

# ESTIMATE

## A behavioural analysis and examination of environmental implications of multimodal transportation choice

DURATION OF THE PROJECT  
01/01/2007 – 31/01/2009

BUDGET  
408.380 €

### KEYWORDS

Multimodal transportation choice, Travel behaviour, Cost-benefit analysis, Activity-based approach, Environment impact, Sensitivity-analysis

### CONTEXT

Urban areas are the prime generators of wealth and economic growth in countries. The performance of the transport system (as a means to overcome space) and the structure of the land-use system (spatial distribution) are however the most important factors that determine the quality of this potential of cities. For more sustainable travel behaviour to occur, it is important to have any transport mode choice clearly integrated in a well coordinated multimodal transport chain. For any multimodal transport chain to support the principles of sustainable development, it should (i) fulfil a social development role, it should (ii) support economic growth and development, and it should have (iii) environmental benefits. It is our goal within this project to pay attention to these three pillars of the concept of sustainability within a context of multimodal transport.

### PROJECT DESCRIPTION

#### Objectives

The overall objective of this research project is to obtain insight into the activity and related travel behaviour of individuals in a multimodal transportation context.

To this end, our first objective is to predict how individuals respond to changes in their travel environments. Specific focus will be placed on multimodal transport. We will also examine how the price which needs to be paid in a multimodal transportation context affects the propensity to use multimodal transport.

The second objective is to get a detailed idea about the different costs and benefits that a multimodal transport chain brings along.

The third objective is to analyse the energy and environmental impact of multimodal passenger traffic and compare the different transport modes (train, car, walk, bicycle, bus, tram, etc.) on a well-to-wheel basis.

#### Methodology

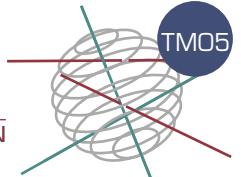
This project has been subdivided in 7 workpackages.

The first workpackage (WP 1) deals with the specification and selection of policy measures which will be investigated in this project. Some policy measures may include the evaluation of population scenarios, such as a change in the composition of single-adult households, household income, car possession, etc. on activity-travel patterns. Other measures which can be investigated are the hypothetical spreading of peak-period traveling through relaxing working, school and shopping hours on activity-travel patterns.

The second workpackage (WP 2) deals with the data collection which is needed for the project. Two kinds of data sources are needed. Firstly, activity-diary data need to be collected reflecting the day-to-day activity and travel scheduling decisions by households. On top of these data, a specific data collection effort is necessary to estimate the impact/sensitivity of the policy measures that have been selected in WP1. We will collect these data by means of stated preference and stated adaptation experiments.

The third workpackage (WP 3) examines the adaptation of the activity-based and emission models which are used to current date in order to evaluate the chosen policy measures. In order to assess the environmental impacts, we will use an environmental vehicle rating tool, which is labelled Ecoscore. However, this model is not able to account emissions for an integrated multimodal transport chain until now. Also this is part of the work that will be conducted within WP3.

In the fourth workpackage (WP 4), we will formulate the policy measures that have been chosen in workpackage 1 in terms of different hypothetical scenario's in order to make them comprehensible and clear for the respondents. The first goal within this workpackage is to assess the social acceptability and the user's responsiveness towards the chosen policy measures. This is important information that is typically not taken into consideration in policy recommenda-



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tions. Another goal is to define policy measures in terms of scenario's in order to make them suitable for evaluation in the context of an activity-based model.

The fifth workpackage (WP 5) will use the new developed Ecoscore indicator and collected data to assess the environmental impact of multimodal passenger transport. A sensitivity analysis will be carried out to assess the influence of the input parameters on the end-results. This is an important aspect since the required data are not always easily accessible and are not always complete or comparable.

In the sixth workpackage (WP 6), a Social Cost-Benefit Analysis (SCBA) model is used.

The final workpackage (WP 7) deals with final policy recommendations.

### INTERACTION BETWEEN THE DIFFERENT PARTNERS

(C=Uhasselt; P2=VUB; P3=VUB; P4=ULB)

WP 1 will be executed by C from

month 1 till 6. Based on the policy measures which are specified, C, P3 and P4 will carry out additional data collection efforts in WP2 during year 1. In WP3, C and P3 perform the model adaptations. WP4 will be executed by C, P2 and P4; while WP5 and WP6 will be respectively carried out by P3 and P2.

### EXPECTED RESULTS AND/OR PRODUCTS

During the research process, brief internal progress reports are produced six-monthly by the Project Management Committee. These progress reports will be compiled and provided to the members of the Follow-up Committee every six months for discussion, together with the preliminary reports of the finished work packages. In addition to the intermediary deliverables, final deliverables will also be provided. These are the collected data from WP 2, the adapted activity-based and emission models from WP 3 and the project summary reports at year ends 1 and 2. In addition to this, papers will be published in leading scientific journals and on international symposia and conferences.

### CONTACT INFORMATION

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#### Follow-up Committee

For the complete and most up-to-date composition of the Follow-up Committee, please consult our Federal Research Actions Database (FEDRA) by visiting  
<http://www.belspo.be/fedra> or  
<http://www.belspo.be/ssd>

### PARTNERS - ACTIVITIES

Hasselt University (IMOB) performs extensive research in the area of activity-based transport models. Such models are important in the framework of the Estimate project, in order to be able to account for policy measures in a multimodal transportation chain.

VUB-ETEC's expertise within the area of emission modeling and vehicle technology, and in particular the Ecoscore-tool, can be employed directly in this project (cf. WP3 and WP5).

Researchers within VUB-MOSI have focused on cost-benefit analyses. Therefore their contribution in WP6 will be of great use within this project.

ULB's extensive expertise within the area of psychosocial sciences, applied within transportation and mobility, will be of great importance in WP2 and WP4.

