

Gerald Berger, Umberto Pisano (WU Wien), Eva Csobod, Tamas Kal-
lay (REC) – on behalf of the CORPUS Consortium

The CORPUS Research Agenda for Sustainable Mobility in Europe

CORPUS – Enhancing the Connectivity between Research and Policy-making in Sustainable
Consumption

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1 Introduction

Mobility is among the top priorities in making current consumption and production patterns more sustainable. Although **sustainable mobility** is confronted with different lock-in situations (e.g. high costs for infrastructure and transport means that cannot be recovered in a short time period), there are also factors that offer new opportunities for transforming the current unsustainable mobility system that is largely based on fossil fuels. Moreover, the decreasing willingness to accept noise or congestion might give rise to alternative mobility approaches and to more sustainable mobility strategies.

The mobility domain is an area with high policy interest. This domain and its modernisation as part of a resource-efficient Europe are among the seven Flagship Initiatives of the Europe 2020 Strategy. As a domain inherent strategy, the European Commission published, in spring 2011, its new White Paper for Transport. These strategies and concepts highlight the attention of policy makers to greening the mobility domain. However, approaches that integrate sustainability challenges are still hard to find.

Generally, mobility is a major issue in the politics of sustainable consumption and production (SCP) debate; therefore, it appears necessary to engage even more in strengthening and furthering our research in sustainable mobility.

With this in mind, the project CORPUS developed a new research agenda, representing the joint efforts of researchers and policy-makers who participated in CORPUS.

Starting in January 2010, the project “**CORPUS: Enhancing the Connectivity between Research and Policy-making in Sustainable Consumption**”, funded by the European Commission within FP7, has been working on and testing novel ways of knowledge brokerage between researchers and policy-makers, in three domains of **sustainable consumption** (food, mobility, housing), in order to enhance evidence-based policy-making and to develop a policy-led research approach.

On sustainable mobility, the CORPUS project consortium has recently organised three workshops, each with an audience of 40-50 experts from all over Europe, where current trends, policy instruments and possible future scenarios were comprehensively discussed and developed. With a total number of about 300 workshop participants and about 800 registered users of the project's web-platform (<http://www.scp-knowledge.eu>), the CORPUS project has already established a broad community.

Extensive work and joint efforts have undergone the formulation of this **Research Agenda (RA)**. Consortium partners, registered users, workshop participants, interviewed researchers and policy-makers have all cooperated in shaping a joint research agenda on Sustainable mobility. Effectively, about 100 people from all over Europe have been actively engaged in the development of the Research Agenda, combining different professional and disciplinary backgrounds. As a result, this Research Agenda represents a joint effort in setting priorities and uncovering challenges in sustainable mobility.

The main objective of the research agenda is to strategically and comprehensively set the stage of research in sustainable mobility for the coming years, with the goal of advancing towards more sustainable consumption. Even though many issues regarding mobil-

ity are defined by local and global causes as well as by local and global effects, the present research agenda considers EU-27 and Europe in general as its own geographical scope.

The research agenda delineates five main 'thematic' strands that define the major areas where sustainable mobility research should converge: (1) Inter-modality; (2) Planning; (3) New types of mobility and mobility management; (4) Behavioural aspects of sustainable mobility; and (5) Internalisation of externalities.

2 Objectives and scope of the research agenda on sustainable mobility

2.1 Strategic objectives of the research agenda

The research agenda aims to develop and suggest a path of present and future research needs in order to help achieve sustainable mobility in Europe. Our objective is, therefore, to show the most pressing and urgent issues in the sustainable mobility domain, and to draw the attention of EU-based research for supporting, consequently, evidence-based policymaking.

The scope of the research agenda regards the domain of sustainable mobility. The CORPUS project is on sustainable mobility in the context of sustainable consumption, and although several topics from the production side have been covered, the focus of the research agenda remains on consumption. The geographical scope of our effort is Europe and, more precisely, EU27 and beyond.

2.2 Process and development of the Joint research agenda

The research agenda has been developed during the course of the second year of the project CORPUS. It has been of primary interest of the project to progress towards the outcome of presenting this document as a shared effort, together with the participants of the CORPUS workshops and the CORPUS web-platform's users.

Effectively, about 100 people all over Europe have been actively engaged in the development of the Research Agenda, combining different perspectives, approaches and instruments. Therefore, in order to achieve the completion of this joint research agenda, a series of steps have been followed during this experience. At first, a sequence of interviews has been undertaken with researchers from all over Europe that work in the sustainable mobility domain. This step has allowed us to collect urgent issues that have received special attention when considering the sustainability of mobility. We have tried to focus on the viewpoint of mobility users with local, regional and European boundaries.

During the second stage of the process, which took place in one of the CORPUS workshops, we prepared a group exercise that put together policy-makers and researchers from different EU member states and from different backgrounds, though all related to sustainable mobility. Thanks to this effort, we again collected a large number of issues and research questions relating to sustainable mobility. All of these inputs were rationalized and then organized into five thematic areas that best suited the knowledge needs that were communicated to us both by researchers and policy-makers. Therefore, this draft document was submitted to the comments of the CORPUS web-platform users.

After the users' comments, another draft research agenda was produced and new insights were collected within the last interaction exercise of CORPUS' mobility series. Furthermore, policy-makers and researchers had the chance of adopting, commenting, rephrasing and adding to this research agenda.

After a second round of remarks from web-platform users, the joint research agenda has been finalized in this document as it is shown in the following section.

3 Themes of research in sustainable mobility

Five areas of research have been identified to define the major fields where sustainable mobility research should converge in order to meet the major challenges of SFC.

1. Inter-modality;
2. Planning;
3. New types of mobility and mobility management;
4. Behavioural aspects of sustainable mobility;
5. Internalisation of externalities.

Each of these themes has received special attention and extensive reflections during the different rounds that constituted our work. For each of these themes a number of 'hot topics' has been identified for research. Therefore, a deeper level has been defined, where 'knowledge needs' have been selected as major and urgent issues for future research in the coming years.

Theme 1:
INTER-MODALITY

Hot topics**Knowledge needs/Research questions**

Integration of and shifts between modes of transport	<ul style="list-style-type: none"> • How to better integrate and link different modes of transport? • How to provide the necessary infrastructure for walking, cycling and public transport, so that modes of transport are more integrated? • What influence has car sharing on modal choices and on mobility behaviours? • What influence has bike sharing on modal choices and on mobility behaviours? • Development of toolbox for sustainable mobility integration for cities (i.e. "Charta") • How to integrate the information from transport providers for third parties such as Google, etc? • Inter-modal modelling (of the logistics) • How to assess communication hubs (modal knots)?
Integration of tariffs for different modes of transport	<ul style="list-style-type: none"> • What is the 'fair balance' between what the user pays and what is subsidised that internalises the external costs?
Transport needs of non-mainstream users	<ul style="list-style-type: none"> • Alternative interface for multi-modal communication • How to ensure equal accessibility to all forms of mobility for handicapped citizens?

Theme 2:
PLANNING

Hot topics

Knowledge needs/Research questions

Sustainable regional, urban and spatial planning	<ul style="list-style-type: none"> • Comprehensive studies on how to get away from the ‘car-logic’ and towards a priority for public transport and cycling • Provision of necessary infrastructure for sustainable modes of transport • Definition of priorities and distribution of existing space dedicated to each transport mode • How to move from small incremental changes to large-scale transition to carbon neutral, sustainable transport solutions? • What is the way forward for scaling up successes? • Institutional frameworks and strategic tools to conduct major change/transitions
Integration with mobility planning	<ul style="list-style-type: none"> • How to ensure coherence among policies? • How to integrate spatial, urban and mobility planning? • Use of longitudinal and panel studies to track the effects of changes in transport and/or land use for travel demand, energy use, and environmental impacts • Alternatives to car-provision in new developments (technical, financial, legal) through mobility management (e.g. PT tickets, CS memberships) and/or provision of Car-Sharing stations within the developments
Reduction of urban sprawl	<ul style="list-style-type: none"> • Short distances and urban density vs. commuting by sustainable mobility • Incentives for attractive city centres and links to sustainable mobility • How to make density desirable for people? • Land-efficiency mortgage (link between mortgage and car-dependence as financial risk)
Accessibility	<ul style="list-style-type: none"> • How to provide accessibility and remove physical barriers for handi-capped citizens? • Needs, safety, delivery of services • How to plan an ‘inclusive’ transport system? • Re-creating services
Knowledge based policy and planning	<ul style="list-style-type: none"> • Definition and application of indicators and performance measures and how to adapt and use them according to purpose and context • Research on the real use and influence of indicators and other knowledge tools for actual planning and decision making processes (e.g. theory development, case studies of indicator applications)
Implementation issues	<ul style="list-style-type: none"> • What does it take to ensure actual implementation in good practice cases? • What goes wrong in the link for good ideas/plans to real practice in some other cases (using comparative case studies)?

	<ul style="list-style-type: none"> • How to understand the cyclic nature of sustainable mobility program implementation? • How can we better understand the complementary nature of sustainable mobility projects as part of a Transport Demand Management strategy?
Goals, public perceptions and practices	<ul style="list-style-type: none"> • Which kind of city do we want? • Comprehensive knowledge on costs / money issues in relation to sustainable mobility • Cultural issues: ownership dream vs. sharing
Timeframes	<ul style="list-style-type: none"> • What are the different timeframes of the different actors and institutions involved in mobility? • What is the apparent divide (in terms of timeframes) between science and policy in terms of language, purpose and habit?

**Theme 3:
NEW TYPES OF MOBILITY AND MOBILITY MANAGEMENT**

Hot topics Knowledge needs/Research questions

Mobility and traffic management	<ul style="list-style-type: none"> • Strategic traffic management (i.e. congestion charges; traffic amount control; smart-informative systems; etc.)
Car transportation	<ul style="list-style-type: none"> • How to get away from the ‘car-logic’? • Increase car-sharing (reason for uptake, urban strategies, best practices) • How car-sharing works in practice? • How to integrate car-sharing in a sustainable mobility concept? • What are the impacts of the various types of cars in terms of cars replaced, mobility patterns, target groups, etc.? • How to integrate car-pooling in a sustainable mobility concept
Public Transport	<ul style="list-style-type: none"> • How to prioritise public transport vs individual car transportation? • Best practices of parking places close to public transport nodes (P + R) • Rural areas and public transport • Urban planning and public transport • What potential is with new types of trolley-buses?
Cycling and walking	<ul style="list-style-type: none"> • How to prioritise cycling vs individual car transportation? • What can we learn from the successes of public bike systems? Can we generalise this model for other big cities in Europe? • Best practices of creating and maintaining cycle lanes • How to increase cycling (i.e. Electro-bikes, provision of parking slots for bikes for safety issues)? • Easy to access information on cycling and walking paths through the city (i.e. websites, apps, guides by the city, etc.) • How to better retrieve data on cycling and walking in order to have a better knowledge of them? • Regulatory and market mechanisms for making cycling more attractive • What are the impacts of the ongoing “electrification” of cycling?
Air Travels	<ul style="list-style-type: none"> • Exploring social and political acceptance of a ban on short distance flights • Are CO2 compensation schemes a way forward or are there more sustainable alternatives? • How can we create sustainable ways for air traffic? • How to expand high-speed rail networks as a substitute for air travel? • Solar aircraft (small)
New types of mobility	<ul style="list-style-type: none"> • Research into new types of mobility with new local designs of infrastructure • How to stimulate electro-mobility and ensure at the same time that the

	<p>source of electricity is sustainable?</p> <ul style="list-style-type: none"> • How to link sustainable energy production and electro-mobility provision? • Exploring challenges and risks of electro-mobility • Business models for new and innovative types of sustainable mobility • Joint ventures of ICT and car industry, space owners, energy providers • Potential and options for 'Real-time ridesharing' and its barriers
Availability of data and data collection	<ul style="list-style-type: none"> • How to produce 'common' data that can be shared and confronted (i.e. database, indicators)?
Rail	<ul style="list-style-type: none"> • How to get the prices right? Rail vs. air travel
Individualised motorised vehicle	<ul style="list-style-type: none"> • How to streamline production of new generation vehicles into car sharing schemes?
Alternative energy sources	<ul style="list-style-type: none"> • Impact on infrastructure • Second generation bio-fuel
Better Logistics	<ul style="list-style-type: none"> • Storage options for goods delivery (on-street and/or in developments)

**Theme 4:
BEHAVIOURAL ASPECTS OF SUSTAINABLE MOBILITY**

Hot topics Knowledge needs/Research questions

Behaviour of transport users and lifestyles	<ul style="list-style-type: none"> • How to overcome individual resistance towards more sustainable transport modes (i.e. walking, cycling, public transport)? • How to influence the attitude of users and to let people experience different sustainable transport modes? • Research on the impact of car sharing/car pooling on behaviour and on the environment • Role of habits and routines that affect transport choices • How to influence individual lifestyle to facilitate more sustainable modes for holiday mobility? • How to influence people’s leisure mobility behaviour towards more sustainable ones?
Education	<ul style="list-style-type: none"> • Research on what works in one city/country, what is special, what can be taken up in other cities/countries and under what circumstances • Toolbox for sustainable mobility: behavioural aspects, specific conditions, national and cultural differences, etc. • Sustainable mobility education
Promotion of sustainable mobility and reduction of traffic	<ul style="list-style-type: none"> • How to communicate a positive vision that depicts an increase of freedom, a decrease in the number of trips, a decrease in distances to be travelled, a reduction of GHG? • Stronger consideration of human beings for whom mobility should be planned • Acceptability and scale of implementation for required changes • Motivational factor for different transport modes in different cultural/regional contexts • User targeted ICT services (e.g. live info on transport conditions)

Theme 5: INTERNALISATION OF EXTERNALITIES

Hot topics Knowledge needs/Research questions

Transaction costs and Economic effects	<ul style="list-style-type: none"> • Appropriate strategies for reducing prices of electro-mobility • How to restructure counter-productive incentives? (e.g. wrong 'subsidies')? • How to ensure employment if more sustainable transport modes are favoured against cars? • Comprehensive cost-benefit analysis of each transport mode including all external costs (include LCA-approach) and comparisons with non-transport modes (e.g. videoconferences, home-work) • Feasibility and acceptability of innovative pricing mechanisms and incentives (e.g. in association with demand responsive parking)
Complexity and Acceptability;	<ul style="list-style-type: none"> • Research into controversial issues (e.g. road security, electric vehicles, GPS speed limitations, etc.) • How can we improve the balancing of policy sectors (Co-benefit of policy measures in other sectors)?
Environmental costs	<ul style="list-style-type: none"> • Identify strategies to further reduce GHG emissions of individual transport • Develop ways of reducing energy and fuel consumption of different transport modes • Strategies of how to increase energy efficiency in mobility patterns • Find ways to avoid landscape fragmentation and destruction of ecosystems
Health costs	<ul style="list-style-type: none"> • How to reduce particulate matter (PM) an air pollution in general in mobility concepts? • Measures to reveal the long-term impacts of noise from transport modes on human health • How to create more consciousness about the manifold health benefits from cycling? • How to evaluate the positive effects from cycling and walking?
Institutional and governance issues	<ul style="list-style-type: none"> • Understanding the role of institutional environments and institutional arrangements for promoting sustainable mobility, and existing structures as sometimes barriers for change • The proper role of combinations of market, government and partnership models for managing various dimensions of transport systems and mobility • Strategies to enhance policy integration for sustainable mobility across different government departments
Methods	<ul style="list-style-type: none"> • How to include infrastructure costs? • How to monetize different impacts (e.g. noise)?