thing is that the relevant stakeholders on the national level know about HEAT so they can include it into national strategies and the national cost-benefits assessment guidelines. The first step should be that they use it at least once or twice for their own strategy so that they can see the huge benefits of cycling or walking in their own country.”*

#### 4.4.5. Finland

HEAT documents have been translated and published online by the Fit for Life programme. This is a programme funded by the Ministry of Education Ministry of Social Affairs and Health and is managed by LIKES foundation for sport and health sciences.<sup>28</sup> The Finnish versions include the Finnish recommended values to help the use of the tool as well as two examples from Finland (Kuopio and Helsinki)<sup>29</sup> and a case study application from the town of Joensuu<sup>30</sup>.

<sup>27</sup> <http://www.fsv.at/shop/produktdetail.aspx?IDProdukt=ad7b8680-d12a-4841-b06b-b1a0e606bf4b>

<sup>28</sup> [http://www.suomimies.fi/filebank/1290-heat\\_raportti\\_netiversio.pdf](http://www.suomimies.fi/filebank/1290-heat_raportti_netiversio.pdf)

HEAT-tools have been promoted by the Fit for Life programme in the national cycling and walking network as well as the Mobility Management networks. Of particular importance was the promotion of the HEAT at a two-day Mobility Management seminar in 2014, organized by Motiva, which operates as an affiliated Government agency and promotes efficient and sustainable use of energy and materials. The use of the HEAT was promoted heavily through the network of cycling municipalities. As a result of this national-level promotion, HEAT analyses have been carried out in at least twelve metropolitan and rural areas (Helsinki, Espoo, Kokkola, Kuopio, Tampere, Joensuu, Ylöjärvi, Hyvinkää, Kangasala, Porvoo, Utajärvi and Jyväskylä). These cover over 25% of the whole population of Finland.

Looking ahead, there is a shared funding process going on for research & development of walking and cycling promotion on municipalities and town areas (funding for 2014). The funding is by the Ministry of Transport, the Ministry of Environment, the Finnish Transport Agency and the Fit for Life Programme. It is likely that HEAT will play a part in this process.

*“HEAT has helped to place walking and cycling firmly in national and in many local transport planning.”*

A significant step forward would be for the HEAT to be included in the Finnish Transport Agency’s evaluation guide for mobility management; this would give more official backing to the HEAT. One barrier to this may be that the default suggested values for statistical life in the HEAT are higher than those normally used by the Finnish Transport Agency.

It seems likely that a major part of the success of the uptake of the HEAT in Finland has been due to the Finnish translation.

*“It’s very important. The transportation people, although Finnish people speak and understand English very well but if you are applying some kind of tool to your cost analysis you need it in your own language”*

#### 4.4.6. France Healthy Cities Network

The use of HEAT is optional in France, but has been promoted by the national transport research agency Centre d’études sur les réseaux, les transports, l’urbanisme et les constructions publiques translate <sup>31</sup>(CERTU) and the national environment research body (centre d’études et d’expertise sur les risques, l’environnement, la mobilité et l’aménagement (CEREMA)<sup>32</sup>. They supported the French Healthy Cities Network to pilot the HEAT in cities across France. Healthy Cities produced a 4 page briefing in French<sup>33</sup> and English<sup>34</sup>, developed a web page ([www.villes-sante.com/HEAT](http://www.villes-sante.com/HEAT))

<sup>29</sup> [http://www.kkiohjelm.fi/viestinta\\_ja\\_materiaalit/materiaalit/maksuton\\_kki-materiaali](http://www.kkiohjelm.fi/viestinta_ja_materiaalit/materiaalit/maksuton_kki-materiaali)

<sup>30</sup> [http://www.suomimies.fi/filebank/1291-Heat\\_Joensuu\\_pieni.pdf](http://www.suomimies.fi/filebank/1291-Heat_Joensuu_pieni.pdf)

<sup>31</sup> Center for research into networks, transport, urban planning and public construction

<sup>32</sup> center for studies and expertise on risk, the environment, mobility and development

<sup>33</sup> <http://www.villes-sante.com/?wpdmdl=31>

<sup>34</sup> [http://www.villes-sante.com/wp-content/uploads/brochure\\_PVS4\\_outil\\_heat\\_mars2015\\_v2\\_ENGLISH.pdf](http://www.villes-sante.com/wp-content/uploads/brochure_PVS4_outil_heat_mars2015_v2_ENGLISH.pdf)

and written a Step by Step guide (“Etapas pour Reussir”) for non-English speakers to use HEAT<sup>35</sup>. These documents set out clear information on approaches to applying HEAT to the French situation, including advice on which data to use, and case study examples.

In addition, the Healthy Cities coordinator has spoken at 6 regional meetings and a number of national conferences about HEAT and how it has been used in by cities in France.

Within the time frame of the study it was not possible to determine impact on policy and/or practice.

#### 4.4.7. Brussels Capital Region (Belgium)

While in the Brussels Region, cycling shares had been very low in the late 1990s, two 6-year cycling Masterplans had been launched in 2004 and 2010<sup>36</sup>. By 2012, the bike mode share had reached 3% and the policy goal stated in the Regional Mobility Plan “IRIS II” was to reach 20% by 2020 (see same reference). Investment in cycling had reached about EUR 10 Mio./year.

The development of the Masterplans had been accompanied by policy audits with the Bypad instrument as well as evaluation, and in the 2010 Masterplan, also the plan for an economic assessment had been included. The administration had been prompted to include this goal due to a presentation of HEAT (and a previous tool by Cycling England) at a Velo-city conference.

*“We were intrigued by the possibility to use economic valuation of benefits... we knew there was a lot of public miscomprehension on the benefits and usefulness of bike policy so we put this project into the cycling Masterplan.”*

While the study was underway, the WHO Regional Office for Europe also had published a press release<sup>37</sup> including HEAT results for a number of cities, including Brussels. That was a useful as a hook to launch their own study as nobody on the political level had heard about HEAT before that.

HEAT was used within the wider assessment to monetize mortality reduction benefits from cycling; comparisons were made with values found in the literature. The study<sup>38</sup> also included other elements such as accidents, morbidity, congestion and environmental impacts.

*“Especially for cities that do not have the time or support to do an in-depth analysis HEAT is a quick and easy-to-apply tool that monetizes impacts on mortality. And in the end, general conclusions were very similar to our more detailed study.”*

<sup>35</sup> [http://www.villes-sante.com/wp-content/uploads/HEAT\\_Etapas\\_pour\\_reussir.pdf](http://www.villes-sante.com/wp-content/uploads/HEAT_Etapas_pour_reussir.pdf)

<sup>36</sup> Ministère de la Région de Bruxelles-Capitale, Administration de l’Équipement et des Déplacements Direction Stratégie. 2010. Plan vélo 2010-2015. <http://www.bruxellesmobilite.irisnet.be/articles/la-mobilite-de-demain/plan-velo>

<sup>37</sup> <http://www.unece.org/?id=35396>

<sup>38</sup> Van Zeebroeck B, Charles J. 2014. Impact et potentiel de l’usage du vélo sur l’économie et l’emploi en Région de Bruxelles-Capitale. Rapport pour Ministère de la Région de Bruxelles-Capitale [http://www.provelo.org/sites/default/files/etudes/evaluation\\_economique\\_velo\\_fr\\_20140530.pdf](http://www.provelo.org/sites/default/files/etudes/evaluation_economique_velo_fr_20140530.pdf)

The results of the study where that compared to the very low levels of cycling in 1999, the 4% mode share in 2012 already lead to about EUR 100 mio. of indirect benefits, most of which due to health effects. Reaching the 20% goal would even bring EUR 500 mio. of indirect benefits.

The results were used for a press release in mid-summer (the so-called 'slack season') and thus created quite a strong media response.

*"The communication experts did a very good job waiting for the right moment to communicate such a rather technical matter. There are only a few moments during the year where these kinds of messages have a real chance to get picked up by the media, in this case mid-July when there was no other competing news to write about. At that moment everybody was very happy to have these quite impressive numbers on the potential benefit of cycling to write about."*

The timing of the press release also happened to coincide with the negotiations of a new government. While not the primary target, the cycling budget was maintained in the end even though the parties normally favouring cycling promotion had lost the elections. The fact that the benefits by far outweighed the foreseen investments was a strong element for such discussions. While it is hard to prove a direct impact of the results of the study, it is likely that it had a favourable influence.

Finally, the Belgian officials were asked what advice they would give to other institutions and countries considering using the HEAT:

*"...we don't have to convince people in Brussels anymore that cycling is interesting for society which you have to do in cities with less than 5% mode share. There the barriers to convince the general public and the politicians are of course much higher and here HEAT is a very interesting tool."*

*"For other cities with low cycling shares, they tend to look at public transport as their only solution for their traffic problems – until they realize that they don't have the money to build the necessary infrastructure, or that it takes too long. So it is not a solution to make their transport system more sustainable. If they had done an economic analysis of health benefits and cost-effectiveness of cycling investments, they would have certainly made different choices."*

#### 4.4.8. Spain: Public Health Institute, Barcelona; and the town of Zaragoza (Spain)

In Spain, there have been two interesting uses of the HEAT.

The first is in Barcelona, where work on the HEAT was started by an injury prevention expert working in the city's Public Health Institute. She realized that there is a great deal of evidence and data in the city on cycling and walking, but not much is done with it. She had heard of the HEAT through conferences and links to academics, and thought she would try it out on the data from her city.

With her team, she worked on a paper to estimate the benefits if more people reached the WHO recommendations for physical activity through cycling and walking<sup>39</sup> and another paper, In conjunction with researchers from the nearby CREAL (centre for research into environmental epidemiology), looking at the benefits of Barcelona's recent policies towards walking and cycling, using results from a mobility survey<sup>40</sup>.

The latter report was sent to the City's mobility department, who had largely been responsible for policies to do with walking; bike sharing; pedestrianisation and traffic calming in recent years. They were very pleased with the analysis and found it helped them to promote the policies in the city, providing 'good arguments for the politicians'. The results of HEAT have also been used to support proposals.

HEAT was well received as it:

- Combines both mortality and financial benefits
- Is comprehensive
- Helps people from other sectors to understand the issue
- Attracts media attention

*"I would really recommend it in order to improve actions from health to other sectors...at the same time I also would recommend that you have enough information on trips and so on ready,...before you start."*

In her opinion not enough people know about the HEAT; it needs to be promoted more. It does not need to be mandatory but more people need to hear about it and try it.

The second Spanish example is in the town of Zaragoza, in the north-east of Spain, the fifth largest town in Spain with a population of around 670.000. Before 2008 the use of the bike for transport in Zaragoza was very low. Encouraged by the national Sports Council (Consejo Superior De Deportes), an assessment was carried out on cycling in the town<sup>41</sup>. It is not clear whether this had much policy impact; both Spanish interviewees pointed out that the major challenge is that the HEAT is not well known in Spain.

<sup>39</sup> [http://www.euro.who.int/\\_data/assets/pdf\\_file/0003/160806/Olabarria-European-Journal-of-Public-Health-2012.pdf](http://www.euro.who.int/_data/assets/pdf_file/0003/160806/Olabarria-European-Journal-of-Public-Health-2012.pdf)

<sup>40</sup> <http://www.sciencedirect.com/science/article/pii/S2214140515005502>

<sup>41</sup> <http://www.zaragoza.es/ciudad/viapublica/movilidad/bici/default.htm>

## 5. Discussion and lessons learned

This study has revealed a great deal of new information about the use of the HEAT across Europe and its impact on practice and policy. It has deepened our understanding of the ways in which the tool has been used, and revealed some new cases where the HEAT is being used at the request of the national government, as summarised below in Table 6:

**Table 6. National uses of the HEAT**

Status of the HEAT	Country
Compulsory; mandated by national government	None
Included in official national guidance	England, United Kingdom Sweden
Promoted by national government	Austria Finland France

Analysing responses to the survey and the interviews has uncovered a number of interesting lessons learned from this study that should be considered in any future efforts to increase the use of the HEAT across Europe. These are set out below.

### 5.1. National-level endorsement of the HEAT is increasing

As shown in section 4 and 5, the HEAT is included in national-level official guidance in two countries (United Kingdom, Sweden,) and encouraged by three others (Austria, Finland, France). Regional and local-level use is far more prevalent than national use (but often, it has been mentioned that national level endorsement and/or promotion would be helpful for local implementation).

### 5.2. The HEAT is solid and respected; this is not a barrier to its wider use

Respondents identified many positive aspects of the HEAT that have encouraged them to use it (see box). The most important of these are that the tool came from the WHO, and had been developed through a thorough, transparent and evidence-based process. The strong uptake of HEAT by academia – while not an initial target audience - demonstrated by dozens of scientific publications, also is a clear sign of its high scientific quality and recognition.



### HEAT: success factors

Active transport has enormous positive impacts on health; HEAT helps to quantify these.  
 It is issued and endorsed by the WHO.  
 It is recommended by the United Kingdom's Department for Transport in their official guidance and has been used or recommended by a number of national agencies.  
 It is tangible and produces clear results.  
 It is clear and in easy to use (once you have data on cycling / walking).  
 It gives traction and allows justification for investment in walking and cycling.  
 It will have a positive impact on the benefit:cost ratio of investments for cycling/walking.

No-one interviewed said that they have heard from people who did not use the HEAT due to a lack of respect for its provenance, or a lack of trust in the methods used. By and large people have not used it either because they have not heard of it, or they have not 'got around to it' yet.

At the same time, the study did identify elements that could further increase the appeal of the HEAT, e.g. inclusion of morbidity or injuries and an even better explanation of the "value of statistical life" which is still not always well understood in some (and sometimes even transport-related) audiences.

### 5.3. The use of the HEAT largely depends on an enthusiastic 'early adopter'.

As with many innovations, successful adoption of the HEAT within countries or organisations has been greatly helped by enthusiastic individuals who hear of the HEAT, see its potential, and make the effort to try it out and then 'spread the word'. More strategically developing and supporting a network of such advocates will be a key task for the future.

On the micro-level within administrations, it is about the right people being aware of it and promoting it and being willing to use it. The challenge is finding the right people, getting them to spend time to apply it at least once or twice to a specific scenario or case study and to promote it on the national and/or local level.

### 5.4. The most impressive thing about the HEAT are the numbers it produces.

It is no use just buying a new bike and looking at it; the real joy comes from riding it. The same with the HEAT: many respondents said that they were not particularly impressed by just looking at the tool, but they were amazed to see the outputs it produced. In particular, people identified the increase in the size of the benefit:cost ratios by including health benefits in the calculations. Marketing of the HEAT should focus less on the process used to create it and the tool itself, and more on the results it produces and how these can be used.

### 5.5. HEAT is more useful in countries with low levels of cycling.

The HEAT appears to be thought of as more useful in places where cycling is low, and where it is still useful to convince people that cycling is ‘a good thing’. Here, HEAT can be used on a wide range of scenarios or proposed infrastructure, to demonstrate the value of investment in cycling.

In higher-cycling countries, it seems that HEAT is more useful at a higher level: focussing on regional scenarios or policy evaluations. Here the HEAT may be used to sustain interest in cycling, and ensure that health is considered in the decision-making process.

### 5.6. HEAT is more applicable in countries where economic appraisal is established.

HEAT is also more applicable in countries and systems where economic appraisal is an established practice. The United Kingdom is a good example here: the HEAT has become very established in the UK principally because there is a strong tradition of putting transport proposals through an economic analysis. Once the basics were considered (i.e. mainstream assessment of transport infrastructure using traffic modelling etc.) there was then room to consider adding in health and other social outcomes. This is not the case in countries where economic assessments are not traditionally used in decision-making.

### 5.7. HEAT is often used to justify existing decisions.

The research identified many examples of applications of the HEAT that were used to justify things that were going to happen anyway. There are few – if any – clear examples of direct impacts on decisions. This does not necessarily mean that HEAT had no influence – in many cases it seems to have been one – often important – puzzle piece, amongst others.

### 5.8. Communication and dissemination of HEAT and specific results – and its timing – can greatly influence its uptake

In a number of exchanges, it was mentioned that the key people first learned about HEAT through presentations at conferences or press releases that included results for their city. At the same time, and even though hundreds of presentations have already been given at health and transport conferences, it was stated a number of times that especially local level planners still “never heard about the HEAT”. Continued and strategic further dissemination is thus another key task for the future, along with translation of the user guide and potentially the website.

In addition, when national or local HEAT results are available, it can be beneficial to aim for media dissemination. In this case, timing and/or using available media contacts can be crucial to ensure uptake.

## 6. Recommendations for a strategy to increase the use of the HEAT

The following recommendations should be considered as core components of any strategy to increase the use of the HEAT. They apply to a range of stakeholders including ECF, the WHO and national and sub-national stakeholders using the HEAT.

### 6.1. Focus on countries with the highest potential

Increased use of the HEAT should be prioritised in selected countries or groups of countries where it is more likely to be taken up. These are countries that fulfil one or more of the following:

- Economic assessments are a routine part of decision-making.
- There are transport problems that have been identified that can be addressed by cycling and walking (e.g. congestion, overload of the public transport system or lack of one, pollution, climate change).
- There is a culture or initial steps towards sustainable transport.
- There is a transport infrastructure that allows for at least some cycling.
- HEAT is already used – perhaps by local experts or academics.
- There is a (possible) champion in or close to the Department of Transport.

### 6.2. Create a network of HEAT ‘super-users’

People need encouragement to begin using the HEAT; and then they need help and support in finding and using the right data, and interpreting and defending the results. ECF/WHO should aim to have an identified person within each organisation, or at least within each country, who is responsible for increasing its use. Make this person responsible for training and dissemination of the HEAT, and ensure that they are available to answer routine questions. Train them to refer more tricky questions to the WHO. Develop a network of such ‘super-users’ and bring them together for training and to share ideas, perhaps linking with THE PEP<sup>42</sup> focal points. Make also sure these people are skilled to defend the HEAT and its outputs, not just to use it and to support other users, in particular in view of the frequent survey response that results were met at times with disbelief.

### 6.3. Encourage key stakeholders to ‘give it a try’

The promotion of HEAT should focus less on the qualities of the HEAT itself and its provenance, and more on what it can do for the user. People who have used it have been universally impressed with the size of the health impacts. Thus, key stakeholders, mostly on the national level, should be targeted and encouraged to try out the HEAT (using real data and/or policy goals where possible) in their own situations.

<sup>42</sup> <http://www.unece.org/thepep/en/welcome.html>

## 6.4. Encourage its use in larger-scale modelling and scenarios

Linked to the above point, HEAT is at its most persuasive when applied to larger-scale scenarios, rather than small-scale infrastructure or schemes. Encourage its use for example in estimating the impact of doubling bike use in a city or achieving an already foreseen local, regional or national policy goal.

## 6.5. Aim for the HEAT to be recommended for use by national transport administrations and the European Commission

Local transport planners – and consultancies supporting them – tend to focus on applying tools and elements that are part of the official cost-benefit analysis guidelines. Thus, large scale application is likely to only occur once HEAT is officially recommended for use by the national transport authorities. The right key persons (see recommendation 0), the network of super-users (see recommendation 6.2) but also being aware of windows of opportunity, e.g. scheduled updates of national guidelines, new ministers being appointed etc., can be crucial in this process.

Just as within countries the use of the HEAT has been stimulated by national-level endorsement, we should aim for the European Commission to support HEAT at a strategic level. This would be best within the context of a European cycling action plan, strategically linked to the currently ongoing more informal process of THE PEP<sup>43</sup> to develop a pan-European Master Plan for Cycling Promotion by 2019. Time seems favourable to aim for a directive to implement cost - benefit analyses for national or local cycling policies, building on a the recent declaration on cycling at an informal meeting of ministers of transport<sup>44</sup>, which called for an EU level strategic document on cycling and European focal point on cycling.

## 6.6. Invest in data collection

The survey revealed that lack of data on walking and cycling is a key barrier to use of the HEAT. Users from the interview stated that trying the HEAT often had an unexpected outcome of helping them realise that the gaps in their dataset. Supporting national and sub-national transport authorities in collecting better data on cycling and walking should be another key component of a future HEAT dissemination strategy.

## 6.7. Promote its use more generally

As well as the more specific targeted initiatives to increase use of the HEAT, it can also be promoted on a more general platform. Previous communications work coordinated by WHO-Europe could be re-considered and/or updated. Further elements includes:

<sup>43</sup> <http://www.unece.org/index.php?id=40211>

<sup>44</sup> <http://www.eu2015lu.eu/en/actualites/articles-actualite/2015/10/07-info-transports/>

- Press releases with specific HEAT calculations that have been conducted for cities / countries. These have led to high levels of publicity and lead to specific uptake.
- Use the available case studies more frequently, widely and strategically.
- Promote the use of the HEAT beyond the usual conferences (e.g. Velo-city), specifically also targeting national key stakeholders and local transport planners.
- Make links to 'Health-in-all policy' organizations – they could help to promote HEAT on the European level (e.g. EuroHealthNet, European Public Health Association), institutions linked to local transport planners such as POLIS (who have already organized HEAT workshops and are interested to do so also in the future) and identify further allies in the transport world, in particular with regard to climate change debates, where health co-benefits are increasingly recognized.
- New translations of the HEAT user guide (perhaps according to demand following consultation with the network identified above.)

So the study allowed identifying a range of possible follow-up actions, which should be further developed and disseminated strategically amongst the HEAT coordinators the ECF and its members, the HEAT core team and other players including the wider HEAT community.

## 7. Annexes

### 7.1. Survey

(Respondents are given different questions depending on their early answers; below is shown the most detailed set of questions)



#### Survey on use of HEAT for walking and cycling

The WHO Regional Office for Europe in collaboration with the European Cyclists' Federation would like to ask you some questions about the Health Economic Assessment Tool (HEAT) for walking and cycling.

The survey will only take a few minutes and will help inform the further development and dissemination of the HEAT.

If you have any questions about the survey, need further assistance or technical support please contact us at [heat@euro.who.int](mailto:heat@euro.who.int)

Thank you very much!

**\* 1. Please describe the sector(s) in which you work**

- Transport
- Public health
- Environment
- Academic
- Other (please specify)

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## Survey on use of HEAT for walking and cycling

**\* 2. Which of the following describes your experience of the HEAT?**

- I have never heard of the HEAT
- I have heard of the HEAT but not looked at it
- I have had a look at the HEAT website but not used the tool
- I have gone through the HEAT and entered some data but only to see how it works
- I have performed one or more full calculations using the HEAT
- Other (please describe)

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Survey on use of HEAT for walking and cycling

3. Which version of the HEAT did you use?

- HEAT for cycling
- HEAT for walking
- Both HEAT for cycling and HEAT for walking

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Survey on use of HEAT for walking and cycling

4. What sort of calculation did you do using the HEAT?

- Estimate the value of future projected or hypothetical levels of cycling or walking
- Estimate the value of measured increases in cycling or walking.
- Estimate the value of existing levels of cycling or walking.
- Other (please explain):

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Survey on use of HEAT for walking and cycling

5. How did you present the results of your HEAT calculation?

- A written report for internal use with my organisation
- A written report that was published online or in print
- A presentation
- A published academic paper
- Other (please explain):

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**Survey on use of HEAT for walking and cycling**

**\* 6. What was the main target audience for your HEAT results?**

- Research body (eg university or research institute)
- National authority or ministry
- Local authority or municipality
- non-government organization
- Other (please specify):

**\* 7. Please explain what impact you think the results had on the target audience.**

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**Survey on use of HEAT for walking and cycling**

**8. Please describe if the use of the HEAT is encouraged in your country, city or organization**

- It is a mandatory part of transport assessments
- It is formally encouraged or promoted by the government or key organisations
- Its use is voluntary

Please provide more details of your answer to this question

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Survey on use of HEAT for walking and cycling

**\* 9. Do you think your HEAT calculation has had an influence on policy or practice on transport assessments in your country/region/city (as appropriate)?**

YES. Please explain what influence you think it has had:

NO. Please explain why you think it has not been influential:

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Survey on use of HEAT for walking and cycling

**10. Please add any further comments you would like to make about the HEAT for walking and cycling**

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## 7.2. Interview guide

### Brief:

*ECF commissioned us to carry out this study, in close collaboration with the WHO.*

### Main question:

*How could the HEAT be more widely and effectively disseminated to facilitate greater policy influence?*

1. To review the impact of the integration of HEAT in evaluation protocols in the UK, Austria and other Member States where it has been applied.
2. To determine what lessons can be learned about integrating HEAT into transport infrastructure assessments in other Member States.
3. To assess the potential for increased application and impact in those and other European Member States.
4. To provide input useful for a strategy to expand the number of Member States using HEAT type analyses when transport infrastructure planning decisions are made.

### OK TO RECORD?

**Interview guide** (main questions only; interviewer will respond to discussion and adjust accordingly)

#### 1. First a quick look back - how is HEAT used

- a. How did you learn about HEAT in the first place?
- b. What made you use it initially?
- c. (on what specific case did you use HEAT – briefly explain)
- d. Then recap based on info from questionnaire:
- e. How did you use the results (report presentation etc.)

#### 2. Institutional/policy mandated use of the HEAT

- a. (from questionnaire) Is the use of the HEAT encouraged “officially” in your country? 1
- b. what helped it get to this position
- c. was there one or several key person
- d. were there political processes / approvals of committees (at which stages?)
- e. if the use of the HEAT is encouraged (or not): what aspects of HEAT have helped (or hampered)
- f. in summary: if HEAT was influential - what were key milestones to get there?
- g. what could be improved

#### 3. Policy influence

- a. (from questionnaire) has the use of the HEAT influenced policy?
- b. In what way?
- c. probe on policy influence i.e. how do you know it has influenced policy?

d. Are you able to provide any evidence to support this?

**4. How can we translate this to other countries?**

- a. what advice would you give to other countries or organisations?
- b. How can the influence of HEAT be increased across Europe?

Do you have suggestions / conclusions?

Thanks very much for your help

## 7.3. Interviewees

Name of Interviewee	Institution	Country
Lucy Saunders	Transport for London	United Kingdom
Robin Cambery Phillipp Thierson	Department for Transport	United Kingdom
Jose Luis Terreros	Consejo Superior De Deportes	Spain
Bruno van Zeebroeck	Transport & Mobility Leuven	Belgium
Frederik de Depoortere	Brussels-Capital Region	Belgium
Martin Eder	Austrian Ministry for Agriculture, Forestry, Environment and Water Management	Austria
Zoë Heritage	WHO Healthy Cities	France
Catherine Perez	Agència de Salut Pública de Barcelona	Spain
Minna Aittasalo	UKK Institute for Health Promotion Research	Finland
Christophe Reuter	Ministère du Développement durable et des Infrastructures	Luxembourg
Stefan Grudemo	Swedish Transport Administration	Sweden