



**European Cooperation
in the field of Scientific
and Technical Research
- COST -**

Brussels, 21 January 2004

Secretariat

COST 220/04

DRAFT MEMORANDUM OF UNDERSTANDING

Subject : Draft Memorandum of Understanding for the implementation of a European
Concerted Research Action designated as COST Action 355 "Changing
Behaviour Towards a More Sustainable Transport System"

Delegations will find attached the abovementioned Memorandum of Understanding.

MEMORANDUM OF UNDERSTANDING
FOR THE IMPLEMENTATION OF A EUROPEAN CONCERTED RESEARCH ACTION
DESIGNATED AS
COST 355
“CHANGING BEHAVIOUR TOWARDS A MORE SUSTAINABLE TRANSPORT
SYSTEM”

The signatories to this Memorandum of Understanding, declaring their common intention to participate in the concerted Action referred to above and described in the Technical Annex to the Memorandum, have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of document COST 400/01 “Rules and Procedures for Implementing COST Actions”, the contents of which the Signatories are aware of.
2. The main objective of the Action is to develop a more rigorous understanding of the conditions under which the process of growing unsustainable transport demand could be reversed, by changing travellers’, shippers’ and carriers’ behaviour.
3. The economic dimension of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at Euro 4.5 million in 2003 prices.
4. The Memorandum of Understanding will take effect on being signed by at least five Signatories.
5. The Memorandum of Understanding will remain in force for a period of four years, calculated from the date of first meeting of the Management Committee, unless the duration of the Action is modified according to the provisions of Chapter 6 of the document referred to in Point 1 above.

COST 355

CHANGING BEHAVIOUR TOWARDS A MORE SUSTAINABLE TRANSPORT SYSTEM

A. BACKGROUND

A.1 Introduction

Current transport behaviour leads to increasing congestion of the infrastructure, growing dependence on imported fossil fuels, continually rising energy demand, and growing CO₂ emissions. The road infrastructure system is failing to cope with the amount of traffic. There is a broad consensus in the declared policies of local, national and international agencies that this trend is not sustainable in the longer term, so that one of the major roles of transport policy is to manage, slow down or reverse this process. This is particularly the case in metropolitan areas, and concerns both personal travel and freight transport. Four main types of behavioural changes might help to achieve this objective:

- a better spatial organisation (leading to fewer trips and shorter distances, being aware that distances are increasing much more rapidly than number of passengers or tons of freight),
- the choice of more environmentally friendly modes,
- the choice of vehicles with lower consumption and emissions and
- a better use of vehicles (higher, occupancy rate and lower empty running).

A.2 Current status

The urgency of the situation has been emphasised by the White Paper 'European Transport Policy for 2010 : Time to decide':

In order to promote a more sustainable transport system, it is essential to (a) understand the determinants of individuals and firms travel and transport decisions and how these could be influenced in various time perspectives and (b) to monitor in an accurate and timely fashion the effects of specific policies, so that an optimal policy mix can be assured. This requires the development and implementation of observational and analytical tools, which enable the investigation of changes in transport and travel behaviour and the conditions necessary to promote these changes.

A shift to sustainable forms and means of transport is also a main goal of the transport policy documents in the EU Member States and other European countries.

A number of projects and studies have been conducted in this field, not only by the EC, but also by the OECD, ECMT (European Conference of Ministers of Transport) and other international organisations and on the national and regional level. Results of the recent research activities have been implemented into practice and some of these measures have already brought significant improvement, particularly if supported by the relevant economic tools.

A.3 Solutions

Most of these studies only dealt with certain aspects (e.g. improvement of public passenger transport or freight logistics or mobility survey) of the process. This COST Action targets a broader scope of the transport process elements and will focus on 3 crucial topics.

This Action takes the state-of-the-art knowledge as a starting point. Based on this knowledge, an integrative analysis will be made resulting in a state-of-the-art and a tool for decision-makers. It will be a tool to support them rather than a handbook in which everything is described in detail. As a side effect of this Action, more insight will be given on the missing links and white spots in the studied fields. This can be used as input for future research activities.

A.4 Why COST

Within the European Union, special knowledge and skills about observing, analysing and modelling transport behaviour exist in different scientific institutions and research consultancies. This knowledge is based either on European R&D-projects (MEST, TEST, MYSTIC, ETIS, etc.) or has been initialised and funded by national R&D-programmes. Despite the mutual interest and benefit for other organisations within the EU and for the EU-Commission itself, information and knowledge transfer has only taken place on an informal basis. The COST Action will create a platform to exchange, consolidate and disseminate existing knowledge and skills to scientific institutes, practitioners and administrations across the EU.

The topic and goal of this Action is a seriously observed issue in a number of European as well as non-European countries and COST is one of the few options for extensive co-operation on a broad Europe-wide basis and beyond.

B. OBJECTIVES AND BENEFITS

The main objective of the Action is to develop a more rigorous understanding of the conditions under which the process of growing unsustainable transport demand could be reversed, by changing travellers', shippers' and carriers' behaviour.

A secondary objective of this Action is to bring potential solutions for a long-term vision related to this problem:

- establish an integrated Europe-wide data collection infrastructure on travel and transport monitoring, based on the combined use of ITS data sources, survey sources and traditional traffic/loading counts;
- enhance the knowledge of the short, medium and long term interactions of individuals, firms, and institutions in transport / land use systems / lifestyles / economic factors / attitudes and perceptions;
- develop a formal theory of policy intervention, underpinned by empirical evidence on the behavioural response to policy measures, to determine how best to manage the transport system dynamically through time in a sustainable manner.

Sharing of data resources, methodological advances and empirical results is clearly more cost effective and beneficial from a research point of view. There is also a need to combine different data sources (surveys and administrative data), especially for comparative analyses between urban areas.

C. SCIENTIFIC PROGRAMME

Traditionally transport data collection has focused on the production of net accounting statistics. However, for the proper assessment of change this is problematic, since changes occur in various directions, but in most instances the changes do not totally counterbalance each other: e.g. the urban sprawl and increase of number of households using more than one car. Population groups concerned by each of these movements are not the same, and their behaviour is not sensitive to the same factors (prices, regulations, etc.). Thus in order to understand the development over time and its determining factors, it is insufficient to look at the net changes; instead the behaviour of different individuals at different points in time must be considered. Concerning data collection and the related analytical methods, there are two main ways to address this question:

by asking persons or firms how they would change their behaviour in the future ; these ‘prospective methods’ are Stated Preferences (SP), Stated Response (SR), etc.

by observing these changes in the past on a long enough period ; these ‘longitudinal methods’ are based on panel surveys, repeated surveys or mobility biographies, and also on administrative data, because exhaustive censuses are progressively disappearing in Europe.

Referring to theoretical discussions about equilibrium, for a better understanding of the conditions of change, one cross-section (snapshot) is not enough: only repeated observations or “moving pictures of trajectories” (i.e. panel surveys) are adequate tools. The collection of such data is very costly and presents difficulties over the longer period; in addition their analysis is not straightforward (e.g., a clear assessment of what is due to transport supply and to the socio-economic context).

Because of the difficulties listed above, relatively limited longitudinal data resources exist. One exception is the socio-demographic panel initiated by EUROSTAT in 1994, which is harmonised across European countries. Unfortunately, this survey contains little information on transport, with the exception of car ownership. Effort to collect and analyse panel data are being conducted separately in a number of European countries with the main documents in different languages, either mobility or car ownership panels and repeated surveys. This means there is a need to combine different data sources from several projects, dealing with mobility, time use and expenditure surveys and the EUROSTAT project concerned with developing statistical methods for sharing and combining transport, environment and health data.

Concerning **freight transport**, the collection of data aiming at the analysis of firms' behaviour has developed later than that for passengers'. The existing methods include:

- 'shipper and transport operator survey',
- detailed study of business decision making in the container transport industry, as part of the development of a new strategic freight model scheme
- innovative methods of quantitative firm survey, enabling the modelling of road occupancy for urban freight transport.
- survey on change of the transport of goods, investigating technological and organisational changes of both the production and the logistic chain in industrial firms.

Prospective methods, Stated Preferences and Stated Responses have been developed both for passengers and for freight and the Action will involve teams in these fields. There is also a common interest in methodological issues such as the optimising of sample schemes and the treatment and correction of non-sampling errors, such as non-response.

In addition several groups are actively involved in promoting new technologies for tracking (for vehicles, travellers or shipments), web-based methods for panel surveys and in the archiving and use of ITS data sources for assessment and monitoring of policy impacts. Experience in the dissemination of information via GIS systems, websites and on-line databases is increasing.

In terms of analytical issues, a few examples related to sustainable mobility are as follows:

Concerning urban sprawl, the interaction between housing, work location, car and season ticket ownership, based on survey and administrative data from registers, biographies and census;

Improved models of individual-level behavioural response, focusing particularly on issues of behavioural dynamics and adjustment processes, on different time scales, between car ownership and residential/work location and car ownership, travel patterns and urban form;

Assessment of the socio-economic factors influencing the dynamic behaviours for car ownership and use (or choice of vehicles) using panel and pseudo- panel analysis from expenditure or mobility surveys;

Behavioural changes in transport and activity patterns due to Information and Telecommunication Technology: e-work, e-shopping but also real time information services in the transport system. This area also gives a good example involving both passengers and freight (e-shopping and home deliveries) and co-ordinating measures dealing with various aspects of urban logistics.

Inputs from other related projects and networks at national, European and global levels will be used to provide added value to the work programme. This allows the integration of innovative research into the ongoing work programme. Specifically, results from the 4th Framework Programme projects MEST and TEST, of the 5th Framework Programme MYSTIC and ETIS, and from at least three PREDIT international projects, will be used as input to the Action.

This COST Action opens the opportunity to harmonise the design of mobility surveys, create comprehensive international databases, compare available analysis through different countries and disseminate acquired knowledge on mobility to different audiences, including national governmental decision-makers.

D. ORGANISATION

In this COST Action, the scope is limited to three crucial topics. For a sound administrative and scientific organisation, each of them is treated by a rather autonomous Working Group. Two levels of network membership are foreseen: the active participants in the Action through its Working Groups and Short Term Scientific Missions, and the people only interested in the outputs, which are essential for the dissemination. In parallel the user's demand will be established. It is important that long term and short-term issues correspond with the policy goals proposed by decision-makers.

Much research is carried out in Europe and elsewhere which is of relevance for the topic under study. It is important to learn from this and avoid duplication of work. Therefore after defining the methodological guidance, the second step will be an inventory of the various aspects of interest using state-of-the-art knowledge.

D.1 Freight Transport and Energy Consumption

The understanding of the determinants of demand in vehicle-kilometre as well as its consequences on energy consumption and pollution is much less satisfactory for freight than for passenger transport, although effective action in order to reduce the consequences of freight traffic requires a thorough understanding of the factors that motivate logistical choices. Conventional data sources on freight traffic (e.g. administrative data for inland waterways, information delivered by rail companies, truck surveys, etc.) are split mode by mode. The first step is to observe energy consumed for the transport of the shipment all along the chain for improving the analysis of intermodality. Further on, the whole supply chain has to be considered in the changing context of globalisation (e.g. industrial structure for different sectors) and its impact in urban areas as well as in corridors for long distance traffics.

D.2 Automobile (panel data analysis)

Although they are seldom available, panel data exist on transport (e.g. car ownership in the EUROSTAT socio-economic panel, car ownership and annual mileage, the German mobility panel, family expenditure surveys). The comparability of data collected through such different instruments has to be examined carefully. Specific issues of these survey designs have to be tackled, as well as methodologies adapted to the analysis of this kind of data (panel econometrics, duration modelling, etc.). Also advantages and drawbacks of true panel versus pseudo panel data have to be considered. Case studies will focus on car dependence, sensitivity to fuel price, inequities, travel to work, land use and travel behaviour.

D.3 Overview of national transport surveys

Most of the data on mobility are collected through conventional instruments. The analysis of changes in behaviour supposes the comparability of these instruments over time, but also between countries and urban areas all over Europe. A first issue is whether these surveys are conducted from time to time (generally with increasing time intervals) or on a continuous basis in certain countries. New technologies (e.g. mobile phone, GPS and Galileo) can help to improve the accuracy for time (departure, arrival, trip duration) and location (origin, destination, trip distance). Since all data needed for a comprehensive analysis of changes in behaviour cannot be collected in the same survey, pairing different data sources (e.g. trip based surveys with time use or family expenditure surveys) is an important issue.

D.4 Integrative synthesis

The information obtained in Working Groups 1 to 3 will be summarised in a Final Report, presenting each Working Group together with conclusions and recommendations. The identified white spots will be described, which should be useful as input for future research. Specific dissemination tools have to be defined for various groups of recipients, particular emphasis given to the scientific community and practitioners (policy makers and industry), in order to help the orientation of firms' and households' behaviour towards more sustainable mobility.

The Working Groups and their subdivisions into separate tasks are indicated in the following table:

Working group n° and Title	Task Title	Task Contents	Task Output
	<i>Network building</i>	<i>Building network and methodological guidance</i>	<i>scientific and user network</i>
1 Freight transport and energy consumption	1.1 Specification of the method	Method for analysing energy consumption for supply chains	Specification of the method ; selection of the chains
	1.2 Surveys	Survey within the chains	Energy consumption per chain
	1.3 Consumer	Last kilometre of the supply chain	Energy from the shop to home
	1.4 Synthesis	Comparison between chains	Report comparing the supply chains
2 Automobile	2.1 Car ownership	Econometric work on motorization	Comparison of changes per country
	2.2 Fuel price	Work on Parc–Auto panel data	Sensitivity to fuel price
	2.3 Car dependence	German mobility panel	Clarify the question of saturation
	2.4 Travel to work	Changes in mode and travel time	Volatility in individual behaviour
	2.5 Land use	Role of land use characteristics	Evolutions per country
	2.6 Inequities	Social dimension of sustainability	Descriptive analysis
	2.7 Synthesis		Report
3 Mobility surveys	3.1 Innovative methodologies	Use of GPS, geocoding, CAPI, CAWI, in transport surveys	State of the Art of the methodologies used in our countries
	3.2 Temporalities	Methods to describe temporalities	Comparison of the methods used in our countries
	3.3 Synthesis		report
4 Integrative synthesis, research needs and dissemination	4.1 Further research needs :	Identifying white spots and research needs	Description of further research needs
	4.2 Synthesis		Final report and book
	4.3 Dissemination	Dissemination of the results	Papers, Internet, CD-ROM, short focussed synthesis, etc.

E. TIMETABLE

The total duration of this COST Action is 4 years.

The timetable of the Action is based on parallel Working Groups 1-3, responsible for their specific area and therefore working relatively independently and WG 4, responsible for synthesis of their results and dissemination.

Timetable of the COST Action 355

WP	TASK	YEAR 1				YEAR 2				YEAR 3				YEAR 4			
1	1.1																
	1.2																
	1.3																
	1.4																
2	2.1																
	2.2																
	2.3																
	2.4																
	2.5																
	2.6																
	2.7																
3	3.1																
	3.2																
	3.3																
4	4.1																
	4.2																
	4.3																

F. ECONOMIC DIMENSION

The following COST Countries have actively participated in the preparation of the Action or otherwise indicated their interest:

Austria	Belgium	Denmark	France
Germany	Greece	Italy	Norway
Romania	Spain	Switzerland	United Kingdom

On the basis of national estimates provided by the representatives of these countries, the economic dimension of the activities to be carried out under the Action has been estimated in 2003 prices at roughly Euro 4.5 million.

This estimate is valid under the assumption that all the countries mentioned above but no other countries will participate in the Action. Any departure from this will change the total cost accordingly.

G. DISSEMINATION

The growing demand for transport (freight and passengers) and the importance of a sustainable development requires a decision making process relying on a clear understanding of the behaviour of economic agents and of the conditions under which they could change. The main objective of the Action can be expressed as identifying the determinants of these changes, the most flexible users' groups, and the instruments that could guide them towards more sustainable mobility.

The objective of the dissemination plan is to identify and organise the activities to be performed in order to effectively guide, target and promote the results of the Action thus ensuring maximum dissemination of knowledge and impact.

G.1 Individually Targeted Recipients

The results of the Action will be disseminated to the targeted recipients by the participating experts. Given the expected participation in the Action of experts from many European countries, a wide coverage is expected to be attained. The targeted recipients of the results of the Action fall into the following categories and will be able to use the information in the following ways:

a) European Level Policy Maker

The European Level Policy Maker will be able to assess the outcome of the Action in terms of its contribution to a sustainable transport system.

b) National Government Policy Maker

The National Government Policy Maker will be able to use the outcomes of the Action to guide policy to take cost effective measures in order to change mobility patterns of individuals and firms' logistics choices. Besides this the outcomes can be used to guide policy to make the transport system more sustainable and environmentally sound.

c) Regional Planner and policy maker

The Regional Planner can use the results for the spatial planning of a region or of a metropolitan area. The policy maker can use the information to identify impacts of local transport and land use policies at an early stage of the decision making process.

d) Research Institutes/Academia

European Research Institutes and Academia will be able to use the results of the Action as a source of information for their research and teaching. It is expected that the study of the changes in behaviour will have positive feedback to the dynamic analysis of demand by socio-economists. It will also initiate co-operation of research in Europe.

Focused short synthesis from each WG will be delivered to each group of recipients, either by mail or on the Web.

G.2 Wider Dissemination

The results of the Action will be disseminated to a wider audience in the following ways:

Internet

A public internet homepage will be set up on the COST Transport website. This will show the Action's activities in a structured way:

overview

objectives

work programme and deliverables

benefits to different users

links with other projects and publications

This homepage will be linked to other appropriate homepages, such as those of the European Commission Transport RTD Programme and CORDIS, and to the sites of related activities of the participating institutions in the Action.

A tool allowing an online extraction of statistics from survey data on the Internet or Intranet, according to one's own needs or topic of interest (e.g., region or population segment), is under development. It has been already used for certain surveys. Subject to the confidentiality and appropriate authorisation by the data owners, it is planned to adapt this tool for other surveys. In addition, practical guidelines for the interpretation and use of the data in decision making will be put at the disposal of the potential users.

Internal homepage protected by password will be established for distribution of information and presentation of temporary results among the participating institutions and experts.

E-mail Network

It is intended to set-up an e-mail network to ensure that key people around Europe, and also at global level, have the opportunity to contribute to the work when required. The size and use of this network will be determined as the work progresses. This will be part of WG4.

Publication

It is intended to use national and international publications to publicise the on-going activities and results of the Action.

Each of the Working Groups of the Action will produce a synthetic Deliverable Report, which will be promoted on the Internet. Where appropriate, a downloadable option will be set in place.

The Final Report will be published. Hard copies will be sent to targeted recipients shortly after publication.

The collective book "Changing behaviour for a sustainable transport demand" is also an important issue for scientific dissemination. This will present examples of methodologies used in dynamic observation and analysis, both for freight and passenger transport.

Events

A number of tools and methods will be adopted for the dissemination of the detailed findings and recommendations from the Action:

Participation at **international conferences** for presentation of intermediate results;

National and/or European level **seminars** for publicity and dissemination purposes;

Final Seminar: The results of the Action will be made known through a Final Seminar, where European countries not participating in the Action will also be invited to attend. Attendees will be informed about how the Action was implemented, what was learned and about recommendations and/or decisions made as a result of the work.
