

SSD

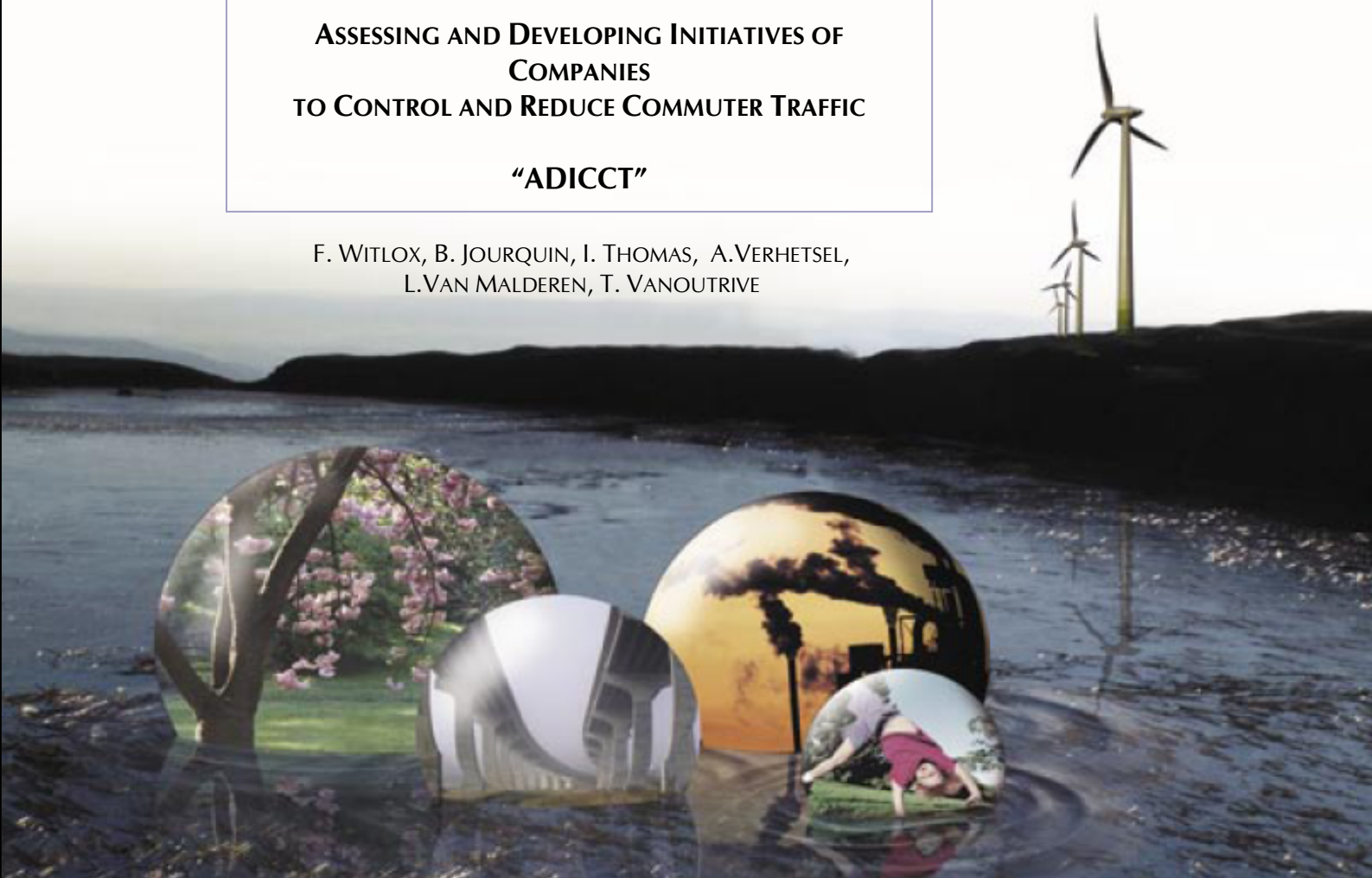
SCIENCE FOR A SUSTAINABLE DEVELOPMENT



**ASSESSING AND DEVELOPING INITIATIVES OF
COMPANIES
TO CONTROL AND REDUCE COMMUTER TRAFFIC**

“ADICCT”

F. WITLOX, B. JOURQUIN, I. THOMAS, A. VERHETSEL,
L. VAN MALDEREN, T. VANOUTRIVE



ENERGY

TRANSPORT AND MOBILITY

AGRO-FOOD

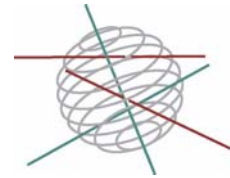
HEALTH AND ENVIRONMENT

CLIMATE

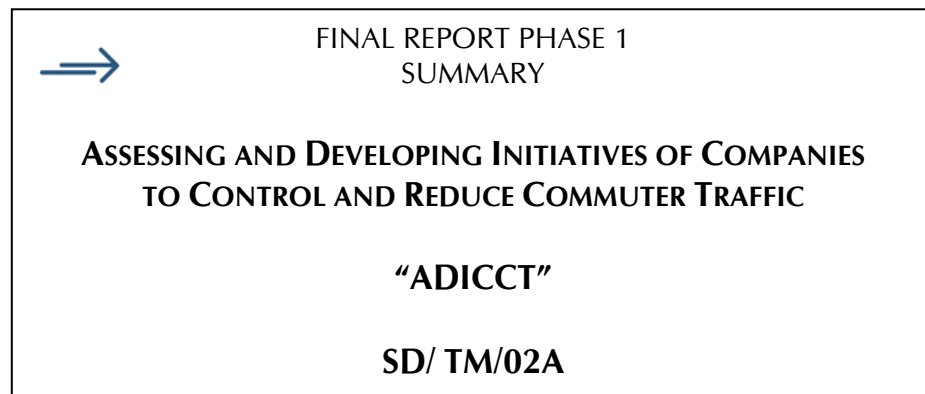
BIODIVERSITY

ATMOSPHERE AND TERRESTRIAL AND MARINE ECOSYSTEMS

TRANSVERSAL ACTIONS



Transport and Mobility



Promotors

Frank Witlox

Universiteit Gent

Bart Jourquin

Facultés Universitaires Catholiques de Mons – FUCaM

Isabelle Thomas

Université Catholique de Louvain – UCL

Ann Verhetsel

Universiteit Antwerpen – UA

Collaborators

Laurent Van Malderen

FUCaM & UCL

Thomas Vanoutrive

UA & UGent

Authors

*F. Witlox, B. Jourquin, I. Thomas, A. Verhetsel, L. Van Malderen,
T. Vanoutrive,*

January 2009



BELGIAN SCIENCE POLICY



Rue de la Science 8
Wetenschapsstraat 8
B-1000 Brussels
Belgium
Tel: + 32 (0)2 238 34 11 – Fax: + 32 (0)2 230 59 12
<http://www.belspo.be>

Contact person: Georges Jamart
+ 32 (0)2 238 36 90

Neither the Belgian Science Policy nor any person acting on behalf of the Belgian Science Policy is responsible for the use which might be made of the following information. The authors are responsible for the content.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without indicating the reference :

F. Witlox, B. Jourquin, I. Thomas, A. Verhetsel, L. Van Malderen, T. Vanoutrive. ***Assessing and Developing Initiatives of Companies to Control and Reduce Commuter Traffic “ADICCT”***. Final Report Phase 1 Summary. Brussels : Belgian Science Policy 2009 – 6 p. (Research Programme Science for a Sustainable Development)

1. Introduction

Companies are an important actor in the mobility debate. As source of the home-to-work travels, they generate a lot of traffic. This traffic contributes to the everyday clogging in the main cities in Belgium. Many companies are aware of this problematic and develop initiatives in order to reduce or control the use of private cars by their employees. Though the visions and actions of the companies are often neglected in studies about mobility. ADICCT is an innovative research that has a company-oriented approach.

The ADICCT project aims at Assessing and Developing Initiatives of Companies to control and reduce Commuter Traffic. To achieve this objective the efficiency of existing mobility policies will be evaluated considering various criterion: time and distance savings, potential of modal shifts, contribution to a fair division of costs, and level of employers and employees acceptance. The assessment of the level of success will next be analysed in models including both spatial and economic variables. Finally, the expected result is a guideline improving the decision process of companies in their invests for a sustainable mobility

The project is spread in 4 years split in two phases. The first phase started in February 2007 and ends in January 2009 and the second phase - if granted - ends in January 2011. The research can be divided in 4 parts: 1. a literature review, 2. a data collection, 3. data analysis, and 4. the formulation of recommendations.

The data collection was initially planned as a case study followed by a large scale questionnaire. It was replaced by cleaning up and enriching an existing and exhaustive “home to work travel” (HTWT) database of the “FPS Mobility and Transport”. The case-study will however be maintained to perform an in-depth best practices analysis. This was suggested by the follow-up committee due to the marginal added value of a specific survey.

The following tasks were achieved during the first phase: a literature review, a classification of the companies, a classification of the mobility measures taken by the companies and a modeling of the modal split of the employees. The case study, more data analysis and a formulation of some recommendations will be performed during phase 2 of the project.

2. State of the art: mobility management by employers

The literature review allows to classify the possible mobility measures into 3 categories: those concerned by alternative work hours, alternative travel options, and the “push and pull” measures.

The “alternative work hours” option involves “compressed work-weeks”, flexible work schedules, teleworking and telecommuting. The aim is to obtain a better fit between the professional and personal activities (Hung, 1996) and to influence the employees’ need to commute. However it often affects only the timing of the commuting rather than the number of trips.

The alternative travel options groups in one hand ride-sharing, shuttle bus and car/bus pooling and, in the other hands, non motorized travel means (bicycles or walking). Employers choose to promote alternative travel options to encourage employees towards more environmentally-friendly travel modes (O’ Fallon et al, 2004). However, travel-related strategies are affected by the subjective assessments desires and affinities of individuals with respect to travel, as well as their attitudes, personality and lifestyle (Cao and Mokhtarian, 2005)

The push and pull measures affects the two key factors in a travel choice: the cost and the convenience. The pull measures rewards the use of alternatives to the drive alone with subsidies or transportation allowance. However it represents a cost for the company. At the contrary the push measures try to discourage the use of car and have a reduced cost. It consists for example in establishing parking restrictions, or in suppressing the company cars.

Implementing a mobility policy can be a mean of achieving both cash and non-cash benefits. Indeed a successful mobility policy save the costs linked to the employees’ car trip, the parking spaces while it reduces the employee’s tardiness, raises their productivity and improves the accessibility of the site for the employees either than for customers.

3. Exploratory research: making a classification of companies

This exploratory research aims at classifying companies and identifying successful mobility policies. Companies are clustered in groups of companies having similar commuting behaviour of their employees, and in groups of companies with the same mobility policy. The comparison between the 2 allows identifying the successes and the failures. The results will serve to define companies to interview in the case study of the second phase.

The HTWT database of 2005 is used. This survey is organized every 3 years by the “FPS Mobility and Transport”. It is a census of the travel mean of the employees of the worksites of companies located in Belgium of more than 100 employees. It contains the percentage of workers using one of the 9 possible travel means on each of the 7460 worksites. It contains also the measures taken by those worksites in favour of a more sustainable mobility. In total, 28 push measures are listed and grouped into 4 categories: promotion of the use of bicycles, promotion of the use of the public transport, promotion of the use of carpooling, or miscellaneous measures.

The first classification clusters the worksites on the basis of the travel means used by their employees. Using the Ward’s method and considering several classification’s criterion (CCC, Pseudo-F and Pseudo-T²), the worksites are grouped into 9 clusters, wherein each travel means is prevailing or at least significantly used. The second classification clusters the worksites using the measures in favour of mobility that are taken. Due to the binary character of the variables, a correspondence analysis is firstly done. It shows that the measures promoting a travel means are related to each others. The sample is clustered in 4 groups of worksites corresponding to: no mobility policy, bicycles-oriented policy, carpooling and public transport-oriented policy, and financial incentives-oriented policy.

The two clustering methods are compared and the successful mobility policies are identified when the cluster of travel means corresponds to the cluster of the travel means promoted at the worksite. It is found that about only 30% of the mobility policies meet the criteria, and that most of them promote the use of bicycles.

4. Exploratory research: making a classification of measures

The second exploratory research aims at classifying the mobility measures taken at the worksites and identifying a potential link between the accessibility problems encountered and the measures taken at the worksite. The results of this research will be the basis of models explaining the modal choice of the employees.

A dichotomous Exploratory Factor Analysis (EFA) is used. The data comes from the HTWT database of 2005. Questions about the accessibility problems have also been asked in the survey. The results show that no strong link is detected between the accessibility problems and the mobility measures taken. However particular factors can be found between mobility measures, confirming the theoretical classification made in the literature review. In total among the 12 categories made by the EFA, 7 groups mobility push measures. This assessment shows that mobility measures are related, and the employers regularly choose to implement a set of mobility measures.

5. Exploratory research: modelling modal split

The third exploratory research made during the first phase of the ADICCT project aims at modeling the modal split using the multi-level regression analysis. With the HTWT database, two models have been developed modeling: the use of bicycle using a spatial hierarchy, and the use of carpooling using an economic hierarchy. The results serve to identify the factors increasing the use of the bicycle and the carpooling, and also to measure the role and the efficiency of mobility measures in the commuting behaviour.

To model the use of bicycles a spatial hierarchy is used. Worksites are nested within municipalities, nested within districts. The dependent variable is the percentage of commuter using bicyclists in each worksite. The model shows that the use of bicycles is explained by variables related to: the worksite (size, work regime, sector of activity and number of available parks), the environment at the municipality level (average slope of the road, the proportion of young people and of people with children, and the job density), and the mobility management (provisions of bicycles and financial incentives). Another conclusion is that the bicycles facilities at the worksite level do not affect the use of bicycles because they in are our sample often implemented in unfavourable place (commuting distance too high or complex trip characteristic).

The use of carpooling is modeled with an economic hierarchy. The worksites are nested within companies, and companies within sector of activity. The dependent variable is the percentage of commuter using carpooling in each worksite. A negative relation of the size of the worksite and the public transport availability is found. At

the contrary, fix work regime increases the number of carpoolers. Differences between economic sectors have also been found.

6. Conclusion

The ADICCT project aims at Assessing and Developing Initiatives of Companies to control and reduce Commuter Traffic. The expected result is a guideline improving the decision process of companies in their invests for a sustainable mobility.

During the first phase, a literature review and three exploratory researches based on the HTWT database have been made. The overall results show that companies tend to implement a set of measures promoting a travel mean independently of the accessibility problems meet by their employees. They also show that only few mobility policies can be considered as successful due to the many factors that influence the behaviour of the commuters. However some factors have been yet identified. They can be divided in three groups: worksite related (economic sector, work regime, size of the worksite), environment related (average slope of the road for the commuter using bicycles, job density, and so on) and mobility management related (measures taken).

In the second phase of the project, further analysis have to be made to understand in-depth the factors influencing the commuter. The most important is a case study wherein managers of successful companies will be interviewed about their mobility policy. The objective is to deeper study the mobility policies and its implementation into the company.

At the end, a report of the project will be produce and will summarize the concepts and definitions, the mobility management initiatives taken in the past, the literature about the subject, the researches made and the case-study. It also contains a list of successful mobility policies and a set of best practices in terms of mobility policy.