Thematic Priority
1.6. Sustainable Development, Global Change and Ecosystems
1.6.2: Sustainable Surface Transport

WORK PROGRAMME
2002-2006

Version 2004

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1. INTRODUCTION

Surface transport plays a key role in people's everyday lives and is a decisive factor in economic competitiveness and employment. The promotion of its sustainable development without sacrificing either economic growth or the freedom of movement has become a central objective of the European Union policy.

Surface transport has to face the challenge of supporting future economic development and subsequent traffic increase without degrading the quality of transport services and protecting the environment. Research and technology developments have an important role to play and are providing the European Transport System with innovative vehicle and vessel technology and new forms of transport organisation and infrastructure.

The sustainable surface transport work programme proposes a set of research objectives which implement the content of the Gothenburg declaration of June 2001 and the Commission White Paper on European Transport Policy 'European transport policy for 2010: time to decide'[1].

The realisation of ERA across the entire surface transport chain of stakeholders and the different research schemes proposed at national level will be essential to achieve the aims for an Integrated and Sustainable Surface Transport System in Europe. The work programme implementation will, where appropriate, strengthen and complement research carried out under non-EU initiatives such as PREDIT, Mobilität und Verkehr, (LOGCHAIN, DEUFRAKO) Foresight Vehicle, EUREKA etc in order to maximise the impact of research within ERA. Also, participation of organisations from Candidate Countries in ERA instruments will ensure a sustainable development and security of transport in an enlarged Union.

The creation of Technology Platforms for the different industrial sectors of surface transport, such as ERRAC (European Rail Research Advisory Council) in rail transport, is an important element to reach the main objectives of the priority and to achieve a higher degree of integration in research. Technology Platforms provide a mechanism to develop a long-term vision for research and a strategic research agenda for its implementation.

The complexity of the transport system is addressed in an integrated and comprehensive way, through two complementary approaches, that are identified in this work programme as *Research to support the European Transport Policy* and *Research, technological development and integration*.

Research to support the European Transport Policy addresses research for transport policy with emphasis on short-term implementation and exploitation of results. *Research, technological development and integration* focuses on the development of new technologies specific to surface transport and on their integration into future transport systems and products with a short, medium and long term perspective.

The technical content of the work programme is described in section 3. Research domains and activities proposed for the calls are presented in relation to the four objectives of the sub-priority as described in the specific programme. They are identified for each objective starting with *Research to support the European Transport Policy* followed by *Research, technological development and integration*. These four objectives support on a cross-sectoral basis (road, rail, maritime and intermodal transport) the three

[1] 'European transport policy for 2010 : time to decide', COM (2001) 370.

convergent aims of sustainable development namely; environmental and social protection and economic growth.

Research domains form a comprehensive and structured set of elements which will be addressed during the entire period of the Framework Programme by means of the different new and traditional instruments which are proposed. Within section 3, the description of research domains is followed by information on the selected topics included in the calls with deadlines 2004 and additional information on possible subjects for the call with deadline in 2005. For *Research, technological development and integration,* additional information is given on possible subjects for the call with deadline in 2005.

An update of this document will be produced every year during the Framework Programme, giving information on further calls and revisions to the proposed research domains as appropriate.

Periodic Calls for *Research to support the European Transport Policy* are identified with the letter A (1A, 2A, etc.) and periodic calls for *Research, technological development and integration* with the letter B (1B, 2B, etc.).

2. OBJECTIVES, STRUCTURE AND OVERALL APPROACH

Objectives

The sustainable surface transport work programme addresses the following objectives as defined in the Specific Programme:

Objective 1: New technologies and concepts for all surface transport modes (road, rail and waterborne).

Objective 2: Advanced design and production techniques.

Objective 3: Rebalancing and integrating different transport modes.

Objective 4: Increasing road, rail and waterborne safety and avoiding traffic congestion.

Modalities for implementation

Research to support the European Transport Policy

The activities described are being implemented by means of four periodic calls with deadlines in December 2003, 2004 and 2005. These calls will include both new and traditional instruments. Details on the periodic call with deadline in 2004 is given in section 6: **3A** (June 2004) in the rest of the document.

Research, technological development and integration

New instruments, specific targeted research projects, co-ordination actions and specific support actions are being implemented by means of three periodic calls with deadlines in 2003, 2004 and 2005, respectively, and one continuous call from year 2003 to 2006. Periodic calls cover new instruments, specific targeted research projects and co-ordination actions. The continuous call includes only specific support actions. Information on the continuous call is given in section 6.

For both activities, specific attention will have to be given, where appropriate and throughout the work programme to issues of standardisation and harmonisation, in order to achieve an integrated surface transport system.

Focussing the technical content of the research activities

An invitation to submit for Expressions of Interest[2] was organised with the aim of assessing the readiness of the scientific community and industry to propose Integrated Projects and Networks of Excellence. The results of the invitation were used as one of the inputs to help define the research domains of the work programme and to specify the technical scope of the first calls as well as indicative trends for future calls.

Research to support the European Transport Policy

Several research domains, including topics identified from the Expressions of Interest, have been considered ready for implementation by means of new instruments. Selected topics in Call 3A (open in June 2004; deadline December 2004) are given in section 3.

Other research domains of the work programme will be open for specific targeted research projects, co-ordination actions and specific support actions. Details on the research domains open for Call 3A (open in June 2004; deadline December 2004) are also provided in section 3.

Research, technological development and integration

Given the number of expressions submitted, the strong presence of industry (49%) and the indicative size of potential projects it is considered appropriate to allocate up to 70% of the budget for the new instruments.

Indicative topics for Call 3B (March 2005) are given in section 3.

In order to fulfil the objectives of sustainable surface transport, structuring and integrating effects have to be complemented with technological developments of a more limited scope. Projects to acquire new essential knowledge on aspects such as developing new transport concepts (e.g. new types of vessels) or processes (e.g. advanced automation in manufacturing processes) are also foreseen. A limited and strategically relevant number of research domains of the work programme will be open for specific targeted research projects in the periodic calls.

International co-operation

The sustainable surface transport research programme welcomes the collaboration of organisations from Third Countries on a project-by-project basis, if the participants in the project find mutual benefit.

All research domains of the four objectives of the work programme are open to international co-operation.

This co-operation could be of particular relevance on long-term research for new transport technologies (e.g. hydrogen technology), on research for supporting standards and regulations (much of transport is regulated at international level) and safety issues.

Participation of SMEs

SMEs will have an important role to play in integrating and structuring the technological and scientific base driving innovation in surface transport. In particular, they will be essential to the creation of new and improved value added supply chains across Europe and accordingly are expected to be key players in the underpinning research programme. SMEs are therefore encouraged to participate in research activities using the New Instruments. Applicants should actively seek to build partnerships to include SMEs. Specific Targeted Research in areas such as design and manufacturing linked to new

[2] OJ C71, 20.03.2002, p. 14

product generations and new construction infrastructure concepts represent concrete opportunities to stimulate SMEs' participation. Specific measures to facilitate their participation to both new and traditional instruments will be implemented throughout the programme by means of Specific Support Actions, continuing the effort initiated in Framework Programme 5.

3. TECHNICAL CONTENT

3.1: Objective 1 « New technologies and concepts for all surface transport modes (road, rail and waterborne) »

3.1.1 Research to support the European Transport Policy (Research domains from 1.1 to 1.3)

Clean Urban Transport

The development and introduction of new transport policy concepts in cities, where 80% of the EU population lives, are a major challenge for policymakers. The White Paper on European Transport Policy has identified congestion, pollution and energy consumption as key causes for the deteriorating performance of Europe's transport systems, especially in the industrialised urban regions. The Commission's Communication "Towards a thematic strategy on the urban environment"[3] presents a vision on how urban transport can contribute to achieving a better environmental performance and increased quality of life in urban areas.

This research priority is of direct concern to authorities, businesses, citizens and the transport industry. It addresses both urban passenger and freight transport. In an era of just-in-time delivery, competition among cities and regions and environmentally conscious development, urban transport has become an important element of the European production system and social fabric – ensuring the conditions for economic growth and social integration.

Research will focus on RTD activities for developing, testing and demonstrating innovative policy tools and technological solutions.

CIVITAS II will address implementation and transition strategies for Clean Urban Transport. Research in the field of public transport will include the development of innovative solutions for market analysis and product development, offensive marketing, service integration, improved access for people with reduced mobility, private sector investments, and low-cost network and vehicle refurbishment. To advance the knowledge on innovative measures, research is planned on urban pricing, awareness and information tools, mobility management, integrated planning approaches, and access control and regulation.

Research domains:

1.1 Testing implementation and transition strategies for Clean Urban Transport– CIVITASII (Call 2A)

1.2 High quality public transport (selected topics for Call 3A)

1.3 Advancing knowledge on innovative measures in urban transport (selected topics for Call 3A)

[3] COM (2004) 60 final

In the framework of the ongoing CIVITAS Initiative, the following topics will be addressed:

Topics selected for the call 3A (open from June to December 2004)

- ***High quality public transport***

Objective: Local and regional public transport operations in most EU Member States are undergoing a fundamental change. Operators are developing their existing activities and are exploring new opportunities and business models. As a result of EU initiatives, the legislative and institutional frameworks are also changing. Apart from large metropolitan areas, with their tram, metro and high quality bus systems, the role of urban public transport is expected to decrease over the next decade. The car is expected to remain the most rapidly growing urban transport mode. At the same time, many EU households do not have access to a private car and therefore depend upon public transport and other alternatives. Research and co-ordination activities are needed to improve the understanding of these issues and tackle these challenges.

Scope: The work consists of two related parts.

Part A addresses research into strategic market development, operations and new business opportunities for local and regional public transport operators with the aim of improving the quality, efficiency and customer orientation of public transport operations. On the market side, the objective is to get a better understanding of the user and non-user, of common trends and of local specifics, and of the quality-link between public transport and walking and cycling. The research should increase the knowledge on the use offensive marketing as business factor, innovative strategies for customer relation management and the financing of change strategies. It must take into consideration the evolution of European society (lifestyle preferences, changes in the relationship to work, space and time, …) and its impacts on future mobility needs.

On the product side, the research should look in a visionary way into current operations and the long term future of bus services – especially in small and medium sized cities. A system approach that covers high quality infrastructure and rolling stock should be followed. The objective is to get a better understanding of the costs and benefits of improving the image (offensive marketing, etc.), reliability and speed (incl. dedicated lanes, design to speed up boarding, information, etc.) and comfort (access for all, integration, park and ride, on-board air quality, etc). The integration with walking and cycling, car sharing, car-rental services and with company-related mobility offers should also be addressed. Innovative ways to produce reliable, comparable and transferable data on the efficiency and effectiveness of public transport undertakings should be produced.

Part B addresses the co-ordination of research activities, pilot projects and other initiatives, and the gathering of expertise and knowledge to identify, generate and assess best practice solutions to improve the quality and image of local and regional public transport. Special attention should be paid to the specific challenges in the countries that have recently joined the European Union, in order to maintain existing modal splits despite their rapid increases in car-ownership. The objective is also to facilitate the exchange of information, raise awareness and disseminate research results and best practice at a European, national, regional and local level. Case studies should be undertaken, for instance on infrastructure and rolling stock upgrading, financing models and societal mega-trends. In addition, in line with the changing legislative and

institutional frameworks, innovative solutions to quantify the efficiency and effectiveness of public transport undertakings should be identified and assessed.

The activity should provide a sound knowledge base to support decision-making and integration of research results into policies and provide input for definition of future policy and research activities. The activity should be clearly stakeholder-led and should build on the experience and results gained in past research activities such as the VOYAGER project.

Expected outcome: The research should lead to an improved expertise and an extended knowledge base to support the development, implementation and assessment of policy. For Part A this should be reflected in, among others, a publicly available strategic marketing document that would include detailed data and trends, methodologies to investigate local needs and expectations, and address the development of marketing strategies. Guidelines on how to develop, upgrade, finance and manage urban bus systems and related mobility services should be produced. Best practices should be identified and disseminated. No major demonstration activities are foreseen.

For Part B this will be achieved, among others, through the organisation of technical workshops, conferences and meetings; performance of case studies; identification, exchange and dissemination of best practices, for instance in guidance papers and manuals; setting up of an information and contacts database; definition, organisation and management of joint or common initiatives; and training and dissemination activities.

For both parts an interactive link with other activities undertaken within the CIVITAS Initiative should be established.

Preferred Instruments: Specific Targeted Research Project (Part A), Co-ordination Action (Part B).

- **Advancing knowledge on innovative measures in urban transport**

Objective: Innovative information and awareness campaigns and mobility management[4] initiatives can lead to an increase in the use of sustainable transport modes and to a decrease in car use. These measures are also a promising important element of sustainable the urban transport plans that many cities in Europe are already developing, or that they will have to develop in the future as a result of EU initiatives.

There is however still a lack of understanding of how successful campaigns should be developed and how potential impacts can be predicted. In the field of mobility management there is a need to develop new approaches for mobility management in small and medium sized cities and to assess the potential of integrated mobility management and planning approaches. Research and co-ordination activities are needed to improve the basic understanding of these issues. In addition, co-ordination of research activities is necessary to identify, generate and assess best practice solutions in the field of urban pricing. Targeted dissemination and validation activities need to be initiated to address the specific requirements of the cities and operators in the countries that have recently joined the EU.

[4] Mobility Management is an innovative demand-oriented approach to enhance and promote sustainable mobility. It is based on information, co-ordination and motivation, and complements traditional (infrastructure orientated) transport planning. Mobility Management can be applied to a range of target groups.

Scope: The work consists of five parts of which Parts A, B and C are related.
Part A addresses research into behavioural change in local and regional transport through innovative information and awareness campaigns. The objective is to gain a better understanding of the links between successful communications initiatives and all aspects of campaign design and management (messages, message givers, branding, design/images used, etc). The research should aim to develop a predictive model, and a prospective assessment tool, to assess the likely impacts of campaigns ahead of implementation.

It should also develop new approaches, and assess their suitability in specific situations, to change habitual car-drivers behaviour or to maintain sustainable behaviour. For example, the potential role of psychological models in the design of communications initiatives should be assessed and non-transport examples where personal image or identity is addressed should be evaluated. The value of arguments related to the personal benefits (health, money, physical and mental well-being, self perception) of behavioural change should de investigated.

Research in Part B addresses innovative mobility management approaches. In order to develop and spread mobility management schemes that can be readily applied by small and medium sized cities, the principles of quality management should be adapted to mobility management. As a part of this work, the research should include the development and testing of measure-related as well as process-related criteria. The overall goal is to reduce road congestion and improve the quality of life.

In addition, following a more structural approach, the research should assess new concepts for the cooperation between the respective interest groups with the aim of integrated mobility management and planning approaches for new and rebuilt sites, housing areas and business parks. Leverage points need to be identified, where and how to best influence developments, taking into account local policies, legislation and culture. Means to quantify the possible impacts should be developed. The research should investigate the specific opportunities that exist in the countries that have recently joined the European Union.

Part C addresses the co-ordination of research activities, pilot projects and other initiatives, and the gathering of expertise to identify, generate and assess best practice solutions in the field of behavioural change through information, awareness and mobility management initiatives. The objective is to facilitate the exchange of information, raise awareness and disseminate and promote research results and best practice at a European, national, regional and local level. A close link with national and European networks such as EPOMM, the European Platform on Mobility Management, should be established. Case studies could be undertaken, for instance to identify best practices in monitoring and evaluation, to assess the lasting effects and impacts of previously funded projects and developed tools, and to compare experiences between Europe, the US and the rest of the world.

The activity should support decision-making and integration of research results into policies and provide input for definition of future policy and research activities. The activity should build on the experience and results gained in past and ongoing activities. It should look into the feasibility of establishing a learning network to teach practitioners on information, awareness and mobility management.

Part D addresses the co-ordination of research activities, pilot projects and other initiatives, and the gathering of expertise to identify, generate and assess best practice solutions in the field of urban pricing. Successful implementation of urban pricing is a complex issue. Local policy makers and researchers need further and more detailed information on the impacts of urban pricing, which is moving forward in some cities but suffers delays in others. The objective is to facilitate the exchange of information, raise awareness and disseminate and promote research results and best practice at a European, national, regional and local level. Case studies into new fields could be undertaken, for instance to assess the socio-economic and the spatial impacts of pricing, and to compare congestion pricing and environmentally differentiated parking charges.

The activity should provide a sound knowledge base to support decision-making and integration of research results into policies and provide input for definition of future policy and research activities. The activity should involve stakeholders and should build on the experience and results gained in past activities such as the CUPID, PROGRESS and IMPRINT projects and the Europrice city-network.

Part E addresses the dissemination and validation of results of research and other initiatives at European, national and local level and covers the specific requirements of the cities and operators in the countries that have recently joined the EU. This part has three elements.

The objective of the first element is to maintain the existing ELTIS[5] web-portal (with its existing functionalities and services) and to expand its coverage in am ambitious way to the new Member States. This means that ELTIS needs to be expanded with three main languages from the new Member States. Research results, best practice case studies, news items and other relevant information from across Europe, but with a particular emphasis on the new Member States, need to be collected and made available. Important case studies should be translated in all ELTIS languages.

The objective of the second element is to update the university teaching materials previously developed by the PORTAL project, taking into account the most recent results from EU, national and local research – including the CIVITAS Initiative. In addition, and building upon the experiences of the teaching programme for urban transport mid-career professionals that is run by the TRUMP project, an exchange and trainee programme for this target group should be set up. This programme should particularly address the needs of professionals from the new Member States. A modest contribution could be made costs of the participants.

The objective of the third element is to set up a set of dissemination workshops, the preparation of brochures and other relevant materials, with a particular emphasis on the new Member States. Non-traditional ways to reach the target audience could be explored and specific language requirements should be addressed.

Expected outcome: The research should lead to an improved expertise and an extended knowledge base to support the development, implementation and assessment of policy. Part A and Part B should lead to new knowledge on behavioural change through information and awareness campaigns. Standardised schemes for mobility management in smaller cities and integrated mobility management and planning approaches should be

[5] The European Local Transport Information Service (ELTIS) is currently available in five languages at www.eltis.org. ELTIS disseminates research results, best practices, news and other relevant information to urban transport experts and practitioners. Since its launch 6 years ago, ELTIS has had nearly 1 million visitors, currently it has around 25.000 – 30.000 visitors per month.

developed. Best practices should be identified and widely disseminated. No major demonstration activities are foreseen.

For Part C and Part D this will be achieved, among others, through the organisation of technical workshops, conferences and meetings; performance of case studies; identification, exchange and dissemination of best practices, for instance through guidance papers and manuals; setting up of an information and contacts database; definition, organisation and management of joint or common initiatives; and training and dissemination activities.

Part E should result in a better knowledge and practical use of the research results among the end-users in the enlarged Europe. This should be achieved through an expanded ELTIS service; specific activities in the training field and targeted dissemination initiatives. Proposers should follow an end-user driven approach and demonstrate end-user support, specifically from the new Member States.

For all parts an interactive link with other activities undertaken within the CIVITAS Initiative should be established.

Preferred Instruments: Integrated Project (combining Part A and Part B), Specific Targeted Research Project (Part A and Part B), Co-ordination Action (Part C and Part D), Specific Support Action (Part E).

3.1.2 Research, technological development and integration (Research domains from 1.4 to 1.10).

The main focus will be on the development and promotion of future generations of clean, quiet and efficient vehicle concepts for all surface transport modes and to reach a target of 20% fuel substitution of fossil fuels by 2020. The next generation of alternative and renewable fuel propulsion systems, designed to achieve greenhouse emissions targets as expressed in the Kyoto agreement and Euro V for regulated emissions, has to be conceived and tested.

To maximise its impact, research on new propulsion concepts needs to be interfaced with work on compatible fuel infrastructure as well as investigations on new forms of mobility and organisation of transport in cities, including demonstration with acknowledged technology that needs to be validated in real scale. The objective will be to reduce the use of polluting transport means in populated areas while maintaining the same level of accessibility and to put on course the transition towards an environmentally harmless transport system based on renewable fuels and reduced environmental noise emissions.

All domains are included for SSAs as part of the continuous call

1.4 Technologies for propulsion increasingly based on alternative and renewable fuels and fuel blends in vehicles and vessels, in particular the optimisation and control of more flexible power trains, the development of new components and auxiliary systems including highly efficient air conditioning systems with near zero green house gas emissions and elimination of hydrofluorocarbon (HFC), the combination of various types of motorizations and fuels and the implementation of advanced control technology for optimal propulsion efficiency and cleanliness.

1.5 Integrating zero or near-zero emission propulsion systems and components such as fuel cells which offer high-energy efficiency benefits.

1.6 Development of holistic noise abatement solutions which consider the entire vehicle/vessel and infrastructure system, new technologies and systems approaches for improved noise control at source and the further support to legislation. Particular attention will be given to urban areas.

1.7 Integration and validation of measurement and sensing technologies to ensure the optimised environmental operation of both vehicles/vessels and infrastructure.

1.8 Technologies and related legislation for the effective, safe and clean supply and delivery of alternative and renewable fuels at fuel distribution points.

1.9 Development of concepts for innovative, non-polluting means of transport to achieve a more effective organisation of urban transport of persons and goods that would, as a consequence, result in a more rational use of motorised traffic.

1.10 Research to develop, compare and assess possible scenarios for the transport system and energy supply of the future taking into account ongoing research outside the research framework programme undertaken by or in co-operation with the Commission. The analysis includes modelling and forecasting and will consider such criteria as the autonomy and security of energy supply, effects on the environment and economic, technical and industrial viability including the impact of potential cost internalisation and the interactions between transport and land use.

Indicative topics for Call 3B

- **Highly efficient, reliable and economic light and heavy duty vehicle hybrid concepts and their control**
- **Advanced electronic traction and systems for real time control of trains**
- **Fuel cells in waterborne transportation including underwater vehicles and rail**
- **Automated road transport for urban environment**

3.2: Objective 2 «Advanced design and production techniques»

3.2.1 Research to support the European Transport Policy

No specific research domain is foreseen under this objective.

3.2.2 Research, technological development and integration (Research domains from 2.1 to 2.7).

Research will concentrate on developing and promoting concepts of one-off, small series and mass customisation production environments specific to surface transport, based on the innovative use of advanced design and manufacturing.

The objective will be to achieve improved product quality and performance based on cost effective and environmentally friendly production systems on a life-cycle basis. Research will seek to reduce manufacturing costs by 30%-40% and production lead-times by 25%.

All domains are included for SSAs as part of the continuous call

2.1 Integration and standardisation of enhanced product development tools for design, simulation, prototyping, testing and risk management that would reduce product development time and all associated costs and resources.

2.2 Application of advanced design and manufacturing techniques used in vehicle production and infrastructure aiming at developing clean, silent, safe and comfortable products and services with reduced operational cost and energy consumption. In addition, activities will support the development of new product generations enabling Europe to strengthen its competitiveness or for certain categories of products to regain competitiveness (e.g. guided vehicles, floating structures, ro-pax and ferries, gas tankers).

2.3 Development of advanced, low-mass material structures and systems for vehicles and vessels offering product structural and functional integrity for rated performance at low cost.

2.4 Integration of manufacturing processes for products characterised by a high degree of complexity with emphasis on quality, cleanliness, flexibility and cost effectiveness.

2.5 Development of strategies and processes for clean maintenance, dismantling and recycling of vehicles and vessels including interventions on vehicle and vessel wrecks. Emphasis will be put on clean, cost and energy effective processes, sub-sea robotics and autonomous systems for maintenance and inspection, innovative dismantling and recycling operations including the removal of oil slicks at sea.

2.6 Design and manufacture of new construction concepts for road, rail, waterborne and inter-modal infrastructures that are high quality, cost effective, energy efficient, low noise, safer, risk mitigating and low maintenance, and that promote rapid infrastructure renewal while improving productivity and performance of the European transport system.

2.7 Design and manufacturing technologies to improve vehicle/vessel interfaces with transport infrastructure and other vehicles/vessels from the same and different transport modes including infrastructure and vehicle inspection aspects.

Indicative topics for Call 3B:

- **Future road vehicle production structures (the 5 day car initiative)**
- **Strategies for life cycle cost reduction with low environmental impact for railways**
- **Structuring the European marine testing capacity for increased competitiveness**

3.3: Objective 3 « Re-balancing and integrating different transport modes »

3.3.1 Research to support the European Transport Policy (Research domains from 3.1 to 3.13).

There is a growing imbalance between modes of transport in the European Union. The success of road and air transport is resulting in ever-worsening congestion while failures to exploit the full potential of rail and short sea shipping, and in general of intermodal transport, are impeding the development of real alternatives to road haulage. The present situation, and its trend, which is forecasted to push even more in this unsustainable direction, is leading to an uneven balance of modes on the main Trans-European network corridors.

Interoperability of the European Railway System

The "2020 Vision" of the European Rail Research Advisory Council (ERRAC) aims at tripling rail freight's volumes. This calls for a set of new measures; concepts of co-operation and technologies designed to increase rail services attractiveness. The focus is on increasing the interoperability and integration of the European Railway System to actually enable and push forward the implementation of the new regulatory framework and to foster innovation in the railway sector for the benefit of all stakeholders.

Research domains:

3.1 Implementation of change in the European Railway System (Call 2A)
3.2 New concepts for trans-European rail freight services (indication for future calls)

Intermodal transport and Logistics

Intermodal transport research activities will support technologies and services to ensure that the inherent advantages of the individual modes can be exploited in "Door to Door" transport chains. Activities should pay special attention to the needs and interests of the customers (shippers and passengers) so as to make intermodal transport more attractive to users.

The transport of freight also has to be understood as part of broader logistics systems which include packaging, scheduling, transporting, handling, storing, labelling, delivering etc. As transport costs are only a small part (10%-15%) of total logistics costs, shippers efforts to reduce total logistics costs often have significant negative impacts on transport demand (e.g. smaller more frequent deliveries, short delivery time windows etc.). Activities will focus on logistics practices that contribute directly to European transport policy objectives.

Research domains:

Intermodal Transport
3.3 Freight Transport Corridors (Call 1A)
3.4 Intermodal Freight Transport Systems, Technologies and Strategies (Call 3A)
3.5 Intermodal Freight Transport management System (Call 3A)
3.6 Improved Intermodal Loading Units (ILU) (to be deleted)
3.7 Services and information for intermodal passengers (indication for future calls)
Logistics
3.8 City Logistics (Call 1A)
3.9 Logistics best Practice (Call 3A)

Safe, secure, efficient and interoperable waterborne transport

90% of the EU external trade and 41% of the intra-EU trade in volume are transported by sea. Short sea shipping has shown an increase in growth rates over the last years, but it still offers an even larger capacity that should be exploited to re-balance the different transport modes. A major goal should be the integration and interoperability of maritime and inland waterways transport

In addition, shipping is a truly global business that, whilst being highly competitive, has to respond to an increasing political and public pressure for high-quality operations that include activities such as improved ship safety and environmentally friendly ship operations and design.

Research will lead to the take-up of innovative concepts and systems in large-scale European validation platforms. To this effect, research will support the implementation of the new regulatory framework and encourage best practice of the shipping community.

Research domains:

3.10 Maritime navigation and information services (Call 1A)
3.13 Maritime transport coordination platform (Call 1A)

Indication for future Calls:

3.11 Safe, environmentally-friendly and efficient shipping operations
3.12 Human resource development

Selected topics for Call 3A

- ***Intermodal freight transport systems, technologies and strategies***

Objectives: The White Paper[6] highlighted mode shift as the key challenge in the years to come in order to develop a sustainable European transport system. The improvement and promotion of intermodal transport is recognised as one tool to influence the modal split towards more sustainable transport modes such as rail, short sea shipping and inland waterways.

The political commitment exits, but the transport market did not yet sufficiently implement intermodal transport solutions. Policy makers are well aware of the specific obstacles (interoperability issues, frictions at transfer points, loading units, liability, information) to an increased use of intermodal transport and are committed to support solutions to overcome those obstacles. In addition to a number of very important recent policy initiatives and programmes (Proposal for a Directive on Intermodal Loading Units, Freight Integrator, Marco Polo), the European Union also supports research and technological development activities into intermodal transport.

There is a considerable research effort in Europe into intermodal freight transport, including terminal and transhipment technologies, systems and strategies; however the results are often not sufficiently known by users or disseminated at the European level.

The objective of this action is not to undertake new research, but to collate, co-ordinate and disseminate what already exists in terms of European research and industrial

[6] White Paper : European transport policy for 2010 : Time to decide

initiatives in order to create a synergy at the European level and to encourage more widespread take-up of research results.

The intention is to bring to the attention of the different users (operators, shippers, terminal operators) the most promising innovative concepts in order to stimulate their further improvement and in particular and where appropriate their implementation.

Scope: The work should focus on research and industrial activities that contribute directly to European transport policy objectives, particularly increasing the attractiveness, efficiency and quality of intermodal transport.

The action should collect and organise an inventory of on-going and recent research and industrial activities. All aspects of intermodal operations should be covered including financial, promotional, operational, managerial and technical aspects.

The action should not only collate inventories of solutions, but also identify performance indicators and benchmarks and possibly quality labels in order to facilitate self-assessment and comparability. It should further identify, define and disseminate best practices, business models and strategies for the enhanced planning and operation of intermodal transport and freight terminals. It should compare the economic viability of different solutions (both technical and organizational) while taking into account the necessary conditions for implementation (e.g. level of public funding, share of responsibilities between private and public bodies).

It should bring together experts on priority topics and disseminate information and results to all interested parties. There should be an emphasis on disseminating European results at the national level.

There should be specific emphasis on the interests of different user groups especially shippers, freight forwarders and terminal operators.

The action should focus on priority topics for which specific clusters could be set up, e.g. terminals, terminal management systems, information systems, transhipment technologies, vehicle technologies, loading units, security strategies etc.

Previous research to be taken into account includes amongst others EUTP II, FV-2000, INHOTRA, INTERFACE, IPSI and SAIL.[7] The action will have to be closely co-ordinated with on-going and possible future DG TREN dissemination actions (e.g. Extr@Web). The action should not limit itself to results of research activities, but spot also initiatives emerging in the transport sector itself at national, European and international level. In this context, specific attention should be paid to the interest of the new Member States.

Expected outcome: The actions should provide a clear overview of the potential offered by innovation in intermodal transport technologies and strategies and provide easy access to interested parties, throughout Europe, to relevant intermodal research results. The action should give a clear European added value to the on-going and recent national and regional research efforts.

[7] http://europa.eu.int/comm/transport/extra/home.html

The action should significantly improve links between the European intermodal research community, final users and policy makers.

Preferred Instrument: Co-ordination Action

- ***Intermodal Freight Transport Management***

Objectives: The White Paper[8] highlighted mode shift as the key challenge in the years to come in order to develop a sustainable European transport system. The improvement and promotion of intermodal transport is recognised as one tool to influence the modal split towards more sustainable transport modes such as rail, short sea shipping and inland waterways.

Successful intermodal transport solutions will have to take into account the logistic requirements of the shippers and will need to be integrated with other logistic tasks. Solutions have to be easy to use, flexible, reliable, transparent and cost-effective.

Modern logistics of which transport is one element requires a process-oriented view. Process-orientation requires a better management of the flow of information throughout the entire logistics chain (logistics chain information management). This is even more difficult in international and intermodal chains due to different standards, investments and different modal cultures.

The transport industry will increasingly require interoperable information and management systems not only to enhance the quality and attractiveness of intermodal transport but also to simplify and improve administrative and logistical processes as well as to increase the security and safety of freight transport and reduce illegal use of the transport system.

Integration and consolidation of ICT solutions (across modes, borders and organisations) towards coherent and interoperable systems which will enable mode independent information on the transport process - secure, neutral and trusted - is the key challenge. Using latest technologies such systems should be simply and easily accessible to all actors including small shippers, small forwarders and independent operators. Potential solutions must also address the specific needs of different production and distribution sectors.

Shared access to information between the public and private sector taking into account different interests and responsibilities as well as appropriate business models need to be addressed.

Standardisation is an important issue in order that systems are open and interoperable. Interested parties must be fully involved in the standardisation process.

Accordingly, it is necessary to establish a framework for freight transport management which promotes the integration and interoperability of information between sectors and modes, serving public and private interests, addressing the need for standardisation where appropriate and support it through legislative / regulatory measures where

[8] White Paper : European transport policy for 2010 : Time to decide

required. This framework must consider the potential for open systems based on free software solutions.

The framework shall provide stability with respect to planning and investment decisions. It shall serve the private sector in achieving commercial benefits (better information for planning and operation will lead to better quality, efficiency, transparency and cost-effectiveness) as well as the public sector in its monitoring and supervisory functions. In order to ensure acceptability of the framework and maximise benefits all stakeholders need to be involved in developing systems and standards.

Scope: Identify actors, user requirements and processes and establish a reference model. Define an open multi-modal framework for information and management systems (functions and tasks, information, organisation, data, physical, and communication).

Design, test, demonstrate and validate mode-independent freight transport and logistics management systems and applications for all unitised cargo (containers, swap bodies, semi-trailers, pallets, drums etc.) in a number of specified multimodal / intermodal logistic chains, optimising the co-operation between the different actors involved and reflecting organisational and financial aspects. The project should identify implementation strategies and provide a sound plan for future system development and financing. These strategies must clearly identify the needs of different production and distribution sectors.

The consortia should include actors from all surface modes as well as relevant public authorities (e.g. customs organisations, emergency services), insurers and shippers. Special attention should be paid to business and organisational models, intellectual property aspects and institutional arrangements.

The system applications should support (or have the potential to support) customs and border control procedures, risk management, brokerage services, shipper and consignee identification, emergency response, civil protection, tracking and tracing, monitoring, business as well as safety and security procedures. The specific problems posed by supposedly “empty” containers needs to be addressed.

They should facilitate and improve booking, ordering, fulfilment, planning, resource management, fleet monitoring and fleet management, deviation control and management, incident management, transport planning, quality control etc.

The link with GALILEO and other advanced technologies should be a major part of the system design as should be the links with modal traffic management systems. The system should be compatible with the requirements of major trading partners. While the system should focus on facilitating intermodal transport, the needs of mono-modal operators should also be considered.

Research should consider possible business models capable of ensuring the deployment, maintenance and development of such systems, taking into account legitimate public interest but also the commercial interests of the actors.

The work should build on the state-of–play in European research in this area and strongly take into account existing results and efforts. Previous and on-going research

and initiatives to be taken into account are e.g. CESAR, D2D, SIMTAG, Also Danube, COMPRIS, THEMIS, ERTMS, VTMIS, ITS – projects, KAREN, ACTIF.

The work should be followed by a strong High-Level Advisory Committee composed of Member States representatives, as well as representatives form the industry and relevant European organisations.

Policy developments and documentation to be taken into account are the White Paper, Freight Integrator, Intermodal Security, Customs Code, Railways Interoperability, River Information Services (RIS) etc.

Expected outcome: A harmonised framework for operational secure, neutral and accredited open information and management systems for transport, logistics and supply chain management. The project should make a major contribution to increasing the quality, security and transparency of intermodal transport operations throughout Europe. Implementation and deployment strategies as well as business models. Proposals for standards to be followed up by the appropriate bodies as well as proposals for legislative measures where appropriate.

Preferred instrument: Integrated project

- **Logistics best practice**

Objectives: Logistics has a key role to play in making the transport system more sustainable, efficient, less polluting and less demanding on our resources. Logistic decisions to optimise production and distribution determine the demand for freight transport.

Some of today's logistics processes, for example decentralised production patterns favour flexible and versatile transport solutions provided by road. However other trends such as increasing distance provide opportunities for intermodal transport. As generators of freight transport demand, supply chain organizers wield a large influence on the shape of the European transport system.

Increased reliance on intermodal transport will not structurally affect the growth in transport demand. If successful, it will spread out the growth of demand more evenly. One has to make better use of the transport system without affecting competitiveness and well being.

If industry should have more recourse to intermodal transport using short sea shipping, rail and inland waterway, whilst improving demand management, one has to understand better logistics trends and learn from best practice examples which do already exist.

Logistics best practices are often not widely known or available internationally. There are wide variations in logistics practices between different industry sectors and across Europe.

The proposed actions should contribute to the widespread uptake of logistics best practices through information, training and promotion and should facilitate their transferability.

The objective is to promote logistics practices that contribute to meeting European transport policy objectives, particularly those that favour intermodal transport, reduce the environmental impact of freight transport and reduce the transport intensity of the economy.

Scope: Priorities include sustainable logistics practices that contribute to modal shift and integrate intermodal transport in logistics chains, reduce overall environmental impact (including energy consumption) and improve transport demand management (de-couple transport demand from GDP growth).

Development and evaluation of promising strategies that increase the efficiency and attractiveness of intermodal transport within the logistics chain and improve the degree of optimisation of fleet capacity in order to support community policies.

Inventory and analysis of key performance indicators, benchmarks and quality assessment schemes already in use in sustainable logistics chains. Definition of benchmarks and key performance indicators resulting in a model for labelling and/or certification of the quality of logistics chains and logistic chain management. This benchmarking and quality control work should take into account the specific needs of different logistics chains, since the requirements are highly specific for different types of products and services.

The action should quantify the contribution logistics procedures can make to transport and energy policy objectives, particularly to support intermodal transport and reducing transport intensity (de-coupling). There should be an evaluation of logistics trends to quantify their impacts on transport demand, draw conclusions and make recommendations. Prospective analysis of longer-term changes in the market structure and consumer needs should be developed, along with an evaluation of the associated effects.

The action should contribute to the development of training for European logistics professionals through giving an overview of current situation and future needs.

It should provide an assessment of the opportunities and threats to the development of more sustainable logistics in Europe.

The action should foster cross-fertilisation between different industrial sectors and support national research activities by bringing together actors at the European level, including MS representatives, on selected priority themes. It should provide an overview of MS logistics policies and programmes.

Activities should target all relevant actors. A High-Level Steering Committee with top-representatives from different industrial sectors and national programmes should be set up.

The action should contribute to the even development of logistics performance throughout the Union through identifying, disseminating and promoting logistics best practices.

National logistics best practice programme and research projects such as SULOGTRA, PROTRANS and EUTRALOG should be taken into account.

Expected outcome: The action should support dissemination and promotion activities to increase the uptake of logistics best practices in Europe.

Quantification the potential contribution of improved logistics to European policies particularly de-coupling, energy and environmental impacts.

Overall the activities should increase the contribution of logistics to meeting European transport policy objectives.

Setting up of one focal point and gateway to information.

Preferred Instrument: Co-ordination action

3.3.2 Research, technological development and integration (Research domains from 3.14 to 3.17).

Research will target the development of transport technologies to achieve a sustainable modal shift from road to railways and water-borne routes including inland navigation and short sea shipping. Both innovative vehicle/vessel concepts and their effective integration in multi-modal door-to-door transportation chains will be addressed.

The objective will be to remove congestion from road infrastructure in Europe, to improve the mobility of travellers and goods and to promote a safe and clean transportation system for Europe. Research and policy measures for road freight would seek to limit growth from 50 % to 38% by 2010. Targets for rail include tripling freight and doubling passenger market share by 2020.

All domains are included for SSAs as part of the continuous call

3.14 Development of vehicle and vessel concepts for both passengers and freight, characterised by interoperability and inter-connectivity, for cross-operation between different transport routes and networks supported by advanced mechatronics, on-board electronics, information and communication systems.

3.15 Development of new inter-modal vehicle/vessel concepts to attain optimal performance in terms of fuel economy, environmental impact (including noise), manoeuvrability (including obstacle avoidance), stability and maximum carrying volume.

3.16 Development of equipment, methods and systems for optimal accommodation, fast loading and unloading of intermodal transport units and definition of optimal use of storage space both in vehicles/vessels and terminals and efficient final distribution of goods.

3.17 Technologies to ensure effective, clean and safe operations of vehicles/vessels in terminals and minimisation of turn-round time combining manoeuvring assistance, terminal auxiliary services, waste management (including ballast water in ports) and integration of telematics support for improved communication with terminals control and management systems.

Indicative topic for Call 3B

- **Mode rebalancing through efficient port/hinter-land interfaces**

3.4: Objective 4 « Increasing road, rail and waterborne safety and avoiding traffic congestion »

3.4.1 Research to support the European Transport Policy (Research domains from 4.1 to 4.10)

Road Safety Strategies

Currently, more than 40.000 persons are killed every year on EU roads and less than 1000 in the other modes of transport. The short term strategic objective of the Community is to halve the number of fatalities by 2010. The medium term objective is to cut by around 75% the number of persons killed or severely injured by 2025, while the long term vision is to render road transport as safe as all other modes.

To be effective road safety policy and the supporting research must target the human, the vehicle and the infrastructure environment. In addition, the interaction between these elements must be considered as well as the acceptability and cost-effectiveness of the proposed measures in a wider socio-economic context. Research should devise the economic mechanisms necessary to reward the introduction of advanced technologies with a view to their overall safety benefits, instead of the defensive approach taken today to avert possible liability risks.

Research will combine measures and technologies for prevention, mitigation and investigation of road accidents placing special attention to risky and vulnerable users groups, including children, handicapped persons and the elderly.

Research domains:

4.1 Accident analysis and injury analysis (Call 1A)
4.2 Influence of Alcohol, Drugs and Medicines (Modification of "Driver Safety Training" domain) (Call 3A)
4.3 Road infrastructure safety (Call 1A)
4.4 Enforcement of traffic rules (Call 3A)
4.5 Effectiveness of road safety campaigns (Modification of "Awareness campaigns and acceptability of measures" domain) (Call 3A)

Integrating Intelligent Transport Systems

Clearly the wide array of technologies is meant to change the face of the transport system. All the research activities described in this work programme involve in one way or another the use of these technologies. Particular attention will be paid to the close co-ordination with Information Society technologies thematic priority, which addresses also Smart Transport Systems development. In this context, Galileo applications will be particularly encouraged and scrutinised. However, as well as the overall co-ordination and monitoring of the implementation of these technologies in the different activity areas, two particular actions are foreseen for future calls:

Research domains:

4.6 European service for electronic fee collection on roads (Call 2A)
4.7 Multimodal real-time information for people on move (Call 3A)

Implementation of Transport Pricing

Successful implementation of the pricing reform, as put forward in the White Paper, is a complex issue. This requires first cross-modal research on cost calculation to ensure a coherent approach and level playing field in support of the European legislation currently being prepared and put in place. Policy makers and the public also need further and more detailed information on the benefits of pricing. One way of demonstrating these are through real-life demonstration projects. These should be carefully designed to tackle both the technical and socio-economic complexities and to address acceptability problems, which can be particularly striking in urban areas.

This research area will be implemented through the research domains listed below. They will be closely co-ordinated with actions funded under *Clean Urban Transport* (objective 1) and *Integrating Intelligent Transport systems* (objective 4) areas, when relevant.

Research domains:
4.8 Costs of transport infrastructure use (Call 2A)
4.9 Optimal investment and charging (Call 2A)
4.10 User reaction and efficient differentiation of charges and tolls (Modification of "Pricing demonstrations" domain) (Call 3A)

New additional domains:
4.11 Improve infrastructure cost allocation methods (Call 3A)
4.12 Design appropriate contractual relationships (Call 3A)

Selected topics for Call 3A

- **Influence of alcohol, drugs and medicines**

Objective: The importance of the challenge

The consumption of psychoactive substances (alcohol, drugs, certain medicines) is likely to alter the driving aptitude dangerously.

Although this problem is decreasing, nearly one accident in five still can be attributed to excessive alcohol consumption. Certain studies[9]– still incomplete - show that the prevalence of drug and medicine consumption in accidents can reach 15%, and that it exceeds that of alcohol in certain countries. The number of accidents that can be attributed to drug and medicine consumption is in regular increase.

The majority of the governments and the European Union recently engaged themselves into active policies of fighting road insecurity. To this end, they have set themselves ambitious targets to reduce the number of the victims of traffic accidents. Thus the European Commission, supported by the European Parliament and the Council, and followed by several Member States, did set a target to reduce the number of the killed between 2000 and 2010 by 50%[10]. In order to achieve these goals, all the important causes of accidents need to be tackled and each of the most negative tendencies to road safety need to be tackled in a clear and durable way. The reduction of the number of accidents under the influence of psychoactive substances is therefore imperative.

The complexity of the phenomena of deterioration of fitness to drive

[9] In particular the Norwegian study…
[10] White Paper on the transport policy of 12 September 2001

The deterioration of the mental and physical fitness to drive by the various psychoactive substances presents similarities, even if in the case of illicit drugs, a penal dimension is added.

The chemical principles present in these substances are numerous (ethanol, THC and of tens others illicit drugs, hundreds for the pharmaceutical preparations), and new products appear regularly; moreover the effect and the danger presented by these substances depend on the methods of consumption which are also varied and evolutionary.

The combined consumption of several products which increases considerably the danger, makes also difficult the evaluation of effective prevention, penalization and rehabilitation strategies.

The search for a strategy permitting to reduce effectively the number of accidents on the one hand and the aim of reinserting persons with such consumption back into society on the other hand, passes through the improvement of the knowledge of the phenomena of deterioration of fitness to drive under the effect of psychoactive substances. In this respect, systematic work of documentation on a large scale of the impact of such consumption on driving behaviour is indispensable.

The studies carried out so far remain in general incomplete (drugs and medicines) or too old: the alcohol study on which all legislation is based still today dates back to the 1960s.

Moreover, these studies do not take into account all ways of consumption of today, or do not make use of modern analysis and simulation methods which would make it possible to update the results.

In fact, research work undertaken before focused on the question of detection; meanwhile, each of the studies undertaken stressed the gap of basic knowledge and left us without response on such important questions as what must be detected or what are the acceptable thresholds?

Imperfect knowledge

Other aspects of the problem need to be analyzed in greater depth. Thus the large number of products and the absence of a systematic tracking policy in certain Member States gives only a fragmentary table of the prevalence of drugs and of medicines in accidents. A better knowledge of the consumer habits of psychoactive substances by the drivers' population, which would also be essential for the development of adapted counter-measures, is sometimes not possible due to the national legal context. This better knowledge would gain to be translated in terms of overall risks, which would make it possible to obtain an evaluation of the real impact of the use of these substances on road safety, integrating the specific effects related for example to cross effects or to regular consumption of several substances at once.

The epidemiologic analysis of the prevalence has to be supplemented by the systematic analysis of the effects of certain drugs and medicines among the most current ones. This analysis, which has to satisfy strict deontological criteria, can be facilitated by the availability of increasingly representative simulators.

The combination of the knowledge obtained in these fields and cooperation between the Member States - possibly including third countries - is a preliminary to rapid improvement of the comprehension of these phenomena. Finally systematic tracking of the drivers under the influence of psychoactive substances involved in serious accidents should be encouraged, at least in an experimental phase.

On the search for adapted measures

Ultimately, better knowledge of the various aspects of the problem and developing procedures and effective tracking techniques have to be used to work out effective, inexpensive, and socially acceptable solutions, intended to inform the drivers, fix legal limits, dissuade the potential contraveners and to discover and sanction the refractory drivers if necessary.

Finally it is advisable to place at the disposal of all, effective procedures to guide the doctors, psychologists, police forces and judges who will have to take decisions on individual cases.

Scope:

- **Task n°1.** After having inventoried and having collected the results available in this field, propose **the realization of epidemiologic reference studies** determining the road safety risk of psychoactive substances, [11]alcohol, illicit drug and medicines. Concerning the last two categories, the covered substances will be chosen, according to three criteria, the methods of consumption (frequency of use, association with other substances…), the presence of the substance, the insufficiency of existing documentation. One will have too, as far as possible, to determine **an admitted level**, or even to approach a value of reference, according to the substance. Cooperation with the third countries is desirable. It will be advisable to take the results into account of studies of the type "Grand Rapids" (1964). These epidemiologic reference studies should be carried out by a combination of road-side checks and hospital checks, both on a population involved in accidents and on a control group. Within the accident population, distinction should be made between injured and killed persons. Experimental studies and use of simulators can be giving additional information but cannot replace the epidemiological studies. Considered duration of this task: 4 years.
- **Task n°2.** Identify the **best practices of controls** by the police forces with the aim of facilitating the use of the official reports by justice and the possible specialist doctors; evaluate the tracking devices available, taking into account the results of the ROSITA projects 1 and 2. This task should be building upon such earlier study results. Considered duration of this task: 2 years.
- **Task n°3.** Initiate **the establishment of European classification** and of a **suitable labelling of** psychoactive **medicines**. This work has to include collaboration with the various Commission departments which are involved, namely DG SANCO, DG ENTR, and the European Agency for the Evaluation of Medicinal Products in London. This task comprises of an inventory of existing classifications and labelling systems, of a methodology for classifying medicines making it possible to continuously update the classification without disruption and should of course propose a classification for the existing medicines on the market. Considered duration of this task: 4 years.
- **Task n°4.** Evaluate the best practices as regards **rehabilitation of persons dependent** on alcohol or on drugs. Prior experience in this matter in certain Member States has be taken into account, just as studies executed on this subject, like ANDREA (Analysis of drivers Rehabilitation programs). Considered duration of this task: 2 years.

[11] For example designer drugs, medicines of major consumption corresponding to different indications (anxiolytiques, sedative…), possibly alcohol

- **Task n°5.** Evaluate the various **strategies of** conditional **withdrawal of the driving licence** or of the restrictions to bring to, with the aim of reducing overall the risks of accidents, to contribute to the rehabilitation of the drivers sanctioned, to preserve as much as possible the drivers' mobility under medical treatment. Considered duration of this task: 2 years.
- **Task n°6.**
  - Produce **guides** in the form of a booklet or CD-ROM intended for **the specialists, the family doctors and the pharmacists** as to make them aware and guide them in their contacts with the patients, likely to present a risk for the road safety, associated with psychoactive substance consumption.
  - At the level of the **doctors**, propose procedures allowing them to exert a **responsibility** in the process of determining the fitness to drive of driving licence holders, without incurring possible penal proceedings in the event of accidents occurring after a positive decision from their side. These procedures fall within the framework of Council Directive 91/439/EEC on driving licences. Considered duration of this task: 2 years.
- **Task n°7.** Carry out **booklets** intended for the **general public**, therefore to the drivers themselves, but also for a younger public as a prevention. This task should of course be carried out during the last year.

Expected outcome:

- Have reference studies of the impact on fitness to drive for alcohol, illicit drugs and medicines.
- According to the substance, to be in a position to refer to a threshold defined for driving a power-driven vehicle.
- To have an evaluation of the best tracking devices allowing a medical and legal monitoring of drivers.
- Be able to position medicines according to a labelling system corresponding to European classification which will have been worked out.
- To be in a position to propose and/or impose rehabilitation schemes to the driver, adapted to its personal situation and having a positive impact on its future perception of the driving task.
- To have defined strategies of driving bans, which are compatible with the road safety objectives and at the same time respect the need for mobility, such as shorter or prolonged withdrawal periods (withdrawal also under condition of a targeted rehabilitation scheme) or definition of restrictions of use of the licence.
- Define the doctors' legal responsibility vis-à-vis dangerous patients consuming psychoactive substances and the role they can play with regard to road safety.
- To be in a position to inform the general public, for both preventive purposes and for intervening with the target group.

Preferred instrument: Integrated project (IP).

➢ Road Safety Enforcement

Objective: Every year, more than 40 000 people are killed on the roads of the European Union. In the White Paper on European transport policy for 2010: time to decide[12], the Commission has set as its over-all objective in terms of road safety that this number of fatalities needs to be halved by 2010.

[12] COM (2001) 370 of 12.09.2001.

The Commission has recently adopted a European Road Safety Action Programme[13], containing operational measures aimed at achieving this objective. This action programme identifies three areas of actions: the behaviour of road users, vehicle safety and improvement of road infrastructure; the measures in these three areas are complementary to one another.

Whereas improvements in vehicle and infrastructure safety need long lead times, measures on enforcement aimed at improving road users' behaviour are most appropriate to achieve a rapid reduction of road deaths and injuries. In this regard, the Commission has adopted a Recommendation on enforcement on 21 October 2003[14].

In order to develop a coherent policy on effective enforcement, quantitative and qualitative data are indispensable. However, data on enforcement are not readily available and exploitable in each Member State. Nevertheless, such data are of utmost importance to determine how enforcement can achieve an optimum contribution to improving road safety.

The complexity of enforcement data

First of all, it is important to study the way data are collected in order to enhance the comparability of the data between and within Member States. Who carries out the control, at what time, place, by which means? What is the frequency of controls?

Furthermore, information should be available on the efficiency of controls. Is the control done at the right location where the real road safety problem is located? Is it a speeding camera in the middle of nowhere or at a black spot? Is the alcohol related control done at 4 am or at 4 pm?

This additional layer of information should be explored even further in accordance with findings such as those of the GADGET project: what is the effectiveness of the controls in place? What is the impact of controls on driver behaviour (short-term and long-term)? Under what conditions do speeding cameras have a lasting effect on drivers, and make them reduce their speeds for their entire journey (rather than just before and after the camera)? Is there a way of checking whether the recidivism rate goes down? Available research results should be brought together and be complemented where necessary.

Moreover, knowledge from other areas than traffic enforcement (e.g. in security monitoring) should be studied. Can this knowledge be imported as potential best practices (concerning the use of modern technology)? In order to well implement the Traffic Enforcement Recommendation new technologies such as EVI might provide useful tools for increasing the effectiveness and efficiency of enforcement.

Finally, controls have to be seen in a wider road safety and societal context. The link of controls with campaigns, with the place the road safety has in the political and social context of the country will influence the efficiency and acceptability of enforcement. Especially the social acceptance of enforcement, for instance of high degrees of automated speed enforcement, should be analysed.

[13] COM (2003) 311 of 2.6.2003.
[14] Still to be published

Scope:

Task 1: Provide an analysis of the current way Member States collect data concerning enforcement. If possible determine best practice and formulate recommendations. This should include the setting up a system and a network to collect relevant data on enforcement with a view to monitoring the development of road safety records in the Member States. This analysis should include quantitative and qualitative data and should address the subject of the effectiveness of controls. Thus should be included a description of the total enforcement chain, going from the decision making process (where and when to enforce), the actual enforcement in situ, the administrative and legal handling after infringement, up to the ways and means to follow up the persons that infringed certain rules. The analysis of this enforcement chain constitutes an essential part of this task. This analysis should also make a link to the political and societal context, as the effectiveness of enforcement is likely to be influenced by factors such accompanying campaigns, ongoing debates in politics and press, etc. This should include the identification of all stakeholders as well, public, semi-public and private and their respective role in the process.

Task 2: Evaluate the impacts of controls on driver behaviour, both in the short and the long term. This task should examine under what conditions controls have the most effective impact on safe driving. It includes an analysis of the social acceptability of enforcement, including automated enforcement and the effect on road safety. It will formulate recommendations for a long-term control strategy (or at least a methodology to design such a strategy while taking into account national and local specificities), and analyse how it will best be coupled to road safety campaigns. It will illustrate these recommendations with examples of good practices in a variety of driving conditions (e.g. urban versus inter-urban traffic). Finally, it will examine the added-value of making control a part of a wider "policy-mix" promoting increased mobility and improved integration of transport in communities.

Task 3: Establish models for best enforcement practices which can be applied in all Member States. This directly derives from task one. However, in this task account should be taken from elements provided by different projects dealing with road safety enforcement (such as EVI, number plate recognition and others) and to import knowledge from different areas such as security. This task should also propose a methodology on how to arrive at targets on essential road safety factors that should be enforced, such as alcohol limits, speed limits and seatbelt wearing. For the latter three subjects, precise proposals should be formulated.

Expected outcome:

- Analysis of the collection of data regarding enforcement in the EU, including best practice and recommendations;
- Recommendations for a network and database on enforcement within and between EU Member States;
- Analysis of the enforcement chain: quantitative and qualitative data, efficiency, follow-up and recidivism rates;
- Inclusion of best practices from different areas such as security;
- Inclusion of the use of modern technology in improving the effectiveness of enforcement and the cooperation between the different actors in the field;
- Best practice guidelines on enforcement *practices and policy-mixes which may increase the efficiency of these practices;*
- Integration of modern technology within the enforcement chain;

- Methodology for setting enforcement targets, including precise examples on alcohol limits, speed limits and seatbelt wearing.

Preferred Instrument: Specific Targeted Research Project

- **Effectiveness of Road Safety Campaigns**

Objective:

Context: Public awareness campaigns represent one of the instruments most used by the Member States to reduce the number of the accidents.

The drivers' behaviour is indeed one of the major causes of accidents and campaigns constitute a relatively economic means of influencing a major fraction of the drivers to convince them to adopt good behaviour.

One of the questions most often raised concerning campaigns is how to measure their effectiveness. Indeed, campaigns have to be repeated at regular interval and it is useful to be able to measure the effects of a campaign a posteriori to be able to improve the next campaign.

The means used until now aim primarily to measure perception and the notoriety of the campaign and the comprehension of the delivered message on a panel of drivers. They do not measure the direct impact sought which is the reduction of the number of killed, because the effect of the campaign is difficult to discriminate other factors, such as the intensification of police controls, the weather conditions etc.

In its White Paper on the transport policy by 2010, the European Commission adopted an ambitious target to reduce of number of persons killed on the roads by 50% by the year 2010. It supports the realization of pan-European road safety campaigns to contribute to this objective. These campaigns are in the field of awareness-raising like the citizens' information, in particular to encourage the effective implementation and the acceptability of the measures decided by the European Union.

Consequently, it wishes to develop a powerful and innovative tool for the evaluation of campaigns that can be used by the Member States as well as by the Commission for its own campaigns. This tool will have to be sufficiently flexible to be able to be used – completely or partly - as a tool for designing the future public awareness campaigns or drivers' information. It will have to identify the necessary knowledge concerning the drivers' psychology as well as the needs in statistical data. It will have to make it possible to evaluate the impact of cultural diversity on the object and of the contents and nature of the campaigns.

As a demonstration, it will have to be used to evaluate real campaigns under development by the European Union and to be used for the design of a pan-European campaign aiming to support the implementation of new measures to improve road safety.

Scope:

- **Task n° 1**

  Draw up the inventory **of the methodologies** applied in the countries of the European Union, as well as in third countries, for the evaluation of road safety campaigns. The results of the previous projects covering aspects such as the

psychology of drivers (e.g. project SARTRE) or the acceptability of the various measures (e.g. project GADGET) will have to be taken into account.

- **Task n° 2**

Work out methodology making it possible to evaluate the public awareness campaigns in the field of the road safety. All the aspects inherent to campaigns will have to be the subject of an evaluation: media used, frequencies of the messages, targets, contents of the messages, effect of repetition, coordination with strengthened road-side checks, and transnational validity of campaigns. Work out a methodology making it possible to isolate the effects of a campaign among effects interfering from other parallel measures.

- **Task n° 3**

Derive from the above a methodology for the design of campaigns.

- **Task n° 4**

Evaluate and test this methodology by applying it to recent campaigns supported by the European Commission.

- **Task n° 5**

Design, in cooperation with the European Commission services, a complete pan-European campaign, which could include related measures, such as for example a strengthening of road-side checks, aiming to encourage the effectiveness and the acceptability of a measure recently taken by the European Union in the field of road safety.

Expected benefit:

- Strengthen the effectiveness of road safety campaigns launched by Member States and by the European Commission.
- Have the possibility to carry out a 'posteriori' evaluation of a campaign.
- The above tool should allow the European Commission to design campaigns in the fields of awareness-raising and information of the public.

Instrument preferred: Specific Targeted Research Project

➢ **Multimodal real time information for people on the move**

Objective: The White Paper on European Transport Policy attaches great importance to Intelligent Transport Systems as potential enablers for improved performances of the Transport System. In particular, Intelligent Transport Systems could:

- increase capacity of existing infrastructure,
- and thus, reduce bottlenecks and congestion that most cities and sections of the European road network presently experience as well as reducing the environmental impact of transport. The top priorities for actions are:
1. to encourage travellers to shift from their cars to other means of transport, and
2. to implement new charging policies for a better demand management.
- ITS are also seen as key contributors to safer transport means and operations for all transport modes.

The task on 'Multimodal real time information for people on the move' will focus on the way ITS added-value services for people on the move can be deployed.

Scope: Multimodal real-time information is expected to be a key issue in the future of both urban and interurban travel by all modes. Technology now exist that can provide travellers - people on the move – with real time or near real time information on the

travel options that are available to them. The deployment of a service which allows users to know what, for example, is the best itinerary to their destination taking into account congestion, when the next public service vehicle (bus, train, tram) is leaving, or how to book a parking space, will make an essential contribution to sustainable mobility European wide technical standards and roaming services should allow travellers to use the facility far from home as well as in their domestic neighbourhood, in their own language. Such services are already being deployed in embryonic form and in certain locations and have been described as one of the Minimum ITS Services in a report 'Final Report of the review of European ITS Services' (D1.4) to the European Commission DGTREN by the TEMPO Secretariat. This report describes real-time traveller information as follows:

- Real-time traveller information: the real-time services that optimise the journey for the traveller by reducing or avoiding delays to the network. Four services have been identified:-
- Pre-trip road traffic information
- Pre-trip Public Transport Information
- On-trip real-time road information
- Real-time passenger information

For each of these individual services the report provides a definition of the service, the functions to be performed, a minimum service level to be provided, the requirements of the service, delivery mechanisms, technologies and systems that could be used for delivery, the expected users, the potential decision makers and the actions that are foreseen.

This research would develop the framework for 'Multimodal real time information for people on the move' from the basis already available from the source mentioned above and from other available resources including details of currently available services of this nature. It would address the following questions:

- should the service be commissioned by a public authority.
- should the service be delivered by the private sector, the public sector or a combination
- should the service include basic features which would be free of charge for the end user.
- should the service be provided at a city wide level/country wide level/single European level with interoperability elements between local services
- should the service be deployed via a multi point access to user/users.
- should the service be available via all technologies or only the most suitable ones.
- should the service include both interurban and road & public transport networks
- what would be the contractual relations between stakeholders for an efficient service
- how can such a service help to foster the modal shift towards public transport

Expected outcome: The expected results this task will lead to the better definition of a 'Multimodal real time information for people on the move' service and will provide a means of deploying a coordinated service across Europe comprising of elements that are recognisable to users regardless of their particular location in the European Union. As an input towards a proposal for a possible later pilot project, demonstrations of the techniques developed through this task would contribute to the output of the research which would describe in functional detail a multimodal information service for one or more large urban areas together with its/their interurban connections. The pilot

description should be extensible to other areas, have a sound business case basis, and should outline: contractual issues between service providers and transport operators, standardisation of data transmission systems for real-time dynamic and static data, assessment of user satisfaction, roaming conditions between urban areas and countries.

Proposed instrument: Specific Targeted Research Project

➢User reaction and efficient differentiation of charges and tolls

Objective: The current charging regimes are often far from internalising external costs and are rarely based on efficiency principles. Even if recent policy developments show a move towards efficient pricing, full implementation of marginal cost based pricing could only be assured in the longer term. Differentiation of existing charges, often based on full infrastructure costs, appears therefore plausible as a first step in the process of implementation of marginal cost pricing. A key issue in putting such an idea into practice requires good understanding of user reactions to differentiated prices. In this respect, it is necessary to analyse and demonstrate the benefits and effectiveness of differentiated charging and taxation schemes as a means to manage mobility, externalities, and to obtain revenues. The work will focus on real world cases covering all modes, both in urban and in inter-urban, where innovative pricing schemes have been implemented or are being demonstrated.

Scope: To develop a scientific sound approach to determine efficient differentiation of full infrastructure costs based charging schemes and methods to assess their impact on user behaviour. The work objectives are:

- To develop a methodology to set up efficient differentiated schemes based on infrastructure cost-recovery objectives. Given users' reaction to price, conditions under which high / low levels of differentiation become ineffective should be identified.
- To provide detailed assessment of existing differentiated pricing schemes in the different modes of transport, and of their impact on user reaction both in the short and long term. The short-term impacts should include at least changes in vehicle type, route and mode of transport. The longer term impacts should assess changes in land use patterns, citizens and business location choices, and environmental quality.
- Assessment of user reaction should combine ex ante / ex post assessment with modelling work. A particular emphasis should be put on improving cost elasticity parameters used in estimating demand reactions. This could also include the assessment of a shift from the existing charging and taxation situation to fair and efficient pricing scheme aiming at avoiding price discrimination.
- The cases investigated should include at least the following existing differentiated schemes: (i) motorway tolls differentiated according to congestion (time of day) or vehicle type, (ii) port and fairway charging systems that reflect environmental performance of vessels, (iii) airport charges that are differentiated according environmental, scarcity or other parameters, and (iv) environmentally differentiated railway charging schemes.
- To underline the limits of differentiation in terms of geographical scope and equity.

Preferred instrument: Specific Targeted Research Project.

➢ **Improve infrastructure cost allocation methods**

Objective: In order to charge infrastructure costs to users, state-of-the-art research suggests combining cost allocation methods and econometric analysis in determining charges. Some of the key parameters for cost allocation methods are based on studies carried out long time ago. For example, the empirical work underlying the commonly used 4^{th} power rule to allocate variable road infrastructure costs to vehicles was developed decades ago. However, differences in the quality of roads or in the composition and the volume of traffic limit its applicability in different contexts. In the other modes, cost allocation methods are less well established. Further research is therefore needed to assess the limits of validity of the existing allocation rules and to refine them and to develop the allocation methods where they do not exist today.

Scope: The objectives for the research work are the following:

- To review the current cost allocation practices in the light of the recent research on marginal infrastructure costs, and to define the fields where their application is pertinent and reliable.
- To propose and test new allocation procedures where the reliability of the existing ones are not sufficient, in particular for variable infrastructure costs. Different infrastructure quality and vehicle types should be covered for all transport modes.
- To analyse the ability of infrastructure managers, or authorities in charge of setting the levels of charges, to implement the cost allocation procedures. Complexity and enforceability should be assessed.

The research should rely on numerous and various real world cases and work in close cooperation with infrastructure managers and operators. Engineering inputs will be essential.

Preferred instrument: Specific Targeted Research Project.

➢ **Design appropriate contractual relationships:**

Objective: To ensure efficient delivery and management of transport infrastructure, public authorities have often recourse to the private sector either through public-private partnerships (PPPs) or privatisation. Concession contracts for the construction and operation of motorways are common in several Member States while in the maritime and air sector both public and private ports coexist and compete. Introducing marginal cost pricing and internalisation of external cost could limit the freedom of the concessionaire/private operator to freely determine the level of charges and thus to contravene their cost recover / profit objectives. It is therefore necessary to assess how efficient pricing can be developed and implemented in a way that it does not hamper the setting up of PPPs or the coexistence of public and private operators.

Scope: Based on research already carried out to determine mark-ups to reach cost recovery targets, further research should focus on the contractual relationships ensuring

the use of marginal cost based charges to repay part of the infrastructure. The work should:

- Identify the degree of variability over time in the level of each component of the costs and to what extent this variability can induce risk in the funding and operating of infrastructure within a concession or privatised framework. Both the provision and the operation of the infrastructure should be analysed.

- Develop possible ways to share, between public authorities and private investors, the risk inherent to the determination of variable external costs over time (refinement of the methods, evolution of the pollution levels per vehicle, etc.).

- Draw from a series of infrastructure projects currently under the study process, the sensitivity of key parameters.

The research should work in close cooperation with infrastructure managers and operators, private investors, and authorities awarding concessions contracts or regulating privatised sectors. It should include a legal as well as an economic dimension.

Preferred instrument: Specific Targeted Research Project.

Horizontal research domain (Call 3A)

- **Dissemination and promotion of transport research results**

Objective: The Treaty of the European Union entails the duty to disseminate and promote the research results produced within the Framework Programme in order to guarantee the public awareness and benefit of the resources invested.

Transport is a complex and multidisciplinary area of knowledge. Subject areas like safety, security and environmental friendliness need to be finely tuned for the requirements of each mode of transport yet synergies need also to be exploited and knowledge transfer fostered.
The white paper (1) sets an ambitious scenario of policy initiatives that until 2010 should solve the major transport bottlenecks and inspire new and more efficient solutions for the long term.

It is widely accepted that like for other sectors, the quickness and effectiveness of the implementation of new transport policies depends much on the availability of adequate technological tools and concepts. In addition, it is also clear that the quality of the existing research results will determine both the quality and friendliness of the practical solutions for real deployment.

The very same need applies for prospective thinking and for the opening of new pathways in transport solutions.

Europe is delivering vast amounts of results in terms of both technologies and concepts and models that are produced by thousands of researchers. But, how to identify and extract the key deliverables and build on them, avoiding duplication or the re-inventing of solutions? The answer lies evidently on the availability of knowledge which in its

turn depends on the dissemination and promotion of the research results. All this knowledge needs to be identified and made available in order to be put to use.

The objective of this task is to apply this global concept of the European research Area to the Transport sector and derive the benefits resulting from the picking of the best available knowledge produced in this vast brain – the European Transport Policy Research Area.

The task will therefore support the continued identification of the key actors and the mapping of essential knowledge, building an embryo of the European Research Area in the field of transport Policy. The resulting information system will display a mirror image of the knowledge produced in the Community framework, in the Member States and co-operating countries as well as by the industry.

The mapping of results and key actors will improve the access to knowledge allowing it to be timely exploited and used. This will increase the pace of innovation and will be instrumental in the making of an efficient and environmental friendly European transport System.

Scope: The work will be carried out building on the production and results of the projects EXTRA (4th FP) and EXTRAWeb (5th FP) guaranteeing inter-alia the following:

- Bridging the Sixth Framework Programme and the implementation of an adequate Follow-up (Duration 2, 5 Years),

- Contribute to the widening of the information being managed - e.g.: larger number of countries, larger number of research sources, larger coverage of projects and programmes to include the relevant technology driven projects.

- In depth analysis of research results with a view to its dissemination in a user friendly way,

- Develop and process information reflecting both policy priorities and activity based targets,

- Develop and implement a communication/organization/marketing plan to support the promotion of the system itself among the community of users and stakeholders – e.g.: policy makers, researchers, industrialists, etc,

- Favour the development of synergies with the education and training systems,

- Develop pilots covering the practical implementation of "discrete" areas of knowledge where the management of information of research results can be used, constantly updated and synergies easily exploited – hence quickening the pace of innovation,

[These pilots and or case studies should, namely bring together the key partners - researchers, industrialists, policy makers, users, etc; with common interests in well pin-pointed application areas where some type of innovation is immediately required and knowledge is available]

- Improve the links and exploit the synergies namely by integrating the results and by providing a harmonised reporting framework, with other Dissemination and Promotion of results activities.

- Improve the links and develop the interfaces necessary to bridge the gap between research activities and the large development programs. In a first phase the primary target is the Transeuropean Network for Transport (TEN-T)

- Support the linkage to European research area initiatives such as the "ERA-NET" platform for Transport,

- Guarantee the "Quality Management" of the project both qualitatively and quantitatively. The quality standards should be demonstrated and used in equivalent terms to those currently in practice in the European industry.

- Use, support and expand, as required, the information management system currently implemented in the "Europa Web site" – "EXTRA" portal.

Expected outcome: Firstly and foremost the project will digest and promote the transport research projects carried out under the 6th FP as well as others (Member States, industry, etc) that have an impact in transport policy.

Secondly, it will co-ordinate and integrate the results of Dissemination and Promotion activities carried out at project or transport sector level thereby achieving a more comprehensive and articulated approach over the research activities carried out in the transport area.

Consequently it will consolidate the development towards a coherent European Research Area in the field of transport policy, that will pool the European resources in this area and make them timely available for use.

Finally, this will also allow the access to a common pool of knowledge by all the stakeholders in Europe thereby facilitating communication and common understanding and quickening the pace of innovation thus of physical deployment in the transport structure.

Proposed Instrument: Specific Support Action

3.4.2 Research, technological development and integration (Research domains from 4.11 to 4.16).

The research will focus on increasing the capacity of existing and new transport infrastructure by maximising safety and well being of drivers, passengers, crew and pedestrians. The aim will be the development of strategies, systems and technologies to attain optimal operational performance of vehicles/vessels and their supporting infrastructure, seeking to halve the number of transport fatalities by 2010 and increasing capacity by 15%.

Technological innovation will largely rely on computer-based decision support tools, information services on the condition of transport routes (e.g. road holding, sea state or traffic congestion) and vehicle/vessel operational responsiveness.

All domains are included for SSAs as part of the continuous call

4.11 Integrating technologies for driving, piloting and manoeuvring assistance to improve safety and maximise the effective capacity of the infrastructure, including the secure transportation of hazardous goods.

4.12 Developing technologies to sense and predict natural and infrastructure conditions affecting safety and efficiency of transport operations.

4.13 Developing integrated safety systems which are reliable and fault tolerant (preventive, active and passive) taking into account human-machine interface concepts focusing on the system implementation.

4.14 Designing user-friendly driver interfaces based on human-centred design philosophies taking into consideration bio-mechanical ergonomics, injury reduction measures, environment perception and effective lay-out of signalling and piloting information for improved safety.

4.15 Developing integrated, single platform, modular computer-based training systems for land-based drivers and waterborne pilots, that are cost effective, with monitoring capability of fitness to navigate and muster, including crisis management conditions.

4.16 As part of the development of a large-scale integration and validation platform across modes for the realisation of the intelligent transport vehicle and infrastructure of the future technology will concentrate on intelligent management and guidance systems. This will include satellite navigation systems capable of stabilising vehicle trajectory, with respect to lateral and longitudinal displacement, and will regulate vehicle speed and separation with high accuracy and reliability.

Indicative topics for call 3B:

- **Safe maritime operations**
- **Effective operations in ports**
- **Computer-based training systems for land-based drivers and waterborne pilots**

4. LINKS TO OTHER RESEARCH TOPICS AND TECHNICAL CONTENT OF JOINT CALLS

To maximise its impact, research on sustainable surface transport will have to integrate the most recent developments in areas such as Information Society technology, materials and new production processes, renewable energy sources and energy efficient systems, intelligent satellite navigation systems. The specific links to other priorities and identified research topics are:

a) Objective 1: New technologies and concepts for all surface transport modes (road, rail and waterborne)

New power train technologies will have an impact on transport sustainability provided new sources of cleaner and renewable energy can be developed and introduced in a way that is compatible with market and societal conditions.

In particular, critical mass will be needed to move towards totally clean mobility solutions such as cars fuelled by hydrogen. As a consequence, advanced vehicle technology will have to be linked with technology for economically affordable hydrogen production and efficient manufacture of fuel cells compatible with surface transport requirements as defined in sub-priority 1.1.6.1 (sustainable energy systems). Equally, technologies for low CO_2 and near zero emissions powertrains must take into account new advances on possible alternative fuels (sub-priority 1.1.6.1).

The programme '*Energy Intelligent Europe*' will promote non-technological activities on the rational use of energy in urban transport complementary to those described for CIVITAS II– Clean Urban Transport. Both will be closely co-ordinated. The CIVITAS II Initiative (research domain 1.1) is an activity jointly funded by the sub-priority 1.6.2 (Sustainable Surface Transport) and sub-priority 1.6.1-i (Sustainable Energy Systems, research activities having an impact in the short to medium term).

b) Objective 2: Advanced design and production techniques

Generic developments on new materials and production systems will be the basis to achieve lighter vehicle structures, effective and reliable manufacturing processes and decreasing production lead time (relevant to priority 1.1.3 Nanotechnologies and nanosciences, knowledge-based multifunctional materials and new production processes and devices).

c) Objective 3: Rebalancing and integrating different transport modes

Several initiatives launched in the context of the European Transport Policy like Marco Polo (start up initiative for intermodal transport services) and major infrastructure projects of the trans-European Transport Networks (TEN-T), and other research avenues like Galileo will be linked with the activities described in this section.

d) Objective 4: Increasing road, rail and waterborne safety and avoiding traffic congestion

Applied research within priority 1.1.2 (Information Society technologies) in the area of mobility (1.1.2.I) addressing vehicle infrastructure and portable systems to provide integrated safety, comfort and efficiency will be relevant to attain targets as defined in this objective. Equally, in the area of embedded systems (1.1.2.II), systems dealing with integration of fault tolerant embedded controls will be relevant to efficiency and safety for all modes of surface transport. Links will also be established with programmes such as EuroNCAP and other research activities at national level. In addition, applications of GALILEO and GMES will facilitate information acquisition on infrastructure conditions affecting safety and operational performance of the transport system. Activities are also closely co-ordinated with priority 8 (policy-oriented research) - Area 3.2 '*The development of tools, indicators and operational parameters for assessing sustainable transport and energy systems performance (economic, environmental and social)*' and Area 3.3 '*Global security analysis and validation systems for transport and research relating to accident risks and safety in mobility systems*'.

- Testing implementation and transition strategies for Clean Urban Transport – **CIVITAS II**, call combined in this sub-priority 1.6.2 (Sustainable Surface Transport, Research to support the European Transport Policy) and sub-priority

1.6.1-i (Sustainable Energy Systems, research activities having an impact in the short to medium term), with deadline December 2003 (call 2A).

4. 1. Technical Content of Joint Calls in the field of hydrogen and fuel cells

Rationale

Hydrogen and fuel cell technologies are recognised as core long term technologies for realising global sustainable energy. Hydrogen complements electricity and together they represent the most promising mass market energy vectors for delivering sustainable energy for stationary heat and power and transport in the long term. However hydrogen and fuel cell energy systems represent a radical paradigm shift in the way Europe produces and uses energy. To bring hydrogen and fuel cells to the point of commercial readiness and viability in terms of performance and cost, substantial effort on research, technological development and validation is still needed.

The availability of new materials with improved performance and at competitive cost will be a key factor to commercialisation. In particular, nanotechnology can open new solutions for innovative products and processes.

Deepening co-operation through co-ordinated and joint calls will deliver benefits in terms of building critical mass, better coverage of the domain, cross-fertilisation of ideas between an extended range of disciplines and stakeholders, and ensure that cross-cutting evaluations deliver the best strategic combination of complementary projects.

Where appropriate, Integrated Projects should address societal, health, environmental, ethical and regulatory issues. In particular, validation and benchmarking, as well as education and training aspects should be included. Strategies for management of risk should be included in IPs, where relevant. All IPs should have strong industrial participation.

A well co-ordinated, strategically selected set of FP6 projects will provide a concerted and essential technical input to the European Hydrogen and Fuel Cell Technology Platform, as well as to the transport related technology platforms ERTRAC, ERRAC and ACARE and the Alternative Motor Fuels policy initiative. It will also help establish the definition and detailed planning phase of a substantial and broad ranging hydrogen communities technology initiative designed to stimulate growth and accelerate the move towards the hydrogen economy, under the Growth initiative[15]

The results of the activities to be funded under these joint and other coordinated calls on the field of H_2 and fuel cells will form the basis for delivering the technologies which should be tested, validated and demonstrated in the hydrogen economy projects identified as Quick-Start in the Growth initiative.

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[15] Following the Growth Initiative (*), the European Council of 12 December 2003 invited the European Commission to implement public private partnerships and to orient projects and funds in the field of hydrogen towards the priorities identified in the Quick Start Programme, namely hydrogen production and use in communities.

(*) COM(2003)690: Commission Communication on a European initiative for Growth investing in networks and knowledge for growth and jobs. It includes the so-called "Quick Start Programme"

4.1.1 Joint Call on component development and systems integration of hydrogen and fuel cells for transport and other applications

(Joint Call between Thematic Priorities 4, 6.1.ii and 6.2)

Rationale

The aim is to develop the core technologies for hydrogen and fuel cell systems for transport applications – many of which may also be applicable to stationary applications. The cost/ performance/ reliability/ packaging targets for transport applications are amongst the most demanding for hydrogen and fuel cells. Safety, reliability, weight, performance and packaging are nowhere more demanding than in aeronautics. Nevertheless, synergetic development of components and systems can lead to a progressive market evolution, starting with premium price, niche market applications in aircraft, trains, ships, stationary Combined Heat and Power (CHP) and leading to trucks, buses and eventually to the automotive mass market. The main aim is to develop generic technology and modular systems - built up from components that can be manufactured in essentially similar configurations, but with different qualities, to meet the specific performance, lifetime and cost requirements of the different applications (e.g. FC stacks, Membrane Electrode Assemblies (MEAs), batteries, power electronics). Essential components include stacks and major sub-systems such as fuel processors, Auxiliary Power Units (APUs), and individual components.

There is a need to develop a comprehensive approach to systems integration. Tools are required for integrating complete hydrogen /fuel cell energy systems, comprising the fuel processor (if applicable), stack and Balance of Plant (BoP). The aim is optimised overall system efficiency by better transient control and integrated heat and water management - adapted to small and large scale stationary and transport applications (automotive, bus, truck, ship and rail auxiliary power units). Overall system safety shall be addressed.

4.1.1.1. Fuel Cell and Hybrid Vehicle Development

The development of electric drivetrains and components for hydrogen Internal Combustion Engines (ICE)/ electric hybrid vehicles is essential for opening the pathway to commercialisation of fuel cell vehicles. Hybrid drivetrains will deliver economies of scale for components and electronic control systems. Efficient, low cost, mass market electrical and electronic drive-train components should be developed in a modular and scalable way, and proved in the near term in hybrid fuel cell platforms - whilst at the same time pursuing the possibility of coupling them with innovative, hydrogen-fuelled energy converters in similar hybrid configurations. This will underpin the development of a strong EU-based industry for fuel cell electric drivetrain components and energy storage devices (batteries, supercapacitors).

Objective: The overall target is to validate a hybrid vehicle with “well to wheel” energy efficiency exceeding 35% on the extended urban European drive cycle, and “tank to wheel” CO_2 emissions not exceeding 80g/km CO_2, when fuelled by hydrogen derived from fossil based fuels, and near zero CO_2 and pollutant emissions if fuelled by hydrogen produced from renewable sources.

RTD Activity:

System level RTD: The latest component technologies should be integrated in vehicle platforms to enable validation of key operating parameters. The platforms should

consolidate previous RTD effort on advanced batteries, supercapacitors, electric motors, control systems, advanced combustion engines, fuel cell stacks, etc, to arrive at systems optimised for energy efficiency over the European drive cycle. Where appropriate, and innovation is not compromised, system integration should contribute to developing standardised "open system" interfaces and modules for electrical and mechanical systems and communications protocols in order to create more open markets for the component suppliers, covering where possible, both parallel and serial hybrid configurations.

Fuel cell system components: Generic development of low-cost, mass market components for fuel cell auxiliary equipment, including air compressors, fans, humidification and water management systems, hydrogen consumption measurement, H_2 safety sensors, hydrogen control valves, compact, high heat transfer heat exchangers; proposals should be complementary to recent projects, such as HyTRAN, and the FUERO cluster project.

Electric drivetrain components: Development of energy storage devices for hybrid drive-train components including super-capacitors, high power batteries (with sufficient power and energy to cover duration of FC system cold-start), efficient, high energy density traction (including lightweight hub) motors; low cost, more efficient power electronic devices, including converters, inverters, and electronic control systems, and including drive-by-wire and control strategies designed to optimise energy conversions and component life. This effort should build on the STREPs on hybrid systems funded in the second call, as well as previous and running projects in this area (e.g. SUVA, EST, ELMAS, INMOVE, OPTELEC, S-CAP, SCOPE, CAMELIA, PROBATT, etc..)

Component and system safety will be a high priority to be addressed in co-operation with the Network of Excellence HySafe which will develop a prioritised action plan for analysing and testing hydrogen handling and hydrogen system safety.

The main deliverables will be a fully integrated platform and sub-systems designed to prove the most promising hybrid FC vehicle concept with potential hybrid hydrogen ICE platform applications taken into consideration. Validation shall include component and system performance and lifetime testing and cost assessment, with forecasts for future development potential, based on the latest component developments and full scale testing on the bench and / or prototypes if necessary.

Instruments: One IP, combining component development with delivery of at least one optimised hybrid platform for testing:

Fuel cell stack development is not the subject of this joint call and will be covered separately under Sustainable Energy.

Scope for two STREPs focussing on specific component technology bottlenecks.

Component development is an opportunity to involve innovative SMEs.

Where applicable, the aim should be to develop modular components adaptable to requirements of applications in domestic power generation, road vehicles, shipborne, trainborne or aircraft or aerospace equipment.

Dual use applications may also be considered.

Consortia should demonstrate a coherent exploitation strategy linking hybrid hydrogen ICE/electric development with fuel cell development and leading to early market entry of hybrid powertrains.

4.1.1.2. Integration of Fuel Cell systems and fuel processors for aeronautics, waterborne and other transport applications

Airborne, water-borne, rail, and stationary CHP or Uninterruptible Power Supply (UPS) systems represent premium power applications for fuel cells. A significant market is predicted for stationary CHP, ship propulsion and ship/aircraft auxiliary power units in the power range 100-500kW. Safety, reliability and durability are paramount considerations and, for aeronautics especially, packaging and weight constraints are also extremely stringent. For aeronautics there is interest to develop and prove concepts for Auxiliary Power Units i)fuelled by reforming on-board kerosene, and ii)fuelled by liquid hydrogen. Vessels for inland waterways and autonomous urban light rail also represent applications where hydrogen fuel cells can bring substantial environmental benefits, through reduced water and air pollution. Ship-borne fuel cell systems may be developed for main propulsion or to provide auxiliary power for "hotel" loads and deck equipment. Fishing vessels, short-sea ferries are also potential applications for hydrogen-fuelled, fuel cell propulsion in environmentally sensitive areas (e.g. inland or coastal waterways). Two main lines of research are envisaged, and may be pursued in parallel, or in an integrated way: -

- Generic RTD on fuel processors for on-board hydrogen production from hydro-carbon fuels for ships, aircraft, and trucks
- Generic RTD on components and systems development and integration for fuel cell systems for compact domestic CHP, and for auxiliary power units (APUs) in the power range100kW to 500kW, for aircraft, ships

Objectives:

The aim here is for a generic, preferably modular approach, developing integrated systems and components that can be adapted or re-configured to meet the different applications requirements. Fuel processors should achieve at least 85% efficiency (H_2 LHV), and less than 10ppm CO, S.

Integrated hydrogen fuel cell systems for aircraft will aim at power densities at system level exceeding 0.5 kW /kg and 0.5 kW/ l. Stationary CHP and ships systems will aim at 0.2 kW/kg and 0.25 kW/l excluding any fuel processor. Fuel cell system efficiency for CHP should exceed 80% when operating in combined mode.

Joint RTD activities

Generic RTD on fuel processors for middle distillate hydrocarbon fuels used in ships and aircraft: The focus is on middle distillates – especially kerosene and diesel for aircraft, ship and truck applications, addressing requirements specification, system integration, design development and realisation of fuel processor systems for aircraft, ship and truck applications. RTD emphasis is on generic reforming technologies *for middle distillate fuels (diesel, kerosene),* including de-sulphurisation, CO removal and reformate gas clean up; investigation of different reformer/clean-up configurations (e.g. micro-reactor, hybrid) aimed at optimising system efficiency and packaging, through better system integration, and adapted to fuel cell requirements. Scope of work is likely to include: development of lower cost, more active reformer catalysts; sealing; lightweight, corrosion resistant reactor materials amenable to low cost fabrication; development and application of modelling tools to optimise system integration, simulate two-phase fluid flows, chemical kinetics and heat transfer.

RTD on integrated hydrogen fuel cell systems: Development of integrated, modular fuel cell systems and Balance of Plant in the power range 100-500kW, adaptable to

aeronautics APUs, marine, and stationary applications – aiming at optimising overall efficiency, taking into account the balance of electricity and heat for ship and aircraft "hotel" loads, aircraft control systems, ship propulsion, cargo handling and/or cargo-conditioning equipment. For ships, effort should also be directed at the use of hydrogen as a fuel for marine fuel cell applications, including aspects relating to refuelling.

For ships and domestic CHP *only*, a comprehensive pre-normative analysis of hydrogen and fuel cell *system safety* should be carried out, including hazard and risk analysis. For ships, this may extend to fuel handling, refuelling, and storage on board. The impact on overall ship design of introducing hydrogen and fuel cell systems should be carefully analysed with a view to developing integrated ship systems, optimised for energy consumption, operating costs and pollution abatement. Strategies, procedures and equipment should be developed for dealing with emergencies at sea, such as loss of propulsion, storm, fire, accident. For aircraft the system will include development and integration of a LH_2 storage tank, filling and tank safety systems and sensors. System interfaces will be covered by other research activities.

Instruments: Indicatively two IPs as follows:

IP 1: Generic fuel processor: combining basic research, system integration and prototype demonstration (e.g. 10-50 kW) for proof of concept of a fuel processor for high sulphur diesel, marine diesel, and kerosene. Partnership should include competent manufacturers, research undertakings, reformer fabricators and catalyst suppliers, and representative organisations from end user applications, such as aircraft, ship, and truck. Dual use applications may also be considered.

IP 2: Integrated fuel cell systems:

Integrated fuel cell system platforms in which the stack, and stack-related, balance of plant are adaptable to aircraft, ship and stationary CHP applications demonstrating proof of concept. The developed fuel cell systems should address all the issues for power modules approximately in the range 100-500kW, including validation within the overall operating environment (for example vehicle system architecture). For ship systems this includes proof of concept under sea-going conditions. Smaller systems may be appropriate as pilot research systems, provided they are representative of full-scale systems. The core of the IP will be the fuel cell system, developed as far as possible in a generic way, and then customised in up to three possible platform configurations.

Platform 1: fuel cell power unit, supplying stationary CHP, and CHP for ship hotel and cargo conditioning loads; this may include the development of a fuel processor for marine diesel, if not covered in a proposal for IP 1.
Platform 2: an autonomous hydrogen fuelled fuel cell system for ship, and stationary CHP, supplying propulsion /hotel CHP, and cargo conditioning loads. Consortia should endeavour to include innovative SMEs for component development.

Platform 3: Fuel cell APU, based on kerosene reformer technology or direct hydrogen

Proposals concerning waterborne hydrogen and fuel cell systems should complement and build on the work being carried out in the feasibility study FCSHIP and the specific support action New-H-Ship, as well as any waterborne fuel cell related projects that may be supported under the second call.

Aeronautics related activities should complement the ongoing and previously funded activities such as the Technology Platform POA and the CRYOPLANE project.

Proposals on fuel processing should be complementary to recent projects, such as DIRECT, Bio-FEAT, HyTRAN.

Dual use applications may also be considered.

4.1.2. Joint Call for the support of the co-ordination, assessment and monitoring of research to contribute to the definition phase for a hydrogen communities initiative

(Joint Call between Thematic Priorities 4, 6.1.ii and 6.2)

Rationale:
The European Initiative for Growth is aimed at stimulating economic growth through a number of key projects promoting transport and energy networks, and development of core technologies that are considered key to future economic growth. The Quick-start Programme of the Initiative for Growth includes a project on the hydrogen economy, which has a component aimed at the development of fully integrated, largely autonomous hydrogen communities, combining hydrogen fuel cell systems for stationary CHP, and transport, and exploiting where possible synergies between applications (Hycom). The hydrogen communities initiative is of 10 years estimated duration and an indicative budget of 1.5 b€, with the clear goal of providing sufficient pump-priming actions to stimulate the start up and growth of hydrogen industries and markets in Europe. The initiative should provide sufficient critical mass for a substantial joint procurement programme for validation of prototypes based on the most promising technologies in a range of applications, under different operating conditions (climatic, duty cycle, primary energy source, etc). Three phases are envisaged – definition, planning and co-ordination, detail design and implementation, and test and validation. The scoping and planning phase for the hydrogen communities initiative, as well as possibly the following implementation and validations phases, will be carried out in close co-ordination with the hydrogen production component (Hypogen) of the hydrogen economy Quick-start project.

The challenges associated to technologies for these hydrogen communities will require large scale research and demonstration activities in the coming years. Such activities would require a paramount investment. It is of utmost importance to coordinate, monitor and assess permanently all the efforts done in research and demonstration. Research will deliver new knowledge and technologies, and demonstration will test and validate these technologies in real life environments, i.e. hydrogen communities. Despite the different nature of research and demonstration activities (e.g. different type of risks, different actors, different users of results, different instruments) their implementation requires a close coordination and interaction, from the planning to the execution stage.

Objective:
To *co-ordinate, assess and monitor research* to contribute to the definition, planning and coordination phase for a 10 years large scale hydrogen communities initiative, designed to test and validate the potential for hydrogen as universal sustainable energy vector for communities, jointly with electricity. The scale of the envisaged initiative, is such that a comprehensive co-ordination, assessment and monitoring of research for the planning and definition phase addressing technological options together with socio-economic, operational and safety aspects is necessary to proceed with the following stages of this initiative.

Co-ordination of projects that are pursuing similar or complementary objectives will help to optimise efforts. Constant **monitoring** and assessment will stimulate the

activities and will accelerate the learning process allowing measuring progress towards intermediate milestones and final targets.

In addition a constant **technology watch** would be necessary to guarantee a quick uptake by the market, or by demonstration initiatives, of the emerging results from research and development activities. In addition, the monitoring and assessment of the demonstrations, foreseen in a complementary action, will provide feedback and guidance for the definition and planning of research.

RTD Activity:
Research monitoring and assessment, together with permanent technology watch, to identify technological solutions under development that could provide potentially economically and sustainable viable hydrogen sources and energy conversion options (e.g. conventional combustion and fuel cells), addressing climatic, economic and social diversity in Europe, as well as synergies between applications and technologies.

The planning phase will require stocktaking of different technologies under development and assessment of their potential for implementation and the needs for further development. It will seek to ensure the alignment of on-going research work with the hydrogen communities initiative goals and recommendation of best options towards achieving sufficient maturity to undertake pilot and large-scale validation.

Studies should assess the potential use in communities of renewable hydrogen (e.g. from wind, ocean, solar, biomass) or hydrogen from de-carbonised fossil energy sources, or possibly by-product hydrogen in remote autonomous communities "hydrogen villages", "hydrogen islands", or a "hydrogen community within a community" (e.g. hydrogen industrial park, campus or an airport).

The work will include the assessment of potential RTD stakeholders and their possible ways of involvement (e.g. financial, technological, development, equipment/infrastructure supply, legal structures, financial aspects, etc.) in the different phases.

The studies are likely to address further development of specific renewable energy converters, optimised throughout the power conversion chain, to the specific requirements of production of sufficiently pure hydrogen for fuel cell applications. The planning phase should also require input from socio-economic research to establish the cost effectiveness, social and environmental implications of the range of hydrogen paths evaluated, as well as scoping the further analysis needed to assess impacts in the following phases.

The project will monitor and assess input form relevant on-going and future research activities funded under FP6 (e.g. HyWAYS, NATURALHY, HyTRAN, HySAFE, STOREHY, etc).

This call will be carried out in close coordination with the short to medium term part of the Sustainable Energy Systems Work Programme that aims at supporting "seed" demonstration projects for future hydrogen communities and establishing the Partnership "Hydrogen for Transport" that will include a similar assessment and monitoring framework for demonstration activities. This Partnership will deliver best practices in terms of stakeholder involvement and co-ordination, as well as proposals for possible management structures for the implementation and demonstration aspects of hydrogen communities.

Instruments:

One IP conducting a set of comprehensive co-ordination, monitoring, assessment and planning actions and studies, which should involve major stakeholders including research suppliers as well as developers and users of technologies. A Co-ordination Action is envisaged in the short and medium term part of the Sustainable Energy Systems Work Programme (see chapter 6.1.3.1.4) aimed at the co-ordination and assessment of demonstration activities. The two projects will be implemented in close association.

5. Implementation Plan and Related Issues

ROADMAP – Thematic priority 1.6.2 "Sustainable Surface Transport"

Type of Activity **Focussing and integrating Community research**		**Indicative budget (m€)** **Date of publication in OJ:** *[date]* **Deadline for submitting proposals**				**Type of instrument** **Open in each call (1)** **IP** – integrated project **NE** – network of excellence **STREP** – specific targeted research project **CA**: co-ordination activity **SSA -** specific support action
Thematic Priority	**Area**	**Call 1A**	**Call 2A**	**Call 3A**	**Call 4A**	
6.2 Sustainable Surface Transport. Research to support the European Transport Policy	*1.New technologies and concepts for all surface transport modes (road, rail and waterborne)* *3.Rebalancing and integrating different transport modes* *4.Increasing road, rail and waterborne safety and avoiding traffic congestion* *Horizontal research domain - Dissemination and promotion of transport research results*	Dec 2002-March 2003 39 M€ (CLOSED)	June 2003 – Dec 2003 48 M€ (CLOSED)	June 2004 – Dec 2004 56M€	June 2005 – Dec 2005	IP, STREP, CA, SSA
Thematic Priority	**Area**	**Call 1B**	**Continuous Call**	**Call 2B**	**Call 3B***	
6.2 Sustainable Surface Transport. Research, technological development and integration	*1.New technologies and concepts for all surface transport modes (road, rail and waterborne)* *2.Advanced design and production techniques* *3.Rebalancing and integrating different transport modes* *4.Increasing road, rail and waterborne safety and avoiding traffic congestion*	Dec 2002-April 2003 170M€ (CLOSED)	Dec 2002 – March 2006 5 M€	Dec 2003-April 2004 150M€ (CLOSED)	Dec 2004-March 2005	IP, NE, STREP, CA, SSA

* indicative call date – may be put forward into 2005

Number of participants and budget per instrument for each area in the call for proposals

Instrument	Number of participants	Indicative budget per group of instruments (%)
Integrated Projects	See general Rules for Participation	70
Networks of Excellence	See general Rules for Participation	
Specific Targeted Research Projects, Co-ordination Actions and Specific support Actions	See general Rules for Participation	30

Joint calls in the area of hydrogen and fuel cells

Call Identifier :	**Joint Call (1)**	**Joint Call (2)**
Planned launch date :	8 June 2004	8 June 2004
Planned closing date :	8 December 2004	8 December 2004
Thematic priorities involved in the Joint Call	4, 6.1.ii and 6.2	4, 6.1.ii and 6.2
Instruments	IP, STREP	IP
Indicative Budget	35 M€	4.5 M€
Tentative % for the New Instruments	65%	100%

Notes: *Dates and budget figures are indicative. Applicants should verify the closing dates in the text of the relevant call, as published in the Official Journal. The proposals will be evaluated and selected according to the guidelines and procedures laid down in the Guidelines on Proposal Evaluation Procedures, using the single stage submission procedure.*

6. CALL INFORMATION:

Call 3A[16] *(Call open from June – December 2004)*

1. **Specific Programme**: Integrating and strengthening the European Research Area

2. **Activities**:
- Priority thematic area of research "Aeronautics and Space".
- Priority thematic area of research "Sustainable development, global change and ecosystems". Sub-priority "Sustainable energy systems"
- Priority thematic area of research "Sustainable development, global change and ecosystems". Sub-priority "Sustainable surface transport"

3. **Call title**: Periodic call in the area of "Aeronautics and Space", "Sustainable energy systems" and "Sustainable surface transport".

4. **Call identifier**: FP6-2004-TREN-3

5. **Date of publication**[17]: 08 June 2004.

6. **Closure date(s)** [18]**:** 08 December 2004 at 17.00 (Brussels local time).

7. **Total indicative budget:** 252 million €, broken down as follows
- "Aeronautics and Space": 64 million €
- "Sustainable energy systems": 132 million €
- "Sustainable surface transport": 56 million €

Instrument[19]	€ (millions)
IP	176
STREP or CA	76
SSA	

8. **Areas called and Instruments**:

- Aeronautics and Space

Area	**Topic**	**Instrument**

[16] Note that this call for 'Sustainable surface transport' will form part of a call including elements of 'aeronautics and space' and 'sustainable energy systems'.

[17] The director-general responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

[18] Where the envisaged date of publication is either advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly, if needed, in the published call for proposals.

[19] IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted research project; CA = Coordination action; SSA = Specific support action

Open Upstream Research	Innovative air traffic management research Research Domain 4.g (See Section 1.3.1.4.)	STREP
	Specific Support Action for the Single European Sky and ATM Master Plan Research Domain 4.i (See Section 1.3.1.4.)	SSA
1.3.2 Integrated Focused Downstream Research	10. Co-operative ATM (C-ATM) (phases 2 and 3)	IP
	11. Airport efficiency (AFF) (phase 2)	IP

– *Sustainable energy systems*

Area	Topic	Instrument
Section 6.1.3.1.1.1 « Cost effective supply of renewable energies »	Innovative combinations of biomass with fossil fuels	IP
	Innovative demonstrations of improvements to energy recovery and renewable electricity production using waste materials and other commonly available biomass feedstocks	IP
	Innovative approaches to improving the yield of medium to large scale biogas plants	STREP
	Innovative combinations of biomass and wastes with fossil fuels	STREP
	Innovative wind farms, components and design tools	STREP
	Innovations in PV manufacturing plant at industrial scale	STREP
	Geothermal energy	STREP
	Ocean / marine energy technologies	STREP
	All	CA and SSA
Section 6.1.3.1.1.2 “Large scale integration of renewable energy sources and energy efficiency” and Section 6.1.3.1.2.2 “Polygeneration”	Grid issues - Distributed electricity generation	STREP, CA and SSA
	Grid issues - Management of electricity grids linked to large scale decentralised wind power generation	STREP, CA and SSA
Section 6.1.3.1.2.2 “Polygeneration”	Improvement of the competitiveness of polygeneration	IP and STREP
	Innovative integration of polygeneration	IP and STREP

Section 6.1.3.1.3 “Alternative motor fuels”	Biofuel-Cities.	IP, STREP, CA
	Hydrogen for transport	IP, CA
Section 6.1.3.1. “Thematic promotion and dissemination”	Renewable electricity technologies	SSA
	Renewable heating and cooling technologies	SSA
	Production and distribution of liquid and gaseous biofuels	SSA
	Eco-buildings	SSA
	Polygeneration	SSA
	Energy demand management and renewable energy supply in high performance communities	SSA
	Alternative motor fuels	SSA

- Sustainable surface transport

Area	**Topic**	**Instrument**
Objective 1 « New technologies and concepts for all surface transport modes (road, rail and waterborne) »	High quality public transport - CIVITAS II	STREP, and CA
	Advancing knowledge on innovative measures in urban transport- CIVITAS II	IP, STREP, CA and SSA
Objective 3 « Re-balancing and integrating different transport modes »	Intermodal freight transport technologies, systems and strategies	CA
	Intermodal freight transport management	IP
	Logistics best practice	CA
Objective 4 « Increasing road, rail and waterborne safety and avoiding traffic congestion »	Influence of alcohol, drugs and medicines	IP
	Road safety enforcement	STREP
	Effectiveness of road safety campaigns	STREP
	Multimodal real time information for people on the move	STREP
	User reaction and efficient differentiation of charges and tolls	STREP
	Improve infrastructure cost allocation methods	STREP
	Design appropriate contractual relationships	STREP
Horizontal research domain	Dissemination and promotion of transport research results	SSA

9. Minimum number of participants[20]:

Instrument	Minimum number of participants
IP, STREP and CA	3 independent legal entities from 3 different MS or AS, with at least 2 MS or ACC
SSA	One legal entity from a MS or AS

10. Restriction on participation: None.

11. Consortia agreements:
- Participants in IP are required to conclude a consortium agreement.
- Participants in STREP, CA and SSA resulting from this call are encouraged, and may be required, to conclude a consortium agreement.

12. Evaluation procedure:
- The evaluation shall follow a single stage procedure
- Proposals will not be evaluated anonymously.

13. Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument.

14. Indicative evaluation and contractual timetable:
- Evaluation results: estimated to be available within some 3 months after the closure date;
- Conclusion of first contracts: it is estimated that the first contracts related to this call will come into force 8 months after the closure date.

15. Additional terms:
It is expected that this call should not result in more than 40 to 50 projects.

[20] MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.
Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

Continuous Call

1. **Specific Programme:** Integrating and strengthening the European Research Area

2. **Activity:** Priority thematic area of research "Sustainable Surface Transport".

3. **Call title**: Thematic call in the area of "Sustainable Surface Transport Specific Support Actions".

4. **Call identifier:** FP6-2002-Transport-2

5. **Date of publication[21]:** 17 December 2002.

6. **Intermediary and final closure dates[22]:** 22 September 2004, at 17.00 (Brussels local time).
Indicative intermediary and final closure dates of 2005 and 2006 will be found in the relevant updates of the work programme. The final closure date will be in March 2006.

7. **Total indicative budget (2002-2006):** 5 million € [23]

Instrument[24]	**€** (millions)
SSA	5

8. **Areas called**

Area	**Topic**	**Instrument**
All research domains for research, technological development and integration	Promoting SME participation	SSA
	Stimulating dissemination and exploitation of results	
	Realising the European Research Area	
	Promoting Candidate Countries participation	
	Stimulating international co-operation	

[21] The Director-General responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.

[22] Where the envisaged date of publication is either advanced or delayed (see previous footnote), closure date(s) will be adjusted accordingly, if needed, in the published call for proposals.

[23] 20.09.04: 0,7M€, 2005: 1M€ +1M€

[24] IP = Integrated project; NOE = Network of excellence; STREP = Specific targeted project; CA = Coordination action; SSA = Specific support action

9. Minimum number of participants[25]:

Instrument	Minimum number of participants
SSA	1 legal entity from a MS or AS

10. Restriction on participation: None.

11. Consortia agreements: Participants in RTD actions resulting from this call are required to conclude a consortium agreement.

12. Evaluation procedure:
- The evaluation shall follow a single stage procedure
- Proposals will not be evaluated anonymously.

13. Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument.

14. Indicative evaluation and contractual timetable:
- Evaluation results: estimated to be available within some 2 months after the closure date.
- Conclusion of first contracts: it is estimated that the first contracts related to this call will come into force 6 months after the closure date.

[25] MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.
Any legal entity established in a Member State or Associated State and which is made up of the requested number of participant may be the sole participant in an indirect action.

Content of Joint Call (1)

1) Specific programme: Integrating and strengthening the European Research Area

2) Activities: Priority thematic areas of research of:
"*Aeronautics and space*",
"*Sustainable development, global change and ecosystems, 1) Sustainable Energy Systems, ii) Research activities having an impact in the medium and longer term*" and
"*Sustainable development, global change and ecosystems, 2) Sustainable surface transport*".

3) Call title: Thematic call in the area of "*Component development and systems integration of hydrogen and fuel cells for transport and other applications*".

4) Call identifier: FP6-2004-Hydrogen-1

5) Date of publication[26]**:** 8 June 2004

6) Closure date[27]**:** 8 December 2004 at 17.00 (Brussels local time).

7) Total indicative budget: 35 Million €, broken down as follows:

Instrument[28]	**€ (millions)**
IP	23
STREP	12

8) Areas called and instruments:

Area	**Instrument**
Fuel Cell and Hybrid Vehicle Development. See Section 6.1.4.2.2.1 of the "Sustainable Energy Systems" Work Programme, Section 4.1.1 of the "Sustainable Surface Transport" Work Programme or Section 1.4.2.1 of the "Aeronautics and Space" Work Programme.	IP, STREP
Integration of fuel cell systems and fuel processors for aeronautics, waterborne and other transport applications. See Section 6.1.4.2.2.2 of the "Sustainable Energy Systems" Work Programme, Section 4.1.1 of the "Sustainable Surface Transport" Work Programme or Section 1.4.2.1 of the	IP

[26] The director-general responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.
[27] When the envisaged publication date is either advanced or delayed, closure date(s) will be adjusted accordingly, if needed, in the published call for proposals.
[28] IP = Integrated project; STREP = Specific targeted research project

"Aeronautics and Space" Work Programme.	

9) Minimum number of participants[29]:

Instrument	Minimum number of participants
IP and STREP	3 independent legal entities from 3 different MS or AS, with at least 2 MS or ACC.

10) Restrictions on participation: None.

11) Consortium agreements:

- Participants in IP are required to conclude a consortium agreement.
- Participants in STREP resulting from this call are encouraged, but not required, to conclude a consortium agreement.

12) Evaluation procedure:

- The evaluation shall follow a single stage procedure.
- Proposals will not be evaluated anonymously.

13) Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument and their application.

14) Indicative evaluation and contractual timetable:

- Evaluation results: estimated to be available within some 4 months after the closure date;
- Conclusion of first contracts: it is estimated that the first contracts related to this call will come into force before the end of 2005.

[29] MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.
Any legal entity established in a Member State or Associated State and which is made up of the requested number of participants may be the sole participant in an indirect action.

Content of Joint Call (2)

1) Specific programme: Integrating and strengthening the European Research Area

2) Activities: Priority thematic areas of research of:
"*Aeronautics and space*",
"*Sustainable development, global change and ecosystems, 1) Sustainable Energy Systems, ii) Research activities having an impact in the medium and longer term*" and
"*Sustainable development, global change and ecosystems, 2) Sustainable surface transport*".

3) Call title: Thematic call in the area of ""*Support of the co-ordination, assessment and monitoring of research to contribute to the definition phase for a hydrogen communities initiative*".

4) Call identifier: FP6-2004-Hydrogen-2

5) Date of publication[30]**:** 8 June 2004

6) Closure date[31]**:** 8 December 2004 at 17.00 (Brussels local time).

7) Total indicative budget: 4.5 Million €, broken down as follows:

Instrument[32]	**€ (millions)**
IP	4.5

8) Areas called and instruments:

Area	**Instrument**
Support of the co-ordination, assessment and monitoring of research to contribute to the definition phase for a hydrogen communities initiative. See Section 6.1.4.2.3 of the "Sustainable Energy Systems" Work Programme, Section 4.1.2 of the "Sustainable Surface Transport" Work Programme or Section 1.4.2.2 of the "Aeronautics and Space" Work Programme.	IP

9) Minimum number of participants[33]**:**

[30] The director-general responsible for the publication of this call may publish it up to one month prior or after its envisaged publication date.
[31] When the envisaged publication date is either advanced or delayed, closure date(s) will be adjusted accordingly, if needed, in the published call for proposals.
[32] IP = Integrated project
[33] MS = Member States of the EU; AS (incl. ACC) = Associated States; ACC = Associated candidate countries.

Instrument	Minimum number of participants
IP	3 independent legal entities from 3 different MS or AS, with at least 2 MS or ACC.

10) Restrictions on participation: None.

11) Consortium agreements:
- Participants in IP are required to conclude a consortium agreement.

12) Evaluation procedure:
- The evaluation shall follow a single stage procedure.
- Proposals will not be evaluated anonymously.

13) Evaluation criteria: See Annex B of the work programme for the applicable criteria (including their individual weights and thresholds and the overall threshold) per instrument and their application.

14) Indicative evaluation and contractual timetable:
- Evaluation results: estimated to be available within some 4 months after the closure date;
- Conclusion of first contracts: it is estimated that the first contracts related to this call will come into force before the end of 2005.

Any legal entity established in a Member State or Associated State and which is made up of the requested number of participants may be the sole participant in an indirect action.