



Report on Joint Call 2011

Deliverable 1.4

April 2011



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Executive summary

ERA-NET ROAD II aims to strengthen the European Research Area in road research by coordinating national and regional road research programmes and policies.

The first ERA-NET ROAD project, which was funded under the Sixth Framework Programme, made considerable progress towards the networking of road research programmes across Europe. ERA-NET ROAD focused on information exchange between national owners of road research programmes and definition and preparation of joint activities.

ERA-NET ROAD II has build on this work, focusing on implementation of joint activities and funding of joint trans-national research. As owners of road research programmes, the partners in ERA-NET ROAD II will ensure that coordination between the owners of the national and regional road research programmes from both within and outside the Consortium is broadened and deepened. They will pave the way towards achieving an expenditure of 10% of their research budgets on trans-nationally funded collaborative research by 2013. They will also liaise with other public and private stakeholders in transport research programming in Europe and encourage collaboration with non-European research programmes. At the end of the project a permanent structure will have been established that will take forward the trans-national coordination of road research programmes after completion of the project and be self-sustaining.

The ERA-NET ROAD II (ENR2) Work Package 1 (WP1) Tasks were to implement Joint Calls (Management Procedure) with cooperation of Work Package 3 (WP3), which is responsible for the identification of common research areas and interest (Coordination Procedure). The ENR trans-national and cross-border funded Calls 2011 on Mobility, Design and Energy were launched on 31st January 2011 and will close on 31st March 2011, 12:00 CET.

The Coordination Procedure (see Deliverable 14, May 2008) is the first step to identify common research topics for a joint call. Therefore, WP1 has worked in close cooperation and liaison with WP3, which is responsible for the future structure model continuing after ENR2 (see Deliverable 3.1 and 3.2, January 2010, October 2010). The aim of the model structure pursues the aims of the Coordination Procedure, to identify common research topics for future joint calls on a regular basis. So, the first Workshop (15 April 2010 in Vienna) on common interest with CEDR Technical Group (TGR), called CEDR TGR Trans-national Programme Meeting (CEDR TGR TPM), and other invited research programme managers was organised to find relevant common road research topics for the ENR Call 2011. The basis for the Workshop was the collection of NRAs finished, ongoing and future projects/programmes. More than 1.100 research projects and programmes were collected from NRAs and at the Workshop these finished, ongoing and future research projects were identified, analysed and validated into a common research topic list. The output of the workshop was compiled in a table of topics in four domains (Safety and Security, Mobility and Transport, Environment, Energy and Resources, Design and Production). A Questionnaire was sent out to the ENR2 members and CEDR TGR (mainly National Road Administrations (NRAs)) concerning the national interest and priority for the topic list within the four domains. An analysis and discussion of the output of the questionnaire has resulted in the selection of the best-ranked topics and to regroup them into three major topics Mobility Design and Energy with brief descriptions of each topics (see Annex II). Based on the NRAs questionnaire output and defining priorities, the ENR2 NSG, CEDR GB/EB and TGR approved the three common research topics on "Mobility, Design and Energy" and decided to launch three calls with three topics in January 2011.

The Aims and scopes on each call topic Mobility, Design and Energy were then developed at three collaborative research planning expert workshops (Thematic Workshops), held in Vienna from 21st - 24th September 2010. Three different Task Forces were set up to define three joint research programmes based upon the outputs from the Vienna thematic workshops. Within four weeks, at the beginning of November the Task Forces reported the three Descriptions of Research Needs (DoRN) on Mobility, Design and Energy to the WP1 Leader. It was then decided to take forward three different joint research programmes, entitled:

- Mobility – Getting the most out of Intelligent Infrastructure (Acronym Mobility)
- Design – Rapid and Durable Maintenance Methods and Techniques (Acronym Design)
- Energy – Sustainability and Energy Efficient Management of Roads. (Acronym Energy)

Upon a request in November 2010, twelve NRAs committed to participate in one or more of the trans-national joint research programmes over its planned 3 year duration (January 2011 to December 2013). A commitment from each NRA comprised a statement that budgeted funds were available amounting on the financial contribution model (see section 4 Performing the Call for proposals). Three different Programme Executive Boards (PEBs) on each call topic was established and PEB members and deputies were appointed.

The three PEBs were formally set up by the PEBs Kick-Off meeting in Austria in December 2010. The first task for the PEB was to agree and sign up to the respective Collaboration Agreements (CA). A template from ENR with lessons learnt from ENR2 SRO4 Call were used as a basis for the Collaboration Agreements. This document is the firm contract between participating NRAs. The Description of Research Needs (DoRN), entitled with the full titles and acronyms Mobility, Design and Energy (full title see above), is a part to the Guide for Applicants, which is appended to the Collaboration Agreement.

Once set up, the PEBs took over the responsibility from ENR2 for the programme management. The Programme Management was taken by Austria, Austrian Research Promotion Agency (FFG), who agreed not to participate in the ENR Calls 2011, as a supplier (in accordance with ENR agreed principles) and not funding party. The first action by the PEBs was to arrange the ENR Calls 2011 for research project proposals at the end of January 2011. The call was launched on the 31st January 2011 through the Supplement to the Official Journal of the European Union (OJ S series). The call will close on 31st March 2011. Each PEB on Mobility, Design and Energy will jointly evaluate at the PEB Selection Meeting from 24th to 26th May 2011 the submitted project proposals to the respective call topics. Within the PEB Selection Meeting the best project proposals will be selected for financing. Each PEB member of each topic call has the authority to reallocate the own funding to another objective within its call topic framework during the PEB Selection Meeting. The call documents (*Description of Research Needs, Application Form and Guide for Applicants*) are included in ENR2 WP1 Deliverable 1.3 Joint Calls 2011 as well as posted on the ERA-NET ROAD II webpage (www.eranetroad.org).

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1 Introduction

The objective of ERA-NET ROAD II Work package 1 (WP1) is to initiate two cross-border funded trans-national road research programmes, to identify and to implement Joint Calls. The first Call in WP1 was initiated in the year 2010 and the second call 2011 is open from 31 January to 31 March 2011 with three Call topics. The topics of the ENR Calls 2001 are

- Mobility – Getting the most out of Intelligent Infrastructure
- Design – Rapid and Durable Maintenance Methods and Techniques
- Energy – Sustainability and Energy Efficient Management of Roads

with 12 participating National Road Administrations (NRAs) from different countries and a total budget of EUR 5,28 Mio for three call topics. The call 2011 for proposals is based on the ENR-toolkit, developed in ERA-NET ROAD (ENR) and is the success factor for the calls 2011.

Advantage can be taken of the lessons learnt from the first two calls initiated by ENR and the call 2010 initiated by ENR2. The same methodology that was used to achieve these three calls was used again (see also *ENR2 Deliverable 1.2*). The methodology is described in the *Deliverable 13/14, Chapters 3.4 to 3.8*.

The way towards the call 2011 for a research programme comprises many steps (see *ENR2 Deliverable 1.2, page 10*). The call 2011 is built on these steps and adapted to the future structure (which is in implementing phase), where CEDR will take over the structures of ENR (see *ENR2 WP3, D3.1 and D3.2*).

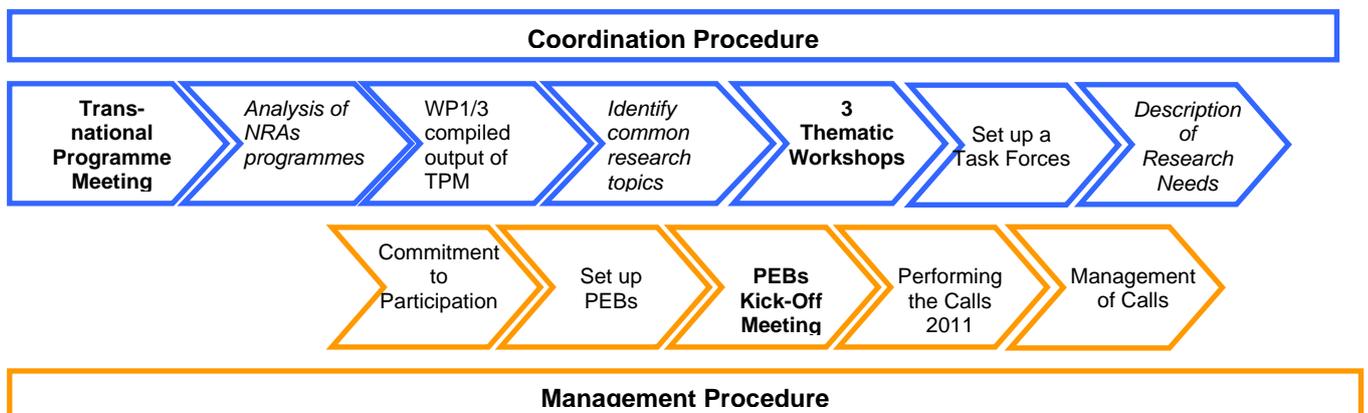


Figure 1 extended ENR Methodology (ENR2 D1.2) proceed towards the ENR2 Call

To initiate these three trans-national Joint Calls three Common Research Topics were identified by the Trans-national Programme Meeting with CEDR Technical Research Group (CEDR TGR) and approved by the ENR2 Network Steering Group (NSG) and CEDR Executive Board (CEDR EB) and Governing Board (CEDR GB). During the Thematic Workshop the common research needs for these three topics were defined. Three different neutral Task Forces were set up by experts from NRAs who are responsible for defining the Description of Research Needs. NRAs were requested for commitment to participate within one or more Programmes. Therefore three Programme Executive Boards (PEBs) were set up by participating NRAs and the PEBs Kick-Off Meetings were undertaken to perform the three Calls 2011.

1.1 Trans-national research programme with cross-border funding

If NRAs define trans-national research topics of common interest, and decide to collaborate and to jointly fund a research programme, this is cross-border funding. The collaboration models have been brought together in the form of the ERA-NET ROAD toolkit (see Annex I, 2010). The “Common Obligation Model” enables NRAs to give a financial obligation when making the budget plans for the research projects and pay later upon request and upon delivery.

On this basis the previous Calls for proposals were initiated by ENR and also for the ENR Calls 2011 the ERA-NET ROAD toolkit and model is the key to a successful collaborative road research. WP1 worked very close with WP3, where the focus is based on structuring public road research in future and elaborates the requirements for establishing a structure that will continue to foster a culture of transnational road research once the ENR2 project is completed. Therefore, the NRAs which are sending road research experts to the CEDR Technical Group Research (CEDR TGR) were implemented in the work process identifying common road research topics for further Calls. The work process was very successful with lessons learnt for the next cross-border funded calls (for more details see D3.2).

1.2 Time Schedule for the Call in January 2011

Table 1 Time Schedule of the Joint Call 2011
(see *Procedure Definitions in ENR Deliverable 14, May 2008*)

When?	Who?	What?	Procedure
by 15 April 2010	ENR2 WP3 (with support of WP1)	Collection of finished, ongoing and future road research programmes and projects within NRAs	Coordination Procedure
15 April 2010	ENR2 WP1/WP3 CEDR TGR	Trans-national Programme Meeting – Identifying research programmes, commonalities and duplications	
by 11 May 2010	ENR2 WP1/WP3	Analysis and compiling of Workshop output into a list of topics	
by 31 May 2010	CEDR TGR ENR2 NSG NRAs	Request for Declaration of Interest for topics and budget	
4 June 2010	ENR2 WP3 / WP1	Analysis and Identification of topic Ranking and topic list send for approval to NRAs	
June – September 2010	ENR2 NSG, CEDR EB/GB, CEDR TGR	Approval of 3 Common Topics on Mobility, Design and Energy	
21 - 24 September 2010	Nominated Experts from National Road Administrations (NRAs) WP1 as coordinator/organiser	3 Thematic Workshops on Mobility, Design and Energy to narrow down the common interests and set up 3 relevant Task Forces	
October 2010	3 Task Forces on Mobility/Design/Energy WP1 as coordinator	Work on 3 different Description of Research Needs (DoRNs)	
November 2010	National Road Administrations WP1 as coordinator/organiser	DoRNs sent to each NRA with a formal request for final commitment to participate in the planned joint funded trans-national research programme and the open call that will follow	
December 2010	Programme Executive Board (PEB) WP1 as coordinator/organiser	arrange an open joint funded trans-national call for project proposals in January 2011	Management Procedure
15 December 2010	3 PEBs Kick-Off Meetings Programme Management (PM) FFG, AT	Finalisation of Call Documents	
31 January 2011	Programme Management (PM) FFG, AT	Open Call	
31 March 2011	PM, 3 PEBs	Closing of the Call	
April 2011	PEB	Evaluation and ranking of proposals	
24 – 26 May 2011	3 PEBs Selection Meetings	evaluate and select which project proposals to award	
June 2011	PM, PEBs	Contracting Phase	

2 Defining the Research Needs

The Description of Research Needs (DoRN) is the final document appended to the Collaboration Agreement. It will be presented to all NRAs and is the basis for NRAs decision to collaborate on the cross-border funded Research Programmes. The DoRN describes the objectives and common research needs of the NRAs on the Call topics.

2.1 Deciding on Common Research Topics

First step was to define common research topics for the Joint Call in January 2011. The decision process on common research topics needed a close liaison with ENR2 WP3, which is working on the model structure continuing after ENR2. The model structure developed in WP3 (see D3.1 and D3.2) is suggesting that CEDR (Conference of European Directors for Roads) will take over the in WP3 proposed structure. The idea behind that was to invite Research programme managers from all of the National Road administrations in Europe to review their research priorities on a regular basis and to propose relevant road research topics for future calls.

Therefore, the Trans-national Programme Meeting (TPM) was established by WP3 to invite research programme managers from the NRAs and other CEDR members to jointly review their research priorities and programmes. TPM contains the CEDR Technical Group Research (CEDR TGR) members, so, CEDR TGR is working as a sub-group identifying common research topics, to increase European collaborative road research and to promote jointly funded research.

WP3 started to collect from NRAs participating in ENR and ENR2 research projects to identifying commonalities. A Workshop was organised by WP3 and WP1 with the CEDR TGR TPM to collect, identify, analyse and validate information on NRAs finished, ongoing and planned research projects in Vienna on 15 April 2010. More than 1.100 research project were collected from NRAs and several commonalities and duplications were identified. These research projects are listed on the web-based tool “Road Research Access Facility” or “RRAF” (<http://rraf.info>), being developed by ENR2 WP2, dealing with Dissemination (Access Facility for Road Research).



Photograph 1: CEDR TGR TPM Workshop in Vienna, 15 April 2010

ENR2 WP3 and WP1 compiled the output of the workshop (CEDR TGR TPM) in a table of topics in 4 domains (Safety and Security, Mobility and Transport, Environment, Energy and Resources, Design and Production). A questionnaire concerning the interest of the topics and indicative budget to the topics was worked out by WP1 in liaison with WP3. The questionnaire was sent to NRAs (all TGR members as well all ENR2 partners) on 11 May with a deadline of 31 May 2010.

Each NRA was expected to declare its interest by using **one of the following scores for each topic** (see Annex III):

1. No interest to participate in the Thematic Workshop.
2. Will participate in the Thematic Workshop, and will check if appropriate officers are available to participate in Task Force set up.
3. Will participate in the Thematic Workshop, and appropriate officers are available to participate in Task Force set up.
4. Will participate in the Thematic Workshop, and appropriate officers are available to be Task Force Leaders.

Question about possible budget:

1. If you would participate in one or more programmes, how much are you able to contribute totally? (this is NO commitment yet, it is an indication!)
2. If you would participate, how much can you possibly contribute to that topic? (this is NO commitment yet, it is an indication!)

An overview of the results of the Questionnaire is shown in the Table 2 below. 12 NRAs from AT, BE, CH, DK, FI, IE, IT, NL, NO, SE, SI and UK replied to the questionnaire. An analysis and discussion of the output of the questionnaire has resulted in the selection of the best-ranked topics and to regroup them into three major topics Mobility Design and Energy with brief descriptions of each topics (see Annex II).

Table 2 Results of the Questionnaire 2010 on common research topics for the Joint Call 2011

key topic	topic	description	Total
1	Mobility (1) Infrastructure for E-Mobility and Vehicle2Infrastructure-communication	Improvement of data and information exchange between road user and infrastructure by using advanced communication equipment and technology (requirements)	29
	Mobility (3) Intelligent Infrastructure and Traffic Management	Improvement of information systems, detection technology and network operation	27
	Mobility (5) Smart use of existing network	Innovative procedures for road network management (journey time reliability, incident management, innovative procedures,...)	25
2	Design (2) Long life pavement (for all conditions)	Optimization of long life pavements from the life cycle costs point of view	27
	Design (6) Innovations for rapid and improved construction and maintenance	Integration of innovative, durable materials in construction and maintenance to extend the service life of road infrastructure sub-assets and thus to minimize traffic interruption	24
3	Energy (4) Energy Efficient Road Management	Understand the impact of people, products and processes upon the design, construction and management of the asset and to explore new technologies and approaches, and assess the effects on safety and durability, and that will deliver improvements in the pe	25
	Energy (7) Sustainability index	Development of a combined indicator for assessing of construction and maintenance measures	23

The results were approved by the ENR2 NSG, CEDR TGR, CEDR EB and CEDR GB. So, three common research topics on Mobility, Design and Energy for the next ENR Calls 2011 were decided.

2.2 Three Thematic Workshops in Vienna

The three common research topics for the call 2011 on Mobility, Design and Energy were approved and more thorough definitions of joint research needs on these topics, i.e. aim and scope, were then developed at three thematic workshops named Mobility, Design and Energy, held in Vienna from 21-24 September 2010.

The thematic workshops task was to discuss and narrow down each of the three tentative programmes (based on the thematic input to the Workshops developed by WP1 see Annex II), their objectives and expected outputs and to set up three different specific Task Forces to develop three Description of Research Needs (DoRNs) on each topic.

NRAs from ENR2 and members of CEDR were invited to appoint their experts on these three topics to join group discussions at the Thematic Workshops.

More than 35 experts on Mobility, Design and Energy from 12 countries - Austria, Belgium, Denmark, Finland, Germany, Ireland, The Netherlands, Norway, Slovenia, Sweden, Switzerland and United Kingdom, actively discussed and defined the topics in three Thematic Workshops in Vienna. Each thematic workshop was divided into 3 groups dealing with the collection and definition of Joint Research Needs based on the question *“What are the Research Needs of the National Road Administrations?”* (from the Road Directors point of view) and defined the output for the three different Task Forces.

Table 3 Input for Thematic Workshops

Mobility – Intelligent Infrastructure
<ul style="list-style-type: none"> • Smart use of existing network <ul style="list-style-type: none"> ○ Innovative procedures for road network management (journey time reliability, incident management, innovative procedures,...) • Traffic Management <ul style="list-style-type: none"> ○ Improvement of information systems, detection technology and network operation • Infrastructure for E-Mobility and Vehicle to Infrastructure (V2I) <ul style="list-style-type: none"> ○ Improvement of data and information exchange between road user and infrastructure by using advanced communication equipment and technology (requirements)
Design – Rapid and Durable Maintenance
<ul style="list-style-type: none"> • Long life pavement (for all conditions) <ul style="list-style-type: none"> ○ Optimisation of long life pavements from the life cycle costs point of view • Innovations for rapid and improved construction and maintenance <ul style="list-style-type: none"> ○ Integration of innovative, durable materials in construction and maintenance to extend the service life of road infrastructure sub-assets and thus to minimize traffic interruption
Energy – Eco Efficient Management
<ul style="list-style-type: none"> • Energy Efficient Road Management <ul style="list-style-type: none"> ○ Understand the impact of people, products and processes upon design, construction and management of the asset and to explore new technologies and approaches, and assess the effects on safety and durability • Sustainability Index <ul style="list-style-type: none"> ○ Development of a combined indicator for assessing construction and maintenance measures

2.3 Task Force Set Up

All three Thematic Workshops achieved its objectives with well defined input for all three Descriptions of Research Needs (DoRNs) and a common agreement on objectives and expected outcomes for the research programmes.

Three different Task Forces were set up, for each Task Force a Task Force Leader was designated (for more details see DoRNs). The Task Forces developed the thematic workshops input to the DoRNs and formulated joint research programmes based upon the output from the thematic workshops within four weeks. A detailed work schedule was set up for the three Task Forces, see Table 4 below.

Table 4 Task Force Work Programme (Mobility, Design, Energy)

Monday, 4.10.2010	1st Draft from Leader to Task Force (TF)
Friday, 8.10.2010	Comments & Input from TF to Leader
Friday, 15.10.2010	2nd Draft from Leader to TF
Wednesday, 20.10.2010	Comments & Input from TF to Leader
Tuesday, 26.10.2009	Final Draft from Leader to WP1 and TF

It was then decided to take forward three joint research programmes, entitled

- Mobility – Getting the most out of Intelligent Infrastructure (4 Objectives)
- Design – Rapid and Durable Maintenance Methods and Techniques (3 Objectives)
- Energy – Sustainability and Eco-Efficient Management of Roads (3 Objectives)

2.4 Three Descriptions of Research Needs (DoRNs)

The final DoRNs were presented to all Thematic Workshop participants, all NRAs participating in ENR2 and CEDR members had the opportunity to decide on the collaboration on one, two or three Trans-national Joint Research Programmes. The NRAs who are participating in the Joint Calls established three different Programme Executive Board (PEB) in December 2010 (see Section 3). In the following the aims of the three Trans-nation Joint Research Programmes Mobility, Design and Energy are described. Applicants should ensure their project proposals are clearly linked to one of the transnational programme objectives, although it is accepted that there may be overlap between them. Proposals should emphasise the trans-national benefit of the project outcomes for the participating Road Authorities in the context of ENR Calls 2011 aim.

2.4.1 DoRN of ENR Call 2011 Mobility

The overall aim of the joint research programme is to improve the management of the European road network. The research will focus on identifying the challenges faced by NRAs in embracing new techniques to get the most out of the existing network and assist road authorities in identifying feasible, valid and cost-effective solutions for key European roads.

The programme is based on four objectives which are described below together with an expected output. The objectives were developed with the concepts of:

- A) Impact Assessment of Intelligent Transport Systems (ITS)
- B) Effective Distribution of Road Authority Data
- C) High Quality Traffic Management/Information Data and Incident Detection
- D) Implementation of Short Term Prediction

This research programme seeks to understand how to get the most out of Intelligent Infrastructure from a road operator point of view. These objectives have been developed following a series of workshops involving specialists from each of the partner Road Authorities. In these workshops, it was recognised that benefits of intelligent infrastructure systems need to be included in business cases. These will inform decisions about whether funding can be made available. In addition all of the above objectives need to consider value for money, whole life costing, sustainability and the environment for the road operator.

Under each heading a number of expected outputs have been defined in the DoRN (see *Deliverable 1.3, January 2011*).

2.4.2 DoRN of ENR Call 2011 Design

Overall aim of the joint research programme “Design - Rapid and durable Maintenance” is to improve road conditions for the short- and long-term. The solutions have to be feasible, valid and cost-effective.

The programme is based on three objectives which are described below together with an expected output. The objectives were developed with the concepts of:

- A) Safely Optimising Road Network Availability during Maintenance
- B) Durable Construction and Maintenance Methods
- C) Strategies for Reducing Maintenance Costs

These objectives were developed following a series of workshops involving specialists from each of the partner Road Authorities. In these workshops, it was recognised that the traditional approach without pan-European co-operation, often resulted in duplication of research. This research programme seeks to redress the problem by integrating these issues into an optimised management framework.

All partners agreed also that there is significant potential for improvement of the traditional road maintenance approaches through application of better material technology, effective safe, environmental friendly methods and standards for road maintenance in order to prolong the service life of road and other road elements.

2.4.3 DoRN of ENR Call 2011 Energy

The overall aim of the joint research programme “Sustainability and Energy Efficient Management of Roads” is to improve the common understanding and performance of sustainable development in the context of the road authorities. Develop whole life consideration of sustainability and energy efficiency, developing decision making tools with practical application to all stages of road planning, design, construction and maintenance. Addressing the need to assess the effects of operation, safety and durability, which will deliver improvements in the energy efficiency performance of the road asset.

The programme is based on three objectives with an expected output. The objectives were developed with the concepts of:

- A) Sustainability: Develop a common understanding of sustainability and development of a rating system
- B) Provide an Energy Efficient Road Infrastructure (construction, maintenance and operation)
- C) Determine the most important Road Infrastructure Characteristics which influence Vehicle Energy Consumption

These objectives were developed following a series of workshops involving specialists from each of the partner Road Authorities. In these workshops, it was recognised that the traditional approach to managing roads, based primarily on the condition of the pavement and structures, is inadequate for today’s needs as they largely ignore the wider issues such as stakeholder expectations, whole life costing, sustainability and the environment. This research programme seeks to redress the problem by integrating these issues into an optimised management framework.

3 Commitment to participation in ENR Calls 2011

The collaboration according to the Common Obligation Programme Model starts with the decision of NRAs (ENR2 countries, non ENR2 countries, CEDR members) to collaborate on one (or more) joint research programmes on the Calls 2011. In November 2010 at the NSG meeting in Copenhagen, different NRAs committed to participate in one or more trans-national joint research programmes ENR Call 2011 over its planned 3 year duration. The following Figure 2 shows the participating countries with the financial contributions and allocation to topic calls 2011.

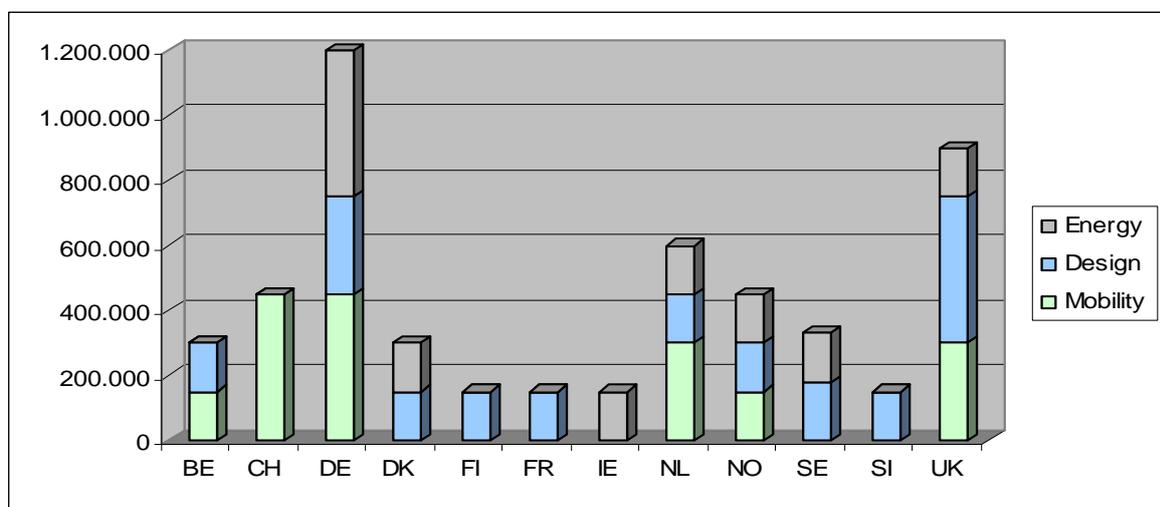


Figure 2 Commitment to participation in ENR CALLs 2011 per country and call 2011 topic

Table 5 ENR CALLs 2011 Participating National Road Administrations

BELGIUM (BE)	Agency for Roads and Traffic (AWV)	www.wegenenverkeer.be	Mobility
			Design
DENMARK (DK)	Ministry of Transport, Danish Road Directorate (DRD)	www.vejdirektoratet.dk	Design
			Energy
FINLAND (FI)	Finnish Transport Agency (FTA)	www.liikennevirasto.fi	Design
FRANCE (FR)	Ministère de l'écologie, du développement durable, des transports et du logement (MEDDTL)	www.developpement-durable.gouv.fr	Design
GERMANY (DE)	Federal Ministry of Transport, Building and Urban Affairs (BMVBS)	www.bmvbs.de	Mobility
			Design
			Energy
IRELAND (IE)	National Roads Authority (NRA)	www.nra.ie	Energy
NETHERLANDS (NL)	Ministerie van Verkeer en Waterstaat (Rijkswaterstaat)	www.rws.nl	Mobility
			Design
			Energy
NORWAY (NO)	Norwegian Public Roads Administration (NPRA)	www.vegvesen.no	Mobility
			Design
			Energy
SLOVENIA (SI)	Slovenian Roads Agency (DRSC)	www.drsc.si	Design
SWEDEN (SE)	Swedish Road Administration (SRA)	www.vv.se	Design
			Energy
SWITZERLAND (CH)	The Federal Roads Office (FEDRO)	www.astra.admin.ch	Mobility
UNITED KINGDOM (UK)	Department for Transport, Highways Agency (HA)	www.highways.gov.uk	Mobility
			Design
			Energy
AUSTRIA (AT)	Austrian Research Promotion Agency (FFG)	www.ffg.at	Programme Management

3.1 Financial Contribution Model

In the ERA-NET ROAD II Description of Work it has been committed to a Joint Call in January 2011 to provide a total budget of EUR 6 million from national road research budgets (NRA budgets). At the CEDR TGR TPM Workshop and the analysis after the workshop has shown that there is a research need for more than one topic and the signal to contribute within the three Call topics with a higher amount of budgets. At the NSG meeting in Rotterdam on 30 September 2010 and CEDR GB/EB it was decided to open three Calls for proposals with three different Call topics and to use the Model of different Financial Contributions as it was successfully used at the ENR2 SRO4 “Effective Asset Management meeting Future Challenges” (see *Deliverable 1.2 section 3.1. Financial Contribution Model, January 2010*).

3.2 ENR Calls 2011 Programme Executive Boards (3 PEBs)

The collaboration according to the Common Obligation Programme Model starts with the decision of NRAs (ENR2 countries, non ENR2 countries, CEDR members) to collaborate on the joint research programmes. The programme ownership is formalised by the Programme Executive Board (PEB) made up of delegates of the participating NRAs. In ENR Calls 2011 three PEBs on Mobility, Design and Energy were established. Each PEB has nominated and approved a Programme Executive Board Chairman (PEC). The PEC is the scientific chair of the PEB and chairs the meetings of the PEB. The PEC is also responsible to reporting and disseminating the status quo (progress, reports and results) of the joint programme to CEDR Technical Group Research (CEDR TGR). The responsibility for the commencement and execution of the joint research programme and for the day-to-day carrying out of the joint research programme is based by the Programme Management (PM). The PM executes the call for proposals, awards the contracts according to the PEB decision and manages the Programme. In ENR Calls 2011 the Programme Management for all three Call Topics is the FFG Austrian Research Promotion Agency. The Programme Management is not funding the ENR Calls 2011, as the role and responsibilities and FFG as organisation is in a very neutral position with no voting, selection or other rights (defined within the Collaboration Agreements).

For each PEB Mobility, Design and Energy there were three Collaboration Agreements (CAs) drafted. Each PEBs Mobility, Design and Energy sign the Collaboration Agreement (CA) in which several items (roles and responsibilities, committed amount of funding, duration, language, and the ownership of IPR and project results) are described. The objectives for the joint research programme are set out in the Description of Research Needs (DoRN) and the Guide for Applicants that is annexed to the CA. (for more detail see *Deliverable 1.3, January 2011*)

All three Programme Executive Boards (PEBs) were formally set up by the ERA-NET ROAD II WP1 Team at its Kick-Off meeting in Vienna on 15th December 2010. The PEB Members and their Deputies are listed in the Deliverable 1.3, January 2011)

3.3 Programme Executive Board Kick-Off meeting

The ENR Calls 2011 Programme Executive Boards (PEBs) Kick-Off Meeting for the three cross-border funded research programmes **Mobility Design and Energy** was held in Vienna at the Tech-Gate Austria on 15th December 2010. This meeting was all three PEBs the first meeting for the Joint Calls 20110.

Once the PEB was set up, it took over the responsibility from ERA-NET ROAD II for future research collaboration activities arising from the joint research programme. This was done at the PEBs Kick-Off Meeting. ENR experience and the tools already developed in ENR were used and helpful at the PEB Kick-Off meeting as well as during the whole call process.

A number of documents needed to be finalised before the opening of the call at the end of January 2011 and were discussed at the PEBs Kick-Off meeting:

- Adaptation of the Collaboration Agreement (CA)
- Discussion of Description of Research Needs (DoRN)
- Updating Guide for Applicants (GfA)
- Application Form (AF)

The following tasks and responsibilities, which are also defined within the Collaboration Agreement, were agreed at the PEBs kick-off meeting:

Table 6 PEB tasks and responsibilities

What?	Who?
Setting the objectives of the ENR Calls 2011 from the three DoRNs	PEB
Deciding on the Budget Frame using the financial collaboration model	PEB
Evaluation and selection of the project proposals	PEB
Monitoring of the selected projects	PEB
Performing ENR Calls 2011 for proposals	PM
Contracting selected proposals	PM
Payment of the instalments to project coordinators	PM

3.4 Adaptation of the Collaboration Agreement

The Final Collaboration Agreement (CA) for the ENR Calls 2011 Mobility, Design and Energy is based on the wording and layout of the previous ENR Calls (see also *Deliverable 1.1, January 2010*). The Collaboration Agreement defines and describes the responsibilities between the Parties, i.e. the participating NRAs and legal aspects on the call itself.

The Collaboration Agreement is based on trust. Understand. commit and on Austrian law. It is signed by the authorised representatives of the Parties.

The Description of Research Needs is the basis for the joint research programme and is copied into the Guide for Applicants (content part). The Guide for Applicants is an Annex to the Collaboration Agreement and is an integral part thereof. That is different to the previous calls as the DoRN was annexed to the Collaboration Agreement.

The estimated value of all three trans-national joint research programmes is EUR 5.280.000. This total budget is deducted by 5% operative costs (administration, organisation and coordination work of PM) and 2% for Final Conference and Report & unforeseen costs and the research budget amounts EUR 4.910.400 (see section 4.1 Funding of the Call).

The CA follows for most parts the wording and structure of the CAs of previous ENR Calls; Main differences or adaptations are the **redefining of the Programme Management** and more **precise definition of the PEB Chair**. In previous calls the name for the call management was the Programme Leader (PL). As the role of the PL is the management of the programme, with the administration, organisation and coordination of the research programme the definition of PL was not appropriate and causes confusions to the tasks and responsibilities. In ENR Calls 2011 there is one PM for all three call topics, due to facilitations and administrative reasons. Moreover, the definition of the PEB Chair was adjusted to the definition of the scientific chair of the PEB. The **PEB Project Contact (PPC)** was renamed (from Project Manager), the responsibility from the PPC is the scientific guidance of a selected project.

Also a definition of the **Budget Plan** is now in section “1. Definitions” of the Collaboration Agreement to define the roles and responsibilities of the budget plan itself for a better understanding. The Description of Research Needs (DoRN) is not an Annex to the CA anymore, the content of the DoRN is exactly copied into the Guide for Applicants (GfA), which is now annexed to the CA. The GfA also contains and describes the selection procedure; there are also slight adaptations and differences within the selection procedure to the previous calls (see for more detail section 5).

Another adjustment within the CA is done in section “4 Performing the ENR Calls 2011 for proposals”, a paragraph concerning the insolvency or inability to pay the instalments for the trans-national research programmes is added. The paragraph says that the PEB must decide between defray of the amount of the payments of the insolvent Party or to discontinue the research programme. These were the main adaptations within the Collaboration Agreement, for more detail see D1.3, January 2011 were all Call documents are published.

4 Performing the ENR Calls 2011 for proposals

The three ENR Calls 2011 of the three cross-border funded Research Programmes in ENR opened on 31st January 2011 and close on 31st March 2011. There was a Pre-announcement and an Announcement in the Supplement to Official Journal of the European Union. The Total Budget for the Joint Call is EUR 5.28 Mio (Excluding the 5% operative costs and 2% final conference/report administration fee, the research budget is EUR 4,91 Mio) provided by 12 NRAs from different countries.

The achieved value of the ENR Calls 2011 of EUR 5,28 Mio from 12 funding NRAs from different countries together is a very success to ENR2. Due to the financial crisis, cost cuts within the NRAs and therefore less human capital, the achievement of more than EUR 5 Mio. shows the intention to collaborate trans-nationally in road research. 53 project proposals were submitted with more than EUR 18 Mio project costs for the ENR Calls 2011. The EUR 6°Mio was a value to achieve maximum and to show, that the interest in road research is increasing. Comparing with the Joint Call 2010, the interest of the NRAs to road research topics is increased and will increase with CEDR in future as well. CEDR Countries, like Spain or Luxembourg will get closer in touch with road research in CEDR TGR and will be more sensitised to the ENR scheme.

4.1 Funding of the Call

Funding of the ENR2 calls is part of the National Road Administrations, which are part of the ENR2 Network Steering Group (NSG) and CEDR TGR. At NSG meeting in Copenhagen in November 2010 final commitment (in principle) was sought for the ENR Calls 20211 for Mobility, Design and Energy. 12 countries signed up for it and Austria (FFG) took the Programme Management for the three trans-national research programmes. By the Kick-Off meeting in Vienna on 15th December 2010, the three PEBs memberships were established and the commitment in EUR given by the members to the following objectives of the three call topics:

ENR CALLs 2011 Financial Contribution					
PEB	Mobility	Design	Energy	Total for 3 years	
BE	150.000	150.000	0	300.000	
CH	450.000	0	0	450.000	
DE	450.000	300.000	450.000	1.200.000	
DK	0	150.000	150.000	300.000	
FI	0	150.000	0	150.000	
FR	0	150.000	0	150.000	
IE	0	0	150.000	150.000	
NL	300.000	150.000	150.000	600.000	
NO	150.000	150.000	150.000	450.000	
SE	0	180.000	150.000	330.000	
SI	0	150.000	0	150.000	
UK	300.000	450.000	150.000	900.000	
12	1.800.000	1.980.000	1.350.000	5.130.000	
	- 90.000	- 99.000	- 67.500	- 256.500	- 5 % managment
	- 36.000	- 39.600	- 27.000	- 102.600	- 2 % final conference/report unforeseen
	1.674.000	1.841.400	1.395.000	4.910.400	RESEARCH BUDGET

Table 7 Overview of ENR Calls 2011 Financial Contributions

During the PEBs Kick-Off Meeting and also documented in all three Collaboration Agreements (see Annex III to the CAs) it was decided for all three ENR Calls 2011 that the PEB members have the authority to reallocate their own funding to another objective within its framework, depending on incoming proposals (ie quality of proposals). In the following the national financial contributions to each call topic (as agreed in the Collaboration Agreement) is documented:

ENR2 Financial Contribution MOBILITY					
	Total for 3 years in EUR	Objective A	Objective B	Objective C	Objective D
BE	150.000	150.000			
CH	450.000		225.000	225.000	
DE	450.000	150.000	150.000	150.000	
NL	300.000	150.000			150.000
NO	150.000	150.000			
UK	300.000	150.000			150.000
6	1.800.000	750.000	375.000	375.000	300.000
	Countries involved	5	2	2	2
	90.000	managment 5%			
	36.000	final conference/unforeseen 2%			
	1.674.000	operativ			

Table 8 Overview of ENR Calls 2011 Mobility National Financial Contributions

ENR2 Financial Contribution DESIGN				
	Total for 3 years In EUR	Objective A	Objective B	Objective C
BE	150.000			150.000
DE	300.000		150.000	50.000
DK	150.000		150.000	
FI	150.000			150.000
FR	150.000		150.000	
NL	150.000			150.000
NO	150.000		150.000	
SE	180.000	180.000		
SI	150.000			150.000
UK	450.000	150.000	150.000	150.000
10	1.980.000	330.000	750.000	900.000
	Countries involved	2	5	6
	99.000	managment 5%		
	39.600	final conference/unforseen 2%		
	1.841.400	operativ		

Table 9 Overview of ENR Calls 2011 Design National Financial Contributions

ENR2 Financial Contribution ENERGY				
	Total for 3 years in EUR	Objective A	Objective B	Objective C
DE	450.000	150.000	150.000	150.000
DK	150.000			150.000
IE	150.000	150.000		
NL	150.000		150.000	
NO	150.000		150.000	
SE	150.000		150.000	
UK	150.000	150.000		
7	1.350.000	150.000	200.000	100.000
	countries involved	4	4	2
	67.500	managment 5%		
	27.000	final conference/unforseen 2%		
	1.255.500	operativ		

Table 10 Overview of ENR Calls 2011 Energy National Financial Contributions

4.2 Open the ENR Calls 2011 Mobility, Design and Energy

On behalf of the three Programme Executive Boards (PEBs), the Programme Management (PM), FFG (AT) launched the ENR Calls 2011 on 31st January 2011. A Pre-announcement to the Official Journal was made in November 2010 and announced in the Supplement to the Official Journal of the European Union (Mobility: ID:2011-012751; Design: ID:2011-012750; Energy: ID:2011-012748) on 26th January 2011. The Design Contest Notice is included in the *Deliverable 1.3. 2011 Joint Call (January 2011)*.

This open call for proposals will be conducted as contest, according to the national law and regulation of the Programme Management, Austria. This contest is partly based on Directive 2004/18/EC respective BVerG 2006 (Austria). It refers to § 10 z13 BVerG 2006 specific exclusion for R&D services, therefore the European and Austrian public procurement directives and rules are not applicable.

PM and PEB members finalised at the end of January the ENR Calls 2011 call documents. The full text of this call for proposals (*Description of Research Needs*), together with the *Guide for Applicants and Application Form* (for each call topic), can be found on the ERA-NET ROAD webpage (www.eranetroad.org) as well as in the *Deliverable 1.3, January 2011*.

The ERA-NET ROAD website is the main Call website, though announcements have been made on both the FFG website <http://www.ffg.at>.

4.3 Results of the ENR Calls 2011 by April 2011

The three ENR Calls 2011 on Mobility, Design and Energy have closed on Thursday, 31st March 2011. On the whole 53 project proposals were submitted. In the Programme Mobility 22 proposals with 73 partners from 11 different countries were submitted. In the Programme Design 20 proposals with 84 partners from 17 different countries were submitted. In the Programme Energy 12 proposals with 42 partners from 13 different countries were submitted.

7 of those countries are not members of ERA-NET ROAD. This proves openness of this cross-border funded joint research programme.

The Programme Executive Selection Meeting will be in May 2011 and the results of the Selection Meeting will be communicated to the project consortia in June 2011 (see section 5). The projects will commence once the negotiations have been completed successfully.

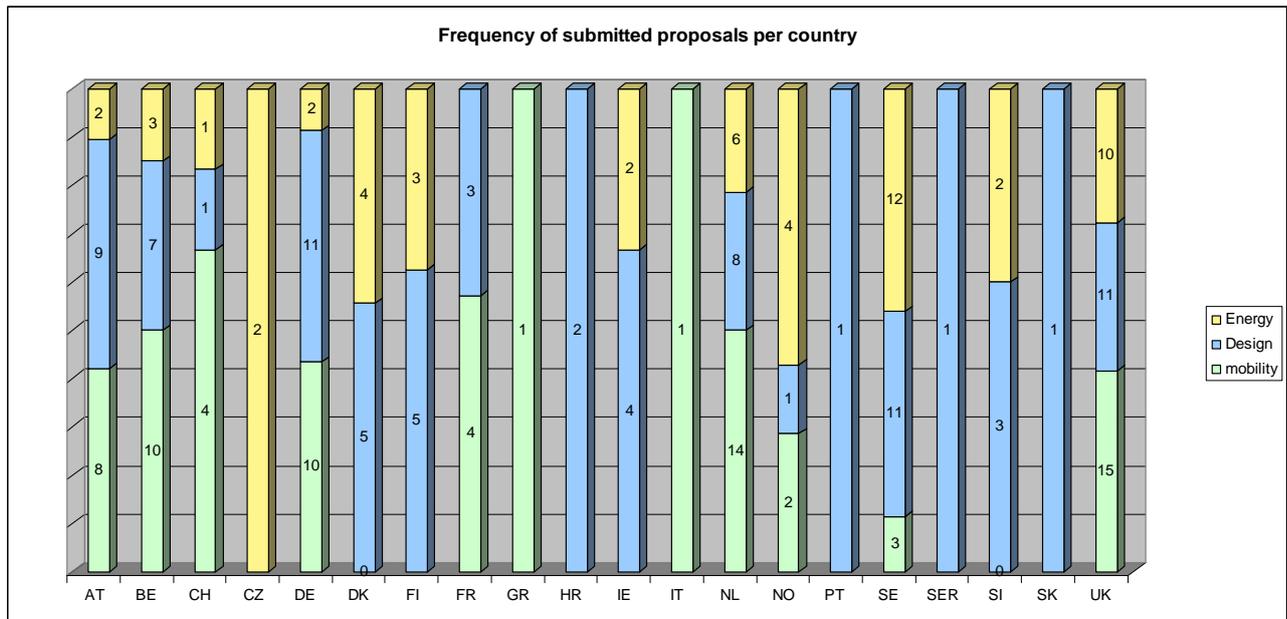


Table 11 Results of ENR Calls 2011 by April 2011

5 Project selection and the way ahead

The evaluation and selection procedure for these three topic calls 2011 for proposals consists of an approach in three phases, namely *Application Phase*, *Evaluation Phase* and *Selection Phase* (described in section 5.1). After the call closed the PM will check the proposals against the eligibility criteria. If a project proposal was not eligible, it would be excluded from the evaluation and selection procedure.

All ENR Calls 2011 PEB members will receive from the PM all submitted application forms (part A and B) with appendices for evaluation. The PEB deals with all projects of all objectives. PEB members have responsibility and a vote, but only within the objective they committed to. Each PEB member evaluates and selects project proposals for the objectives funded by his/her NRA. The influence of each participating NRA during the selection process is limited to the project proposals in the committed objective. The evaluation phase is April 2011. The final selection will be end of May (see table 12) in Vienna.

The three PEBs will follow the selection procedure, which was used in previous ENR calls. There are some adaptations and adjustments to the evaluation criteria, which will be described in the following sections. The Selection Procedure is documented in the Guide for Applicants and a reference in the Collaboration Agreement (see *Deliverable 1.3, January 2011, as well as the ENR Calls 2011 Guide for Applicants, January 2011*).

To conclude, this three joint-funded and trans-national research programmes Mobility, Design and Energy demonstrate what will come in the future. Research will be based on a common agenda, common financing and common activities. These will comprise to launch calls, evaluate project proposals, control findings and disseminate results as well as to implement them.

5.1 Project Selection Procedure

The selection procedure for these three joint *calls 2011 for proposals* will consist of an approach in three phases:

Phase 1 (Application): The call is announced and opened in the Supplement of the Official Journal of the European Union and the FFG Austrian Research Promotion Agency invites organisations to hand in full proposal(s) by taking into account the national rules and regulations of the Programme Management, Austria (see *Guide for Applicants for Mobility, Design and Energy*).

Phase 2 (Evaluation): Evaluation of the eligible project proposals is carried out by experts of the *Parties*, the *PEB members*, applying the defined *evaluation criteria* and *trans-national benefit* to prepare a joint priority list of the proposed projects in three steps to be able to achieve joint trans-national funding decisions (see *section 5.1.1 Eligibility Criteria and 5.1.2 Evaluation Criteria*).

Phase 3 (Selection): Final discussion and agreement on the **joint priority list** for each of the four objectives take place within the PEB Selection Meeting. *PEB members* have the authority to reallocate their own funding to another objective, depending on incoming proposals. Some adjustment might be needed reflecting trans-national interest or in case of duplication of projects. For each objective, the final decision and responsibility lies with its funding *PEB members*.

According to the agreed joint priority list the *PEB* selects the most appropriate projects. The maximum number of projects that can be selected is determined by the size of the *budget frame*. All applicants will get feedback after the selection.

5.1.1 Eligibility Criteria

The PEB agreed in the Kick-Off meeting also described in the ENR Calls 2011 Collaboration Agreements the following **eligibility criteria**:

- The use of the Application Form for the proposal of this joint call for proposals is obligatory (“ENR2 Mobility Application Form.doc”).
- Only applicants from independent legal entities established in Europe are eligible.
- Applications must be submitted by a Project Coordinator of a consortium of at least two independent legal entities (including the coordinator) from different countries in Europe. A maximum 75% of the workload can be assigned to one partner.
- The management structure must be appropriate and resources for successfully carrying out the proposed activities must be adequate. A project consortium requires a **Consortium Agreement** between the project partners, a draft Consortium Agreement shall be submitted (see *Chapter 3.4.2*). The purpose is to clarify:
 - Technical Provisions (tasks of the partners, project schedule, etc)
 - Managerial Provisions (co-ordinator, responsibilities, etc)
 - Financial Provisions (financial plan, payments, costs, etc)
 - General Provisions (duration, communication, dissemination, etc)
- Organisations that were involved in the preparation of the Description of Research Needs (DoRN) of this programme (members of the “Task Force” written the DoRN) are not allowed being part of a Project Consortium submitting a proposal.

5.1.2 Evaluation Criteria

Quality of the project proposals

Eligible applications/projects from phase 1 will be assessed (1=very poor; 10= excellent) on the basis of the following **four evaluation criteria** (in parentheses the weight that is given to each criterion). Eligibility criteria are defined above:

Quality of proposed activity (30%)

- Technical-scientific quality, with focus on:
 - Degree of innovation; comparison to state-of-the-art
 - supplement potential and certain risk (financial and technical)
 - quality of applied methods and approach
- Quality of planning, with focus on:
 - Project Management and Resources
 - Work-plan (phasing, milestones, project meetings, etc)
 - Adequacy of costs and financial plan

Relevance of proposed activity (30%)

- Contribution to achieving the aims of this call
- Added value from the work for Road Authorities

Suitability of applicants and project partners (20%)

- Scientific-technical qualification and capacity of the participants (knowledge and experience)
- Management skills and capacities

Potential and exploitation (20%)

- Dissemination of project results and strategy for exploitation of these results
- Transnational benefit and potential

5.2 Time Schedule of ENR Calls 2011

The closing of the three cross-border funded research Programmes Mobility, Design and Energy is the 31st March 2011. In April 2011, the three PEBs will evaluate and rank the submitted project proposals. Within the PEB Selection Meeting the best project proposals will be selected for financing. Each PEB member of each topic call has the authority to reallocate the own funding to another objective within its call topic framework during the PEB Selection Meeting. All PEB members will read all submitted project proposals to their call topics, but will evaluate the submitted project proposals, which are funded through their NRA.

At the ENR Calls 2011 Mobility, Design and Energy PEB Kick-Off meeting on 15th December 2010 the following time schedule for all three call topics was decided:

Table 12 Time Schedule of the PEBs of ENR Calls 2011

When?	What?
Phase 1: Submission Call opens Call closes	open 60 days 31 January 2011 31 March 2011
Phase 2: Evaluation Evaluation and ranking of proposals	April 2011
Phase 3: Selection Contracting phase	May 2011 till September 2011
ENR Calls 2011 Inception Joint Meetings	Autumn 2011
ENR Calls 2011 Progress Meetings	Spring 2012
Etc.	

6 Lessons Learned, Conclusions and Recommendation

In ENR two cross-border funded research programmes (ENR SRO3 and ENR SRO1) were/are successfully running and in ENR2 the third Joint Call SRO4 with few adaptations and new financial collaboration model was implemented (see *Deliverable 1.2, January 2010*). Now, in ENR2 with three trans-national research programmes were identified and further defined with different experts from National Road administrations (NRAs). The Coordination Procedure and the Management Procedure developed in ENR (see Annex I, ENR Toolkit) have shown cross-border funding and trans-national collaboration is working. The ENR Toolkit includes three procedures (Coordination, Management and Monitoring Procedure) with models for the trans-national co-operation and special tools that have been tested on several pilot projects and two cross-border funded programmes initiated by ENR. ENR2 WP3 is defining the Coordination Procedure for identifying common road research topics for further successful cross-border funded research programmes in future (see Deliverable 3.1 and 3.2). The Management Procedure is part of ENR2 WP1, where the aim is to launch joint calls and to manage them successfully. Before this Coordination Procedure, the question for many NRAs occurs, why should NRAs initiate Joint Research Programmes. The answer is that trans-national collaboration brings more benefits to the NRAs than procuring research projects alone:

- NRAs together have bigger research budgets (ie. ENR Calls 2011, EUR 5,28 Mio) than alone
- Wider choice of research providers and/or suppliers and improved quality of research projects
- Easy access to international best-practice and exchange of knowledge, experience and results
- Better and wider dissemination and implementation
- Reduced duplication of research projects, due to coordination.
- Better value for money, due to shared costs and wider choice of suppliers

When the question “*why should NRAs initiate joint research programmes?*” is answered positively, the NRAs decide to collaborate trans-nationally and to initiate joint research to gain the benefits of trans-national collaboration.

The successful implementation of these programmes has been due to the trust and commitment developed between partners and more experience has been gained along the way. ERA-NET ROAD has helped to develop the **Trust. Understand. Commit.** between all NRAs, which are the success factors for the future trans-national research programmes. Previous initiated ENR Calls and ENR Calls 2011 is based on the procedures developed in ERA-NET ROAD (ENR), namely the ENR-Toolkit (see Annex I). Moreover, the advantage and the lessons learned from the first two calls initiated in ENR and the SRO4 Joint Call were implemented within ENR Calls 2011. The same methodology (*ENR Deliverable 13/14, Chapters 3.4 to 3.8.*) was used to achieve the best practise during the process.

Getting 12 countries (Mobility 6 countries, Design 10 countries, Energy 7 countries) to commit to one or more of the cross-border funded research programmes with to EUR 5,28 Mio in collaborative funding shows a growing interest in trans-national collaboration, and a belief that “together we can achieve more”. This goal has only been reached by the will, the attendance and the efforts of each NRA. Another main part was the identification of the three common research topics Mobility, Design and Energy (see Annex II) firstly identified at the CEDR TPM Workshop and secondly and then specified within the three ENR2 WP1 Workshops in Vienna, September 2010. It shows the concept on these three topics is high

priority to NRAs in Europe - who are dealing with budgets and whole life costs every day for their own road network.

More specific conclusions and recommendations, which can be looked upon as important guidelines for future trans-national research collaboration, are:

- A central factor for the success of trans-national research collaboration is the **pro-active announcement** and **communication** of the call within the community of all the PEB participating countries as well as non-participating countries.
- A **pre-announcement** and an **announcement** in the Supplement to the Official Journal of the European Union of the call were made. It is also recommended to publish the link of the announcement of the Call on the Official Journal of the EU.
- Furthermore and more essential is the publication on the **ENR2 website** of the ENR Calls 2011. The website is an information platform for all NRAs and research providers interested in road research projects. The website also provided all call documents for download. Therefore, it is recommended for further calls to use the eranetroad website for promoting and informing calls and disseminating reports from previous calls. Also, the ENR-Toolkit with its templates for the three procedures should be standardised and published on the ENR website. Furthermore, **frequently asked questions (FAQs)** should be visible on the website.
- Much attention should be paid to creating a **promotion and dissemination** process to make information on the call itself, on the project reports and the outcome of the projects visible to the community. **ERA-NET ROAD** has crystallise as a logo, a brand mark were people know that it is dealing with road research. Therefore, it is recommended to use ERA-NET ROAD as a brand for further calls, initiated by the future structure after ENR2.
- For the **Programme Management (PM)** an organisation is responsible, namely FFG (AT). The renaming from Programme Leader into Programme Manager shows internally and especially externally more visibility to research providers. The Programme Management is a kind of a **key person**, who is the authorised person to the public (NRAs as well as researchers or other persons) to answer questions of the call, promoting and disseminate the call.
- The Tasks and the definition of the **PEB Chair (PEC)** are more precise within the ENR Calls 2011. The PEC is the scientific chair of the PEB and chairs the meetings of the PEB. The PEC is also responsible to reporting and disseminating the status quo (progress, reports and results) of the joint programme to CEDR Technical Group Research (TGR). The PM is responsible for overall Call issues, the PEC is the expert within the research field.
- The **financial contribution model** focusing on one or more objectives of the call topic is a good method to get a wide range of knowledge on one specific topic as well as to increase the number of participating countries within the PEB. This financial model is flexible enough during the selection process of the projects, depending on the quality of projects coming in and reallocation of NRAs budget, the allocation of objectives (A,B,C,D), to get the best value for money and avoid of course duplication of research.
- Inclusion in the Collaboration Agreement of a paragraph **clarifying the reporting** of the output of the projects from the PEB to the NRAs and CEDR. In ENR Calls 2011, the scientific PEC is responsible to communicate with the CEDR TGR about the call progress. Also, **Joint Meetings** between the PEB, CEDR and the project Coordinators (PC) are planned to have a communication and dissemination basis.

- Inclusion in the Collaboration Agreement of a clause stipulating that PEB members or its organisation, who/which have submitted a project proposal are unable to participate in the **evaluation and selection** of submitted project proposals. Therefore, there are excluded from the Selection phase of the Selection Procedure.
- Questions to the contract appeared before and during contracting phase. Therefore, a *template for the contract for services* under Austrian procurement law is annexed to the Guide for Applicants to avoid questions and disappointments of researchers and to clarify the VAT question. Also, the type of contract is communicated to the research providers.
- The **Collaboration Agreement (CA)** follows for most parts the wording and structure of the CA of the previous ENR Calls. In section 3.4 Adaptation of the Collaboration Agreement the procedures are explained and described precisely.
- Selection Procedure contains the Eligibility Criteria and the **Evaluation Criteria** in phase 1 and 2. These Criteria were adapted from the ENR SRO1 Call (which was also performed by FFG and Austrian law). It contains now four evaluation criteria, *quality of project proposal, relevance of project proposal, suitability of project consortium and potential & exploitation (see section 5.1.2 for more detail)*.
- Early identification and **clarification of involvement of partners not from Europe**. A clear final decision of the NSG/CEDR for the next calls is needed. Also the identification of problems occurring with non European countries is essential and should be communicated to the WP1 as early as possible.

Regarding the outcome of the organisation, coordination and preparation of the three topics of the ENR Calls 2011 in ENR2 so far, the participating NRAs can summarise that trans-national collaboration is definitely beneficial. As the problems and challenges are not unique to any nation, neither are the solutions. These three trans-national research programmes Mobility, Design and Energy under the ERA-NET ROAD II programme are benefiting from the previous three joint-funded calls (SRO3, SRO1 and SRO4) including their standards, templates, ENR-Toolkit and the experience gained from open international calls for research proposals. Most PEB members were new to the ERA-NET ROAD system, but with the templates and the Programme Management, which was Programme Leader and Chair in and has the know-how from previous trans-national research programmes (Programme Leader and PEB Chair in previous ENR Calls), continued the call process (with ENR aims and procedures) with adaptations of lessons learned by now very well.

For the next cross-border funded Research Programme the work from ENR2 Work Package 3 Structuring on Road Research will be the basis for the next collaborative topic. The Coordination Procedure from the ENR-Toolkit will be more specified for trans-national research topics. The time schedule used in the ENR2 SRO4 call and ENR Calls 2011 is recommended to the next calls and will be defined in Deliverable 1.5.

Annex I: ERA-NET ROAD Toolkit

The ENR-toolkit was developed by ENR to achieve and support the 'trans-national research programmes, which are strategically planned and trans-nationally funded'. The ENR-toolkit is underpinned by four fundamental questions: Why?, What?, How? and When?:

- First you have to know WHY you want to collaborate trans-nationally.
- Then you have to define WHAT the research topic of common interest is.
- Next you choose HOW to organise that trans-national collaboration.
- And finally you decide on WHEN results have to be available for progress monitoring and evaluation of the research projects.

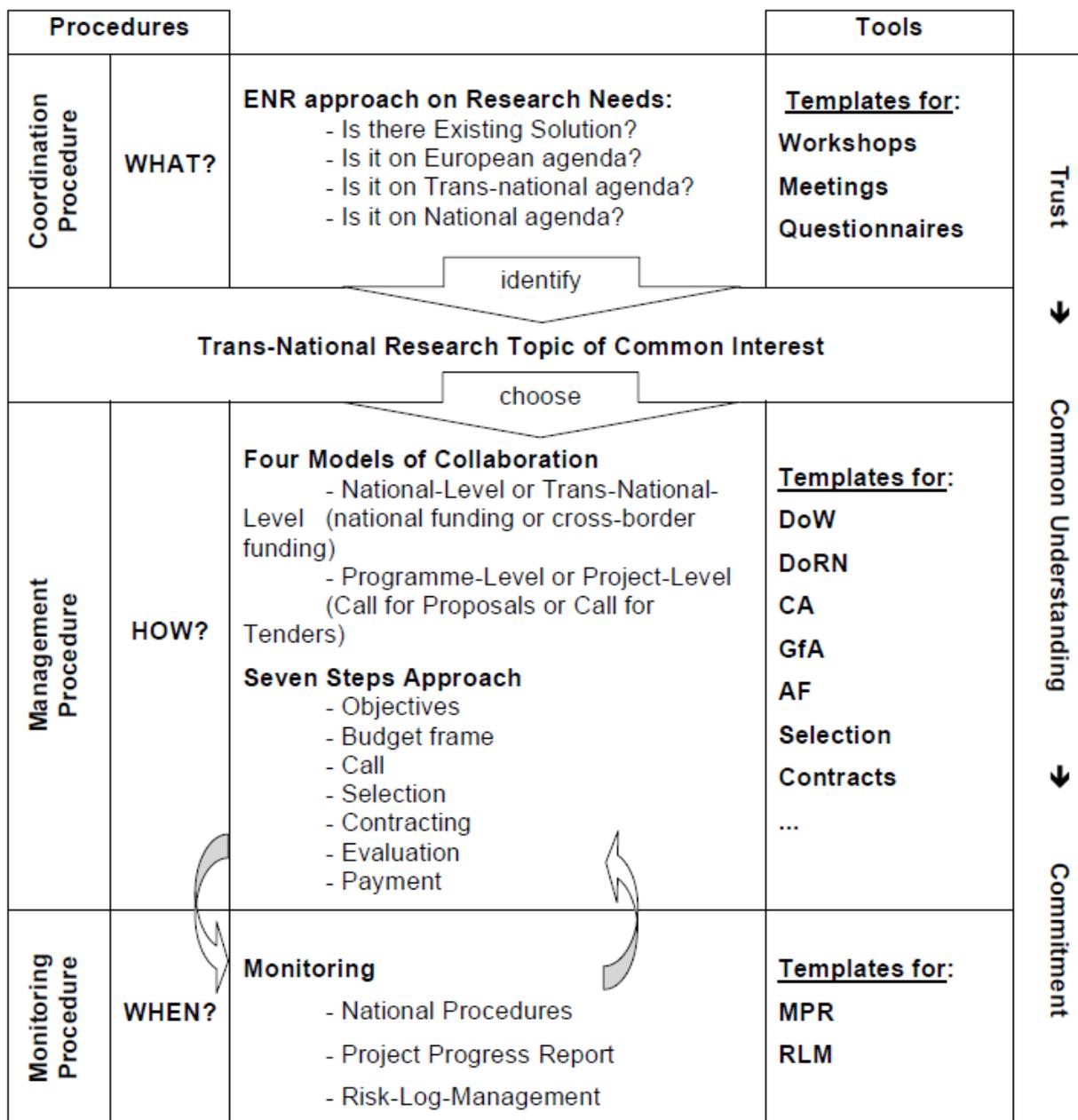
The ENR-toolkit can be described by its basic elements: the three procedures, the four models of collaboration, the seven steps to solutions and the tools (more details about the ENR-toolkit are available in its Deliverable 4 Final Report consolidating model procedures, practices and rules developed).

The ENR-toolkit is based on:

Trust. Understand. Commit

and addresses the collaboration of funding sources to initiate trans-national Research Projects or Programmes, and within its "Management Procedure" provides collaboration models and is used in the undertaking of joint research activities.

Figure III: The scheme of the “ENR-toolkit”



Models of Collaboration

The Management Procedure introduces four models of collaboration:

- on National-Level or on Transnational Level
- Project-Level or Programme Level

When a topic of trans-national interest is identified, a decision on the type of financing of the activity has to be done. The financing can be either at the national level (national funding) or at the trans-national level (cross-border funding/common pot). On National level funds stay national and the money does not cross borders. In ENR it emerged very soon that cross-border funding is more efficient which resulted in developing trans-national collaborative research. ENR is one of the few ERA-NETs in the 6th Framework Programme, where the primary objective was to achieve trans-national programmes that were trans-nationally funded. Cross-border funding is based in ENR on the Common Obligation Model, described in the following sections. Furthermore, the scope in ENR can either be at the project level (call for tenders) or at the programme level (call for proposals).

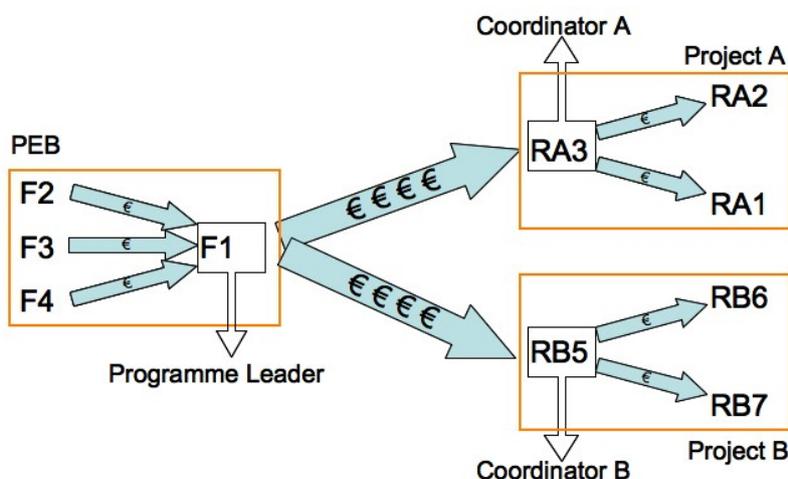
The following chapter describes the Management procedure in more detail.

Common Obligation Programme Model

The collaboration according to the Common Obligation Model starts with the decision of some NRAs (ENR countries, non ENR countries) to collaborate on a certain topic for a joint research programme. The objectives for the joint research programme are set out in the Description of Research Needs (DoRN). The programme ownership is formalised by the Programme Executive Board (PEB) made up of delegates of the participating NRAs. They agree on a Programme Leader (PL), who is responsible for the programme management, and a PEB Chairman (PEC) and sign a Collaboration Agreement (CA) in which several items (roles and responsibilities, committed amount of funding, duration, language, and the ownership of IPR and project results) are regulated. The PEB members jointly agree on the budget that is contributed by each participating NRA. The PEB contributes their share to the PL and the PL pays the contractors. The PEB members become undivided joint owners of information, results and IPR of the projects that were selected.

Table I.XIII: Characteristics of the Common Obligation Programme Model

Model	Common Obligation Programme Model
Scope	NRA's collaborate on programme level and define objectives in a Description of Research Needs (DoRN) to make a call for proposals
Funds	Cross-border funding. Any contractor is paid by the Programme Leader, who requests and receives payment from the other PEB members
Recommended calls	Open call for proposals (performed as "design contest")
Roles & Responsibilities	<p>Programme Executive Board (PEB) is a board at the expert-level with one responsible officer from each funding NRA (programme ownership).</p> <p>Programme Leader (PL) has the responsibility for the administration and procurement of the programme (programme management).</p> <p>Programme Executive Chair (PEC) chairs the PEB meetings</p> <p>Project Manager (PM) are PEB members from the same country as the projects coordinators. They support the PL in negotiations and monitoring</p> <p>Contractors are the research providers who do the contracted research.</p> <p>Coordinator is the leading researcher of a consortium.</p>



1, 2, 3 etc...different countries

F...funding NRA's

R...research providers

Figure IV: How funds flow in the Common Obligation Programme Model

The Seven Steps Approach

Seven Steps from the identification of research needs to the delivery of a project within the project and programme model were identified. The table describes the tasks and features of each step in each Common Obligation Model on Project and Programme Level. The tools provided in the ENR-toolkit are listed as well.

Table II.XIV: Tasks and features of Common Obligation Model

7 steps	Common Obligation Project/Programme Model - What to do?	Tools
Objectives	<p>The 1st step is to define the expected outcome, the purpose of the research. What objectives shall be achieved? What is the research need?</p> <p>On <u>project level</u> objectives are defined in more detailed in the DoW to make clear what outcome is expected of the project. Thus the researchers can make a bid how they would realise the tendered project.</p> <p>On <u>programme level</u> the objectives are more generic within the DoRN, they just give an idea of what is the expected outcome, so the researchers can propose projects that meet the objectives.</p>	<p>Description of Work</p> <p>Description of Research Needs</p>
Budget Frame	<p>To formalise the collaboration all participating NRAs sign a Collaboration Agreement (CA) that describes all responsibilities within and outside the project or programme.</p> <p>Project/Programme ownership is formalised in a Project/Programme Executive Board (PEB) made up by one member from each participating NRA. One NRA takes the Project/Programme Leadership (PL) and has the project/programme responsibility. Another becomes PEB chairman (PEC) and chairs the PEB meetings.</p> <p>PL and PEC are approved at the kick-off meeting of the PEB. The project/programme is financed jointly, so each NRA commits a fixed budget. NRAs are responsible for making the budget available following a request from the PL.</p>	Collaboration Agreement
Call	Depending on the scope of the activity (project or programme level) a call has to be made. Either a call for tender to find the most suitable research provider to perform the project or a call for proposals to find most appropriate projects to meet the objectives.	Call for Tender/ Proposals
Selection	The PEB agrees on the procedure and criteria for selection of project proposals and jointly selects the most suitable research provider or appropriate projects. All Applicants are informed about the result of the evaluation and get feedback to their project whether they were selected or not.	Selection Procedure
Contracting	The PL makes the contracts with the jointly selected research providers following its national law and regulations. The research providers are formally responsible to the PL.	National Procedures of the PL
Evaluation	The monitoring of the progress and the evaluation of the results follows the Monitoring Procedure from the ENR toolkit. The research provider presents reports and final results to the PEB. The PEB jointly approves the results and reports.	Monitoring Procedure
Payment	The funds flow according to the programme budget plan. The PL pays the research provider at certain stages on delivering the corresponding report after they have been approved by the PEB. The PEB members provide their contributions to the PL following a request for payment. The participating NRAs become undivided joint owners of information and results of the different projects. The results are published.	National Procedures of the PL

ANNEX II: Descriptions input of the three ENR Calls 2011

Mobility:

Intelligent Infrastructure - Smart use of existing network, Traffic Management, Infrastructure for E-Mobility and Vehicle to Infrastructure (V2I)

Smart use of existing networks needs innovative procedures for road network management. This includes journey time reliability (in relation to congestion, incident management and keeping travellers informed and able to make timely/ suitable/ informed travel decisions), improved safety, reduction in emissions and long-term resilience of technologies. This work is complementary to other ongoing initiatives, such as the EASYWAY project.

Intelligent Transport Systems (ITS) represents one of the highest profile areas of research in Europe, with a range of projects being undertaken in this area, for example, CVIS, COOPERS, EASYWAY, DATEX II, etc. National Road Administrations have to continue to explore a more holistic approach to ITS ensuring consistency of systems across borders. This work will identify research gaps in intelligent and automated road systems to help progress and support implementation.

Research needed to support implementation comprises:

- **Informing travellers**
Select, pilot and trial ITS today to ensure we have the tools in 3-5 years to better inform and empower travellers to make best use of the network. Major focus on congestion.
- **Detection Technology**
Select, pilot and trial detector technology today to ensure we have the intelligence gathering capability in 3-5 years to operate the network effectively.
- **Technical Toolkit Improvement**
Select, pilot and trial technology solutions today to ensure we have the capability to improve the economic, environmental capabilities and safety performance of the technology asset in 3-5 years. Major focus on Safety and secondary focus on Energy, Environment and Climate Change.
- **Network Operations**
Develop, pilot and trial ITS technology today to ensure we have the tools to meet operational needs that will emerge in 3-5 years. Major focus on Congestion and secondary focus on Infrastructure.
- **ITS Foresighting**
Influencing the foresight strategy over the next year, exploring and developing future ITS solutions which contribute to improving future capabilities. To enhance operational and information services by adopting best practice, informed by collaboration engagement with European partners.

Design:**Rapid and durable Maintenance - Innovations for rapid, improved construction, maintenance and extended service life of roads**

Integration of innovative design, durable materials and new technologies and models in construction and maintenance of road infrastructure to extend its service life and thus to minimise traffic interruptions.

The aim is to reduce intervention needed for repairs, reconstructions or other improvements of road infrastructure. The key to this will be adaptable construction elements, formed of durable prefabricated, upgradable structural components that can be implemented in minimum time and are weather hazards resistant.

Potential topics may include:

- Using high-performance materials for durable repair and maintenance;
- Self cleaning and self-repairing with nano- or other technologies and innovative materials;
- Climate change resilient technologies;
- Optimised evaluation techniques to minimise traffic interruptions and to avoid unnecessary rehabilitations;
- Life cycle analysis to demonstrate short and long-term efficiency of innovative solutions;
- Trials and pilot test, including laboratory test and experimental sections, to verify and demonstrate efficiency of new materials and technologies for fast and durable repair and maintenance;
- Technical specifications to support standardisation processes associated with these new materials and technologies.

Energy:**Eco-Efficient Management - Energy Efficient Road Management and Sustainability index**

Understand the impact of people, products and processes upon the sustainability, design, construction and management of the road asset and explore new technologies and approaches, and assess the effects on safety and durability, which will deliver improvements in the performance of the asset.

Longer term priorities/goals are:

- impact of climate change on standards, design and maintenance of assets,
- benchmarking exercises,
- explore new materials (e.g. materials that replace the need for illumination and reduce energy requirements),
- explore new materials and techniques to reduce the NRAs' carbon footprint, reduce waste and improve sustainability,
- understand the impact of improvement and maintenance works on the asset in order to better assess their overall effects on network performance and journey time reliability,
- Develop a combined indicator (sustainability index) for assessing construction and maintenance measures.

Energy use and CO₂ in road transport is complex and associated with construction, operation and demolition. All phases need to be considered in an LCA (Life Cycle Analysis) to analyse energy consumption and associated CO₂ emission. Specifically rolling resistance plays a major role as a performance attribute of pavements to assess energy consumption under operation. However, this has to be put in context with the road class or traffic volume on that road to assess the overall effect.

Research in this field aims at answering the following questions:

- How are road design, material and construction methods related to energy use, sustainability and CO₂?
- How are pavement surface characteristics and energy use relative to other contributors to energy use in the road transport sector?
- How are surface characteristics like texture (micro/macro/mega) and evenness influencing rolling resistance?
- What is the magnitude of change in energy use due to changes in pavement surface characteristics in a PMS (Pavement Management System)?
- What is the potential direct cost of such changes?

ANNEX III: Output of CEDR TGR TPM Workshop to Common Research Topics

Safety & Security	
topic	description
Tunnel Safety in General	European harmonization of tunnel equipment regarding the European tunnel safety directive
Bridge Safety in General	Improvement, extension and harmonization of existing safety assessment procedures for bridges
Safety of road workers	Increase of road worker safety by improved construction site measures and a fully separation of road workers from the moving traffic
Safety of road users in urban areas	Investigation and reduction of conflict areas between different traffic participants in urban areas
Reduction of speed limits	Assessment of effects of speed limits reduction from the safety and environmental point of view
Road safety audits	Implementation of the European Directive on Safety Audits
Traffic management for evacuation	Development of basic guidelines and standards for evacuation of people and goods in sensitive areas (Tunnels, parking areas at big malls and shopping centers, football fields and similar areas)
Safety barriers	European harmonization in the selection process of safety barriers on different road networks
Mobility & Transport	
topic	description
Road Usage Charging	Benchmarking and harmonization of road charging policies from a more holistic approach (economic assessment, environmental effects, socio economic impacts, etc.)
Intelligent Infrastructure and Traffic Management	Improvement of information systems, detection technology and network operation
Heavy Freight transport	Technical, economic and environmental impact of heavy vehicles (gigaliner) on the European road network
Local hubs (road/rail)	Improvement of hubs from big to small delivery trucks outside cities, roads to rail exchange areas and separate lanes for heavy vehicles (gigaliner)
Smart use of existing network	Innovative procedures for road network management (journey time reliability, incident management, innovative procedures,...)
Infrastructure for E-Mobility and Vehicle2Infrastructure-communication	Improvement of data and information exchange between road user and infrastructure by using advanced communication equipment and technology (requirements)
Implementing Innovation	European harmonization of implementation of existing innovative solutions
Environment, Energy & resources	
topic	description
Emissions and Pollution	Optimization of planning and maintenance guidelines with regard to environmental impact and long-term health impact. Development of strategies to reduce emissions of harmful substances
Energy Efficient Road Management	Understand the impact of people, products and processes upon the design, construction and management of the asset and to explore new technologies and approaches, and assess the effects on safety and durability, and that will deliver improvements in the performance of the asset.
ITS – green driving	Define standards for transportation systems which have no long-term negative effects on the environment

Spatial planning and influencing land use	Development of Knowledge Management in respect of special planning policy, land-use and roadside facilities that impact upon the strategic road network. This should point out necessity for cooperation with authorities outside NRAs.
Noise	Integration of results of the EU-noise directive into the road infrastructure planning and maintenance processes
Sustainability index	Development of a combined indicator for assessing of construction and maintenance measures
Design & Production	
topic	description
Long life pavement (for all conditions)	Optimization of long life pavements from the life cycle costs point of view
performance on safety components in tunnels	Definition of safety related performance indicators as a part of risk analysis and assessment in tunnels
improved quality control at construction site	European harmonization of procedures and methods for quality control in the complete construction chain of road infrastructure sub-assets
Innovations for rapid and improved construction and maintenance	Integration of innovative, durable materials in construction and maintenance to extend the service life of road infrastructure sub-assets and thus to minimize traffic interruption
Innovative procedures for road network management	Development of procedures for the improvement of the interaction between various (road) authorities in the road network management processes
Road Drainage Systems	Improvement of design and maintenance methods and guidelines as a consequence of climate change effects
Redesign of Structures	Development of procedures and methods to assess the redesign of structures from the technical, economic and environmental point of view (e.g. structural analysis for assessment for bridges)
Asset Management	Implementation of procedures and methods for a holistic approach of asset management issues on the total road infrastructure
Cost-benefit calculation of road maintenance	Improvement of methods for the calculation of the cost-benefit efficiency for the holistic approach of life cycle analysis on the total road infrastructure asset.
Pavement without bitumen	Development of future-oriented ideas for the development and assessment of flexible or semi-rigid pavement constructions without binder
Warm mixed asphalt	Comparison of experiences of warm mixed asphalt applications in practice

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Sources

- ERA-NET ROAD II Deliverable 1.3 Joint Calls, January 2011
- ERA-NET ROAD II Deliverable 2.3, April 2011
- ERA-NET ROAD II Deliverable 3.1, January 2010
- ERA-NET ROAD II Deliverable 3.2, October 2010
- ERA-NET ROAD Deliverable 17, March 2009
- ERA-NET ROAD Deliverable 4, May 2008
- ERA-NET ROAD Deliverable 4, May 2008
- ENR PO2, DoW, September 2008
- ENR PO2 final Report, May 2009
- ENR PO3 Backlog DoW, January 2008
- ENR PO4 DoW, October 2009
- ENR SRO3 DoRN,
- ENR SRO1 DoRN, January 2009
- ENR SRO4 DoRN, January 2010
- ENR Mobility DoRN, January 2011
- ENR Design DoRN, January 2011
- ENR Energy DoRN, January 2011
- ERA-NET ROAD II website, www.eranetroad.org
- ERA-NET ROAD Deliverable 13/14, Chapters 3.4 to 3.8., May 2008
- ERA-NET ROAD II SRO4 Description of Research Needs
- ENR Asset Management Workshop (Warsaw, February 2007)
- 7. Framework Programme
- COST354 - Performance Indicators for Road Pavements – Final Report (July, 2008)
- 3rd European Pavement and Asset Management Conference (2008, Coimbra, Portugal)