ECTRI

European Conference of
Transport Research Institutes

White spots in European transport research traced by ECTRI's Thematic Working Groups



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Introduction

One of the instruments of the European Conference of Transport Research Institutes[1] (ECTRI) to pursue the vision and the goals of ECTRI are the Thematic Working Groups (TWGs). They were given a clear mission:

- to contribute to the building of European research agenda's,
- the establishment of a "knowledge map" for their respective fields of expertise,
- formulating targets for common activities.

Within this framework the researchers are given the freedom to develop their own initiatives and establish their own working procedures.

The TWGs gathered in Lyon from 9 to 11 December 2008 during the ***EU French Presidency Event***. Their main target was to prepare an input for the updating of the Work Programme of the 7th Framework Programme and for the subsequent midterm review. Therefore the format is similar to the one chosen for the task-descriptions in FP7. This document has nevertheless a wider target audience.

The TWG on *Urban Mobility* has defined 6 research subjects (pages 2 to 8) that complement an earlier initiative of this group (URBAMOVE), which contributed to the definition of a Strategic Research Agenda on urban transport by EURFORUM.

The *Safety and Security* TWG has contributed to and endorsed a contribution to the update of the Work Programme of FP7 submitted by the Forum of European Road Research Institutes (FERSI). The 3 research subjects in this document (pages 9 to 13), address horizontal issues concerning all modes (**B1** on behavioural aspects of safety, **B2** on safety and security management or the development of a long-term prediction tool **B3**).

The TWG on *Energy and Climate Change* clearly deals, with its 4 proposals (pages 14 to 20), with important issues of the political and research agenda. The proposal **C2** on battery–ultracapacitor association could help to improve the performance and life span of batteries and contribute thereby to the "electrification" efforts in the road sector. The other proposals aim at developing instruments to measure and monitor specific environmental issues.

One proposal (**D2**, page 24) developed by the TWG *Freight transport*, deals with another priority issue in the research agenda of the European Commission: the strengthening of rail freight transport. It addresses the development of 2 corridors linking the Western part of Europe with the Eastern part and with Asia. The other (**D1**, pages 21 to 23) deals with the CO2 footprints in freight transport.

The TWG on *ITS and intelligent infrastructures* defined a large number of issues (page 27) asking for R&D- efforts. These research themes will be further developed in the coming months.

The *Mobility* TWG prepared 6 proposals (pages 28 to 37) and deal mainly with the influence and interaction between information and mobility behaviour, one (**F6**) addresses the impact of the ageing of the population on transport demand.

Finally, the TWG on *Transport Economics and Policy* developed 2 proposals (pages 38 to 41) dealing with impact assessment of transport policy (**G1**) and performance based indicators for public private partnerships (**G2**).

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[1] The European Conference of Transport Research Institutes (ECTRI) is a network of major national research institutes and universities engaged in transport research in Europe. ECTRI counts 20 members dealing with cross-cutting, mode-neutral perspectives on transport research, management, and policy, from 17 countries; this represents a potential of 2,800 researchers and engineers specialized in the field of transport. The ECTRI members are focused, research-oriented organisations, some of them dealing with cutting-edge research issues. They are involved in regional, national, European and international research programmes.

Thematic Working Group:

Urban Mobility

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**A1 Implementation of sustainable transport measures and integrated sustainable transport plans**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013

Indication on research "activity" and "area" of research topic:

Policy context / background

- Implementation of policies and measures are essential, but often overlooked. Many plans are adopted but not realized or only partly or with poor results. Implementation research is a field with much to offer in terms of understanding implementation processes and barriers and how they are sometimes overcome. But implementation theory also have to recognize new situation associated with multi-level governance, public-private partnerships, and long term concerns such as sustainability. Sustainable urban transport is a typical example of 'intractable' policy area reflecting such trends, in addition to traditional implementation issues.

- The policy objectives and the knowledge regarding relevant instruments are abundant when it comes to sustainable urban mobility. What lacks is implementation – European cities experience an implementation deficit. For that reason it is important to analyse political and institutional conditions for implementing policies, instruments and measures in favour of sustainable urban mobility, and to derive possible implementation paths.

Objective(s) of the research topic:

- To improve dissemination
- To speed up potential impact
- To have a more systematic approach
- To improve the cost effectiveness European research
- Better understanding of implementation processes and barriers
- Overcome fragmentation/overspecialisation in science and politics
- To define the impact of cultural differences in the implementation

Scope and scientific approach of the research topic:
(including reference to ongoing research projects, state of the art)

Implementation issues and barriers has been studied in a few European transport research projects such as the FP5 projects TIPP (Transport Institutions in the Policy Process) and PLUME (Planning and Urban Mobility in Europe), and more detailed in various national programs, such as DESTILLATE in the UK. A major program called IMPACT was recently completed in Sweden, dealing with implementation problems related to sustainable mobility. Specific aspects of implementation problems studied in IMPACT, included the implications of multi-level governance, of horizontal deregulation of transport

policy, and the use (or non-use) of decision support information such are indicators and monitoring programs. It was found that implementing sustainable mobility is a challenging task, partly because of limitation in those areas, and also because of inconsistent time horizons among stakeholder. In the UK several studies have addressed implementation problems related to complex transport decisions. A number of 'implementation barriers' types have been identified, e.g. economic, institutional and political ones. The ECMT has for example listed 9 specific barriers. However there is a limited understanding of how implementation processes actually work, including how barriers emerge, if and how they can be foreseen and if and how they can be overcome through policy redesign inside or outside the transport policy context. Few projects have studied urban transport implementation processes specifically, although cities are clearly a critical venue for inducing change to current transport patterns. Comparative approaches, trying to systematize and compare implementation problems and pathways across the national or regional contexts for cities in Europe are few. Examples of successful implementation processes (moving from words to action to results to success) are also in need of detailed research investigations: Are 'success factors' always unique or can any generalizable patterns be identified? Research could include examples of cities across Europe that have been addressing similar policy targets (e.g. regarding air quality, safety, public transport reform etc), but have followed different implementation trajectories.

A particular topic that remains to be understood better is the extent to which implementation trajectories (and associated successes or failures) are largely determined by early/underlying aspects of policy or institutional designs, versus the availability of options to design successful 'implementation processes' more independently. Another important topic is the extent to which implementation of sustainable urban transport measures and plans are best promoted by via 'control' e.g. through top-down monitoring, performance measurement, and incentive frameworks versus more experimental or bottom-up driven 'learning' approaches. How can tools to support different types of implementation problems in different institutional settings and policy settings be devised?

Expected results:
(impact and benefits of the research topic, including dissemination activities)

Improving the understanding of implementation processes, helping to achieve faster or smoother implementation of overall objectives and more specific measures; constructing tolls especially to help in implementation processes.

Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)

Links to national projects DESTILLATE and IMPACT, and former work in the European Conference of Ministres of Transport, now International Transport Forum

Dimension of project: (level 1: generic; defining broad fields of activity;
level 2: specific; referring to well identified industrial policy and socio-economic matters)

Contact for further information:
(if available: name of institutes supporting this idea for a potential consortium)

DTU Transport, Senior researcher Henrik Gudmundson, hgu@transport.dtu.dk

Thematic Working Group:

Urban Mobility

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**A2 Non-residential transport users**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Policy context / background	
How far are non residential transport users taken into account by planners? (Business travellers, leisure travellers…)	
Objective(s) of the research topic:	
- Take better account of non residential transport users to improve all aspects of transport in the urban area (management, organisation, needs…) - Adapt the transport services for every type of user present in the urban area (including sustainable development of transport)	
Scope and scientific approach of the research topic: (including reference to ongoing research projects, state of the art)	
Expected results: (impact and benefits of the research topic, including dissemination activities)	
Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)	
Dimension of project: (level 1: generic; defining broad fields of activity; level 2: specific; referring to well identified industrial policy and socio-economic matters)	
Contact for further information: (if available: name of institutes supporting this idea for a potential consortium)	

Thematic Working Group:

Urban Mobility

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**A3 Evaluation of the impacts of dissemination of European urban transport research**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Policy context / background	
• No sufficient evaluation on the impact of dissemination of European urban transport research • Need for management of the knowledge produced in projects • Improved and faster transfer of research outcomes to policy making and implementation, especially concerning climate change and energy consumption	
Objective(s) of the research topic:	
Scope and scientific approach of the research topic: (including reference to ongoing research projects, state of the art)	
Expected results: (impact and benefits of the research topic, including dissemination activities)	
Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)	
Dimension of project: (level 1: generic; defining broad fields of activity; level 2: specific; referring to well identified industrial policy and socio-economic matters)	
Contact for further information: (if available: name of institutes supporting this idea for a potential consortium)	

Thematic Working Group:

Urban Mobility

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**A4 New approaches of land use**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Sub-topic: Interaction between land use and the reduction of car speed Sub-topic: Time shared land use Sub-topic: Interrelation with alternative modes	
Policy context / background	
Urban structure is the arrangement of land uses in urban areas. Its interactions with the transport system go both ways. On the one hand, the functional differences in land use and the spatial separation of functions create the need for travel and freight transport. On the other hand, the transport system determines the accessibility of places and – at the same time – has significant impact on land use. This research area is concerned with: • the relationship between land use and transport demand; • the potential of making the development of our cities and transport systems more sustainable by coordinated planning and management of the urban structure based on sustainability objectives and policies.	
Objective(s) of the research topic:	
- Make a synthesis (a typology?) of the methods and results of existing empirical research concerning the relationship between land use (and especially the different spatial scales that are concerned) and travel behaviour - Enhance the comprehension of the links between land use, the transport system and GES emission by both case studies and modelization - Better understand the interactions between land use and the promotion of alternative transport modes	
Scope and scientific approach of the research topic: (including reference to ongoing research projects, state of the art)	
Both theoretical (modelization) and empirical results are expected and policy recommendations	
Expected results: (impact and benefits of the research topic, including dissemination activities)	
Policy recommendations	
Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)	
Dimension of project: (level 1: generic; defining broad fields of activity; level 2: specific; referring to well identified industrial policy and socio-economic matters)	
Level 1	
Contact for further information: (if available: name of institutes supporting this idea for a potential consortium)	

Thematic Working Group:

Urban Mobility

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**A5 Urban transport experimentation**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Policy context / background	
Objective(s) of the research topic:	
It is not always possible to model or predict how road users, the general urban public, of policy makers will respond to new measures. Models may not exist or may not be able to forecast changes in behavior. Second order behavior (policy making) may be even more difficult. Experimentation is another approach that allows transport users and policy makers to experience chances in practice before a final decision for implementation is made. Sometimes assumptions are confirmed, while in others experiments may surprise or even contribute to change agenda. The research should investigate experiments with new urban transport technologies, measures, designs, solutions, etc and examine how experiments inform and influence subsequent planning and implementation. Significant emphasis should be put on ex post evaluation of experiments, since there is limited documentation available.	
Scope and scientific approach of the research topic: (including reference to ongoing research projects, state of the art)	
Expected results: (impact and benefits of the research topic, including dissemination activities)	
Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)	
Dimension of project: (level 1: generic; defining broad fields of activity; level 2: specific; referring to well identified industrial policy and socio-economic matters)	
Contact for further information: (if available: name of institutes supporting this idea for a potential consortium)	
DTU Transport, Senior researcher Henrik Gudmundson, hgu@transport.dtu.dk	

Thematic Working Group:

Urban Mobility

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**A6 User needs and user behaviour**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Policy context / background	
Objective(s) of the research topic:	
Study the evolution of user needs, sub-topics: • Urbans (demographic aspects, immigrating population, ageing population in urban population) • Leisure • Work patterns and especially workplace location (and impact on (business travel) and telework • Use of ICT (mobile phone, e-commerce) and travel demand • Shifting from cars to alternative modes (prices, …) Provide a sustainable transport system matching to these new user needs	
Scope and scientific approach of the research topic: (including reference to ongoing research projects, state of the art)	
Better understand the relationship between ICT use and travel Better understand the influence of the relations between the changes concerning work patterns (workplace location, diffusion of ICT and telework, etc.), travel behaviour for work purpose (especially the need for business travel) and for non-work purpose.	
Expected results: (impact and benefits of the research topic, including dissemination activities)	
Policy recommendations concerning each topic (demographic aspects, leiseure, work, etc.)	
Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)	
Dimension of project: (level 1: generic; defining broad fields of activity; level 2: specific; referring to well identified industrial policy and socio-economic matters)	
Contact for further information: (if available: name of institutes supporting this idea for a potential consortium)	

Thematic Working Group:

Safety and Security

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**B1 Cross modal integration of approaches regarding behavioural aspects of safety and security**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Activity: Improving Safety and Security Area: Integrated Safety and Security for surface transport systems Topic: 7.2.4.1	
Policy context / background	
The goal of this proposal is to increase the effectiveness of the individual methods on influencing the human behaviour. Early work on workload, distraction, fatigue and fitness to operate has had some influence on research and legislation in other transport domains. Yet there remain very great differences in approaches to certification of systems, standards for interfaced design, or agreement in approaches to training and licensing. There should be more cross fertilisation of approaches across the transport modes.	
Objective(s) of the research topic:	
To review safety and security provisions in the EU for freight and passenger travel. To recognise best-practice approaches and potential for IT solutions for common cross border and multi modal journeys.	
Scope and scientific approach of the research topic: (including reference to ongoing research projects, state of the art)	
Strong link to Theme 10 Security.	
Expected results: (impact and benefits of the research topic, including dissemination activities)	
Clear recommendations for adoption of technical systems and regulatory instruments to improve transport safety and security within EU borders.	
Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)	
Common call with Theme 10 Security.	
Dimension of project: (level 1: generic; defining broad fields of activity; level 2: specific; referring to well identified industrial policy and socio-economic matters)	
Level 1	
Contact for further information: (if available: name of institutes supporting this idea for a potential consortium)	
Name / contact person: Andrew Parkes Institute: TRL E-mail address: aparkes@trl.co.uk Phone: +44 (01344) 770421 Research topic supported by (other institutes interested): ECTRI partners	

Thematic Working Group:

Safety and Security

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**B2 Safety and security management**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013

Indication on research "activity" and "area" of research topic:

Activity: Improving Safety and Security
Area: Integrated Safety and Security for surface transport systems
Topic: 7.2.4.1

Policy context / background

One of the main topics of the European Commission is to create a greener, safer and smarter transport system. Infrastructure authorities have to manage all kinds of safety aspects (road safety, nautical or maritime safety, external safety, occupant safety, construction safety, security etc). Safety management is a systematic process, normally used by large industries that can help countries reduce the number of severe accidents. The process provides ways for planning, implementing, and evaluating safety programs and projects. Through safety and risk management, all opportunities to improve safety are identified, considered, implemented as appropriate, and evaluated in all phases of planning, design, construction, maintenance, and operations.
Some countries in the EU use a ROAD safety management program. This proposal contains the employment of a integrated safety approach

Objective(s) of the research topic:

Make an inventory of safety and risk management programs used by authorities and large industries
Analyse the use of these programs and show the added values of these methods for infrastructure authorities
Develop a guideline for infrastructure authorities to implement safety and risk management.

Scope and scientific approach of the research topic:
(including reference to ongoing research projects, state of the art)

The study must lead to a integrated approach to identify and to manage risk and counter measures to improve safety in all phases, including security (natural disasters, man made disasters and security threats)

Expected results:
(impact and benefits of the research topic, including dissemination activities)

Overview of potentials of safety and risk management techniques
The method helps authorities to define an cost effective strategy to increase safety

Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)
Use of the knowledge which is developed in a PIARC project TC C3 Managing Operational risk in road operations
Dimension of project: (level 1: generic; defining broad fields of activity; level 2: specific; referring to well identified industrial policy and socio-economic matters)
Level 1
Contact for further information: (if available: name of institutes supporting this idea for a potential consortium)
Name / contact person: Pieter van Vliet Institute: Dutch Ministry of Transport; Centre for Transport and Navigation E-mail address: Pieter.van.Vliet@rws.nl Phone: +316 515181259 Research topic supported by (other institutes interested): ECTRI -partners

Thematic Working Group:

Safety and security

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**B3 The development of an evaluation and prediction model for middle and long term national road safety strategies**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013

Indication on research "activity" and "area" of research topic:

Activity: Improving Safety and security
Area: Policy support
Topic: 7.2.4.2.

Policy context / background

The midterm review shows that the EU is not on course to reach the target of halving the number of road deaths by 2010. The model must help countries to make a cost effective middle and long term strategy. New future safety (ITS) measures must be included.

Objective(s) of the research topic:

State of the art of comparable models of countries that have such a model
- Statistical base line model for the prediction of safety in future, based on developments in the past
- Overview of the effectiveness of safety measures (infrastructure , education, vehicle and ITS)
- Possible scenario's of the implementation ITS safety measures for the period 2010-2020 and 2020 - 2030
- A model that can help policymakers to develop multiple scenarios of cost-effective strategies for reducing of the number road deaths and hospitalised victims for the national situation

Scope and scientific approach of the research topic:
(including reference to ongoing research projects, state of the art)

This model focuses on Road Safety
References to ongoing projects:

- E-impact
- Humanist
- Safety
- Etc.

It is expected that successful models would incorporate social science approaches to targeting behavioural change policies for relevant traveller groups (for example; age, nationality, trip purpose)

Expected results:
(impact and benefits of the research topic, including dissemination activities)

This model should make it easily possible to bring in the results of 6 and 7th framework projects into national policies

Further suggestions regarding this topic: (common call with other priority; expected instrument; relation with trans-national research programme)
Dimension of project: (level 1: generic; defining broad fields of activity; level 2: specific; referring to well identified industrial policy and socio-economic matters)
Level 1
Contact for further information: (if available: name of institutes supporting this idea for a potential consortium)
Name / contact person: P. van Vliet Institute: Ministry of Transport, E-mail address: pieter. van.vliet@rws.nl Phone: +31 6 51581259 Research topic supported by (other institutes interested): ECTRI partners

Thematic Working Group:

Energy and Climate Change

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**C1 Characterization of airplane emissions**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Activity: 7.1 AERONAUTICS AND AIR TRANSPORT ACTIVITY 7.1.1 THE GREENING OF AIR TRANSPORT	
Motivation and suggestions of activities within the research area	

1. Emissions: Works are needed for the characterization of the real-world airplane emissions. Methodologies and metrology - in complement to the standard LTO procedure - have to be developed in that aim, to characterize in-flight emissions, according to altitude and operation. Non-CO2 greenhouse gas as well as other pollutants should be considered to enable characterization of impacts on climate change and ozone layer.
2. Inventory of GHG and prospective: As for the other transport modes, robust prospective of the air traffic and scenarios for the air transport development are needed, taking into account new / evolving technologies and airplanes, to enable a good forecasting of the GH effects, including the international flights in the inventories. Traffic related data based on robust and real-world statistics are also needed, as well as a detailed characterization of the airport logistic and its integration in GHG inventory.
3. Mitigation measures and their assessment:
   - Improved traffic management should be aimed for energy, GHG, air quality and noise optimization (multi criteria optimisation as envisaged in SESAR programmes).
   - As for the other transport modes, integrated assessment approaches should be developed to enable objective comparisons of the modes, to account for the transit to and from the airports or stations for instance (by car, bus, train) in the quantification of the overall emissions from the transport mode.
4. Technology: Consumption on the airport (electric trailer) to from runway. Research on reactor (fuel injection), technologies for high temperatures operation. Similarities / synergies should be developed with the development of road engines, electrical generator, in particular fo on-board electrical-power unit).
5. Intermodality: intermodality for intermediate distances is of strategic importance for Europe. It includes in particular the development of a complementarity and share between air transport and rail and have significant implication in term of choice for high-speed rail network extension and intermodal airport location. To help in these strategic issues, methods, criteria and decision making tools should be developed. These ones imply multiple criteria optimization, and assessment methods that include door to door (travel) and dust to dust (production, use of energy) approaches.

Thematic Working Group:

Energy and Climate Change

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**C2 Battery-ultracapacitor association**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013

Indication on research "activity" and "area" of research topic:

Activity: 7.2 SUSTAINABLE SURFACE TRANSPORT
ACTIVITY: 7. 2. 1. THE GREENING OF SURFACE TRANSPORT
AREA: 7.2.1.1 THE GREENING OF PRODUCTS AND OPERATIONS

Motivation and suggestions of activities within the research area

- Hybrid vehicles
- Battery / ultracapacitor association: Ultra capacitors associated to batteries could improve battery life duration by insuring high transient power, mainly in recharge phases, while reduced-sized battery provides energy with an appropriate management to preserve its durability. Researches are needed to validate the feasibility and demonstrate the benefits of the battery/ultracapacitors association. Energy management with 3 sources (i.e. ICE, battery and ultra-capacity) requires research on generic management methods and multi-source systems.
- Plug-in hybrid vehicles (PHEV) have a real potential to reduce CO2 emissions, battery sizing and cycling representing however the key point of such a solution. The researches must deal with optimisation of the energy and the battery management together with parametrical studies of the appropriate battery type and size according to the vehicle use.
- Integrated assessment and life cycle analysis: Assessment of new technologies through of a single vehicle is necessary but not sufficient to relate expected real-life impacts. A number of market and traffic related data should be taken into account. Furthermore, life cycle assessment (LCA) (and dust to dust analysis) including environmental impacts and economical costs should be applied for both transport operation and industrial process (of which raw Battery materials, energy, production, operation and recycling) to enable objective and exhaustive information on the environmental impacts of different technological options. Such an assessment requires enormous amounts of technical and socio-economic information. A collaborative project could manage to produce clear and incontestable results.
- Vehicle emissions (and fuel / energy consumption), measurement and modelling:
- Non-CO2 (N2O,VOC, particulates) greenhouse gas should be measured.
- Real-world emissions measurements are needed including the auxiliary operation and parameters not covered by the standard procedure (driving resistance, etc.)
- Large-scale real-world CO2 measurements should be conducted through simple on-board measurement systems and OBD system, for light and heavy duty vehicles, allowing a good taking into account of numerous parameters of the emissions, including driver behaviour, vehicle operation and traffic conditions.
- Portable on-board emissions measurements (PEMS) have been developed, that should enable characterizing real-world emissions from road and non-road engines. Developed for regulation purpose (emission control), these systems lack of appropriate methods (experimental design, etc.) to

derive real-world emission factors and models.

- Emission models on different scale levels constitute the base for most evaluations of scenarios in order to reduce emissions of climate gases. Emission models are currently based on average vehicles and average test conditions through test cycles. Specific models should be defined to consider misfunctioning vehicles (high emitters) as well as off-cycles conditions. These models should include all necessary input data. The use of alternative energy raises the need for energy system models to estimate energy efficiency for the transport sector. Specific developments are also needed to enable simulation of traffic management, ICT and eco-driving impacts on greenhouse gases and air pollution: indeed crucial issues related to the modelling scales, the coherency and the interfaces between demand, traffic, driver and emissions models are not sufficiently addressed by existing tools. This requires both modelling works as well as experimental studies to develop and validate the models,
- Inventorying tools for non-road transports lack of reliable emission data and traffic statistics. Significant efforts are required in particular for air traffic, which is increasing quickly. Car ownership models (addressing different vehicle categories and types) and vehicle use models (addressing mobility, mileage, etc.) should be developed as regards growth scenarios, demographic data, etc.
- Emissions standard and regulation should be adapted to consider components not covered by the standard procedures (tyres, air conditioning, auxiliaries, etc.). Energy / CO2 labelling should also apply to these components.
- Mobility and driving behaviours
- The driver behaviour (driving and vehicle usage) remains one of the key elements of the emission. Observation and monitoring is required to assess the characterize the real-world driving conditions as well as their evolution due to the implementation of various measures, ICT, eco-driving, training, raising awareness campaign, etc. The development of on-board systems, traffic management, and communication technologies should enable large scale data collection related to vehicle use and traffic conditions. Pilot projects should be proposed to demonstrate the feasibility of such experimentation. Such experimental tools should also enable quantifying potential impact or efficiency of eco-driving campaigns.
- Numerous traffic related information such as trip lengths, vehicle load, parking time, access to electric, car ownership by vehicle type and size, etc. should also be investigated for emissions inventory as well as for the feasibility assessment of future individual transport systems. A good description of the characteristics from the existing and future vehicles (driving resistance, weight, etc.) is also required for good forecasting of energy use and exhaust emissions by the vehicle fleets.
- Driver behaviour should also be assessed as regards the development of new technologies such as electric or hybrid vehicles (definition of vehicle mission profiles needed for their optimization). Driving behaviour models should be developed in combination with real-world measurements, to predict future driving patterns and their impacts. Systematic description of driving patterns for combinations of vehicle types and traffic situations requires the use of simulation models at different scales (from very detailed driving cycles to averaged driving conditions).
- Low consumption operation and maintenance (rail, etc.): tools are needed to help predictive driving with lowered energy consumption within certain contexts (guided systems, trains, etc.). Most data is available in that aim, but operational strategies should be developed.
- Energy, raw materials, energy recovery in vehicles (incl. manufacturing and recycling aspects):
- Energy (and raw materials) management is of high concern for transport, for which significant possibilities exist. Recycling can and should be increased. Energy consumed by the recycling processes (and environmental impacts) has to be considered.
- It is absolutely necessary to consider the quantities of raw materials that would be needed for a large scale implementation of new technologies (i.e. Lithium for batteries, Platinum for fuel cells, etc.), as that conditions their feasibility. Raw materials with low environmental impacts should be preferred for the conception of transport vehicles and systems.
- Electric vehicles: an integrated deployment in connection with the others consuming sectors (heating, industry) and producing sectors (especially the possibilities for storing electricity from the volatile wind power production in the batteries of cars) is needed. An overall optimisation should be searched for, implying good knowledge of traffic data, electricity needs, etc.
- Future vehicles, future urban contexts:
- it should be useful to develop a future vision of the city and of the transport systems, with a

significantly increased urbanization, a market of lightweight- (3-wheels, etc.) and electric- urban vehicles, new transports systems and services, adaptation to the future needs, and developments of new transport strategies (car hiring, shared cars, etc.) as well as freight transport urban logistic.

- Magnetic levitation transport system, at low speed in urban are currently studied in Corea, Japan, China. A research effort should be dedicated to such system for their overall advantages (electric-powered, low noise, no track wear, low visual nuisances).
- "Radical changes" (new technologies, strong evolution within short time period) require new tools and knowledge and models, as a number of issues have to be raised up and anticipated without experiences (economy, maintenance aspects, etc.).

Thematic Working Group:

Energy and Climate Change

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**C3 Monitoring tools for energy related consumer behaviour**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Activity: 7.2 SUSTAINABLE SURFACE TRANSPORT ACTIVITY: 7. 2. 1. THE GREENING OF SURFACE TRANSPORT AREA: 7.2.1.3. SOCIO-ECONOMIC ISSUES	
Motivation and suggestions of activities within the research area	

- Monitoring tools:
- A strategic issue concerns the deployment of monitoring tools (surveys, on-board sensors, ICT and GPS deployment). for decision makers and public authorities at different geographical scales, but also for companies and consumers (tools to help the decision and the choice). Monitoring – when aimed at the user - , can be seen as a powerful instrument to influence the behaviour (actual knowledge of the real-world consumption or emission). Agreed system of accounting the CHG should be implemented. Harmonised databases, indicators and models should be developed and shared in that aim. Harmonisation between freight and passenger transport is needed.
- Monitoring is also needed for transport logistics, to analyse efficiency and derive best practices. Knowledge on the load factors as well as on the impact of ICT should be gained from such monitoring.
- Transport intensity as regards economic structure and geographical organisation should be investigated to trend to optimal configurations.
- Galileo offers efficient way to trace the vehicles and develop an efficient monitoring of the transport modes and activities. This should result in a powerful help for the decision making as well as for inducing behaviour changes.
- Reduction measures and policies assessment: shared cost-efficiency assessment should be elaborated, with a good understanding of the behaviour evolution and of its elasticity, while taking into account of the crossed effects. This requires assessment methodology and agreed hypotheses on energy prices, rate of actualisation, etc. Agreed assumptions on costs related to vehicle, time spent, injuries, nuisances, infrastructure, are also needed.
- Social representations of climate change, social and political acceptability of mitigation measures:
- The social representations of the climate change issues need to be followed and understood as the context is rapidly changing. Moreover, they are strongly linked with the acceptability of the mitigation measures and with behavioural changes (energy uses, mobility, driving). Assessment of reduction policies should thus consider social and political acceptability (i.e. sensitivity to GHG issues, perceived efficiency, social equity, etc.).
- Barriers (economic, social, political) to and driving forces for the dissemination of technological innovations / GHG emissions reduction should be identified. Experiences from case studies (hybrid vehicle diffusion, etc.) should be helpful in that aim. Beyond the GHG reduction policies, appropriate instruments (regulations, economic instruments..) should be implemented.
- Information (CO2 emission performances, on-board real-time fuel consumption) as well as public

awareness campaigns are also strategic issues. The development of models analysing the mechanisms of vehicle and transport modes choices should enable predicting (and influencing) the purchase of new vehicles according to exogenous information such as exhaust emissions, greenhouse gases, costs, etc. Such tools should aim also at determining optimal vehicles for given missions, combination of transport modes, etc.

Thematic Working Group:

Energy and Climate Change

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**C4 Assessment of mitigation measures**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013
Indication on research "activity" and "area" of research topic:	
Transport (incl. Aeronautics) **-** Activity: 7.3 Horizontal activities for implementation of the Transport programme - Greening / Climate Change topics ***ICT*** **-** Challenge 6: ICT for Mobility, Environmental Sustainability and Energy Efficiency ***Environment (including climate change)*** **-** AREA 6.4.2.1 TOOLS FOR IMPACT ASSESSMENT	
Motivation and suggestions of activities within the research area	

6. Mitigation measures assessment
   - Rigorous and coherent methodologies should be elaborated to enable an objective assessment of the different mitigation measures. Currently, we observe a large range of assessment methods for different purposes (assessment of new vehicle technologies, of traffic measure, of behavioural measures, life cycle analysis, field operational tests, etc.), which are not consistent between them to enable objective comparisons. A rationalization of the assessment methods is required. Concepts (perimeter of the analyses, parameters, etc.) should be defined as well as required metrology and methodology, to ensure coherent assessment. A preliminary typology of the mitigation measures as regards the suitable assessment methods is needed as well as the analysis of the coherency between these methods. Set of coherent and validated models (demand, traffic, emissions) should also be elaborated on these bases.
   - Timescale (short term, long term) of the effects of mitigation measures should be considered with their efficiency level.
   - In several countries and cities, mitigation measures have been and will be implemented. A synthesis of these experiences is needed as well as their results. Best practices should be derived from these experiences as well as recommended packages of measures. One of the main issue concerns the collection of reliable and coherent data (between countries).
   - Transport planning, urban planning: a major issue as regards optimisation of the transports can be achieved through urban planning, transport planning and their coordination. Assessment methods have to be designed and implemented to the existing plans. Optimisation should be searched for, through analysis of best practices and understanding of the drivers and barriers. Modal choice for urban transports should be developed including trips by non-motorized modes (pedestrians, bicycles).
7. ICT assessment and emission models
   - Due to the large range of ITS measures and of their effects, their assessment as regards traffic conditions and emissions require simulation models and field experimental tests. The current emissions and traffic models, being developed on average actual traffic conditions and driver behaviour, are not suitable to simulate the ITS or eco-driving induced changes as they do not include realistic sensitivity to these aspects. Coherent sets of models have to be developed and implemented (demand, traffic, driver behaviour, vehicle operation, emission).

Field operational tests (FOT) are a favourable way to assess ITS measures and enable collection of a large range of data regarding the driving behaviour and engine operation through simple devices implemented on-board vehicles samples and satellite facilities (Galileo). Methodologies of assessment should be designed in that aim.

Thematic Working Group:

Freight Transport

Proposal for programming a FP7 research topic	
Suggested title of the research topic:	**D1 CO2 labelling of shipments**
Programme:	Transport (incl. Aeronautics) ☒ ICT ☐ Others (Environment, SSH…) ☐
Timing/year Work Programme:	2010 – 2011 – 2012 – 2013

Indication on research "activity" and "area" of research topic:

Activity: GREENING
Area: Environmental friendly and efficient Industrial Processes
Topic: complementary idea (no existing topic number in this area is addressed)

or
Activity: STRENGTHENING COMPETITIVENESS
Area: Competitive Surface Transport Products and Services (w/SMEs)
Topic: Competitive transport operations

Policy context / background

Retailers are planning and preparing to sign the CO2 Footprints on their products. That should inform the consumers how much CO2 has been generated in production and transport or distribution processes. Consumers can consider the CO2 labelling of the product and involve this in their purchase decision besides quality and price of the products.
On the other hand, some logistic service suppliers and forwarders will adjust their processes according to e.g. the CO2 emissions and will use these as an important indicator to optimise their processes and to increase energy efficiency.
Accounts of CO2 emissions from various activities are not measured on the same scale or using the same methodology across different companies, across different modes of transport etc. This creates uncertainty for the consumer as to what the CO2 label of the product actually encompasses and the labelling loses its value.
It is essential to have an unambiguous definition of what the labels should included and have a common background as to how the different CO2 contributions are measured.
ISO 14064 defines an international standard for greenhouse gases. This standard specifies the organization level for quantification and reporting of greenhouse gas emissions and removals. Based on this standard a common methodology and rules are necessary to unify the application in the transport sector. Special attention should be given to projects of former EC Framework Programmes in the area of logistics and methodologies for calculation or measurement of green house gases. So there should consider the results and methods e.g. of the following projects: QUANTIFY, SULOTRA, PROTRANS, REDEFINE, REORIENT, ASSESS, ETTAR and TRILOG.

Objective(s) of the research topic:

The high level objective is to establish a European standard of calculating CO2 contents of a product based on existing and extended rules and regulations.
Other objectives are

- A definition of the requirements of retailers and logistic service providers or forwarder by interviews or workshops should be realised.
- Based on these requirements, the development of a common methodology to calculate the CO2 emissions for shipments in the transport processes.