

Monitoring the FP7 contribution to the EU's SD objectives in the area of 'sustainable transport'

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Summary

The Europe 2020 strategy's white paper on transport

Transport is a fundamental sector of the European economy and society, employing about 10 million people in the EU. Under the Europe 2020 strategy, transport is most prominently addressed in the 2011 white paper 'Roadmap to a Single European Transport Area' under the 'Resource-efficient Europe' flagship initiative.

How does FP7-funded research address the SD-related aspects of the white paper?

For the purpose of analysing how FP7-funded research addresses the sustainable development-related aspects of the 2011 white paper on transport, the objectives of the EU Sustainable Development Strategy (EU SDS) in the area of 'sustainable transport' have been used as a proxy.

488 topics called for in the FP7 Specific Programme 'Cooperation' between 2007 and 2013 have addressed the EU's 'sustainable transport' objectives. Under these 488 topics, 505 projects with a co-funding of € 2.1 billion received from the European Commission have been initiated so far. This puts 'sustainable transport' in fifth place when compared with the other six EU SDS key challenges.

Which EU SDS objectives in 'sustainable transport' are addressed the most?

Within the key challenge 'sustainable transport', objectives dealing with reducing energy consumption and greenhouse gas (GHG) emissions as well as achieving a shift towards more environmentally-friendly transport modes are addressed most prominently through research under the 'Cooperation' programme. In contrast, the objective of decoupling economic growth from demand for transport receives the least attention.

Which SP 'Cooperation' theme contributes most to 'sustainable transport'?

Not surprisingly, the SP 'Cooperation' theme TRANSPORT comprises the largest number of topics with positive expected impacts on the EU's 'sustainable transport' objectives (382 topics). The biggest contribution stems from research in the area of 'air transport' (168 topics), followed by 'surface transport' (138 topics) and 'horizontal activities' (76 topics). In comparison, the impact of the remaining nine SP 'Cooperation' themes on the 'sustainable transport' objectives is rather small.

How did the contribution to 'sustainable transport' change over time?

Between 2007 and 2013 the share of topics called for in SP 'Cooperation' that address 'sustainable transport' objectives fluctuated between 12 % and 23 % without showing a clear trend in any direction.

Where are the centres of excellence research on 'sustainable transport'?

The biggest share of 'sustainable transport' related research in SP 'Cooperation' is taking place in Germany, France, UK, Italy, Belgium and Spain. In comparison, the contribution from Eastern European countries is rather low.

Policy background – the 2011 white paper on transport

The 2011 white paper on transport puts forward 40 concrete initiatives for making the EU's transport system more competitive and resource-efficient

Key goals include the reduction of the EU's dependence on oil imports and a 60 % cut in GHG emissions from transport by 2050

The 2011 white paper 'Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system'¹ is part of a set of policy initiatives under the Europe 2020 strategy's flagship initiative 'Resource efficient Europe'². It puts forward 40 concrete initiatives for the next decade in view of building a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. The initiatives are intended to also dramatically reduce Europe's dependence on imported oil and to cut GHG emissions from transport by 60 % by 2050.

To this end, the white paper *inter alia* calls for new technologies for vehicles such as the use of electric and hydrogen/hybrid technologies, with the aim of phasing-out conventionally fuelled cars in cities. Moreover, establishing a more efficient aircraft management in order to achieve an EU global aviation hub and the creation of multimodal connection platforms for passengers would result in a more efficiently coordinated air transport system. Additionally, low-carbon aviation, a 40 % cut in shipping emissions and the creation of an EU high speed rail network by 2050 are among the key approaches to achieve the 60 % decrease in transport emissions.

How does FP7-funded research address the EU's objectives in the area of 'sustainable transport'?

More than two thirds of FP7-funded research contributes to EU SDS objectives

3,234 research topics have been called for in the whole FP7 'Cooperation' programme between 2007 and 2013. Under these topics, 4,613 projects with total a project cost of € 23.6 billion (of which € 16.6 billion have been co-funded by the European Commission) have been initiated so far³.

75 % of these topics (2,722 topics) are expected to have an impact on at least one of the objectives outlined under the seven EU SDS key challenges⁴. When looking at the research activities actually carried out under these topics, the share of SD-relevant research⁵ amounts to 69 % for projects (3,193 projects) and 75 % for the EC contribution (€ 12.4 billion) provided to these projects. The variation is due to differences in the number and size of the projects funded in the different

¹ [European Commission, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport, COM\(2011\) 144 final](#)

² [European Commission, A resource efficient Europe, COM\(2011\) 21 final](#)

³ Project-related data in this policy brief refer to the Work Programmes 2007-2012.

⁴ See <https://www.fp7-4-sd.eu/index.php?request=public:page:default&page=about#sds>.

⁵ In this policy brief, terms such as "SD-relevant" or "contributing to sustainable development" are used synonymously for "contributing to at least one of the 78 objectives of the renewed EU SDS".

SP 'Cooperation' themes.

'Sustainable transport' ranks fifth by count of topics, projects and EU contribution among the seven EU SDS key challenges

When it comes to the amount of topics addressing EU SDS objectives in the area of 'sustainable transport', about 15 % of the topics called for in SP 'Cooperation' (488 topics) are expected to have an impact on one or more of these objectives. While the share is lower when looking at the number of projects (505 projects; corresponding to 11 %), it is higher in terms of the co-funding provided by FP7 (about € 2.1 billion, corresponding to almost 13 %). This puts 'sustainable transport' in fifth place compared with the other six EU SDS key challenges (see Figure 1).

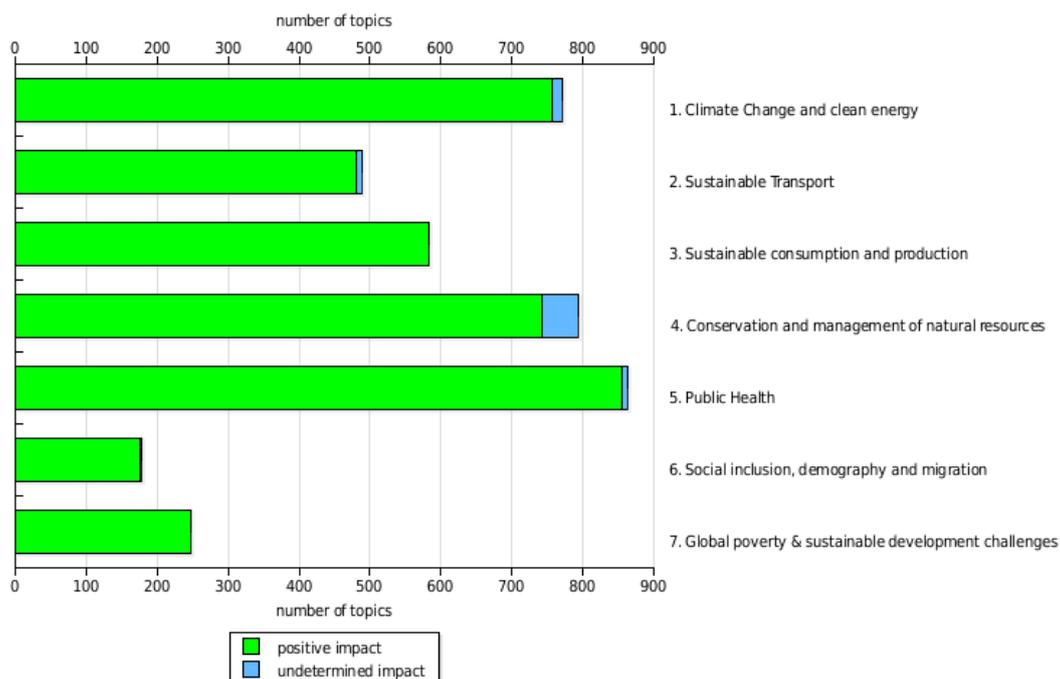


Figure 1: Number of topics contributing to the seven EU SDS key challenges

Which 'sustainable transport' objectives are addressed most?

The objective 'achieving sustainable levels of transport energy use' is addressed most

Out of the 382 topics addressing the EU SDS key challenge 'sustainable transport', 157 address the objective 'achieving sustainable levels of transport energy use', followed by 'other expected impact on sustainable transport' with 149 topics and 'reducing transport greenhouse gases emissions' with 136 topics, as shown in Figure 2.

Most FP7-funded research aims at reducing negative environmental impacts of transport

The reduction of the negative environmental impacts of transport activities is obviously a major objective of the research carried out under the 'Cooperation' programme. This is reflected in the high number of topics addressing objectives related to reducing energy consumption and greenhouse gas emissions from transport as well as achieving a shift towards more environmentally-friendly transport modes. In contrast, the objectives addressing the decoupling of economic growth from demand for transport, modernising the EU framework for public passengers as well as reducing CO₂ emissions from new car fleets are addressed least.

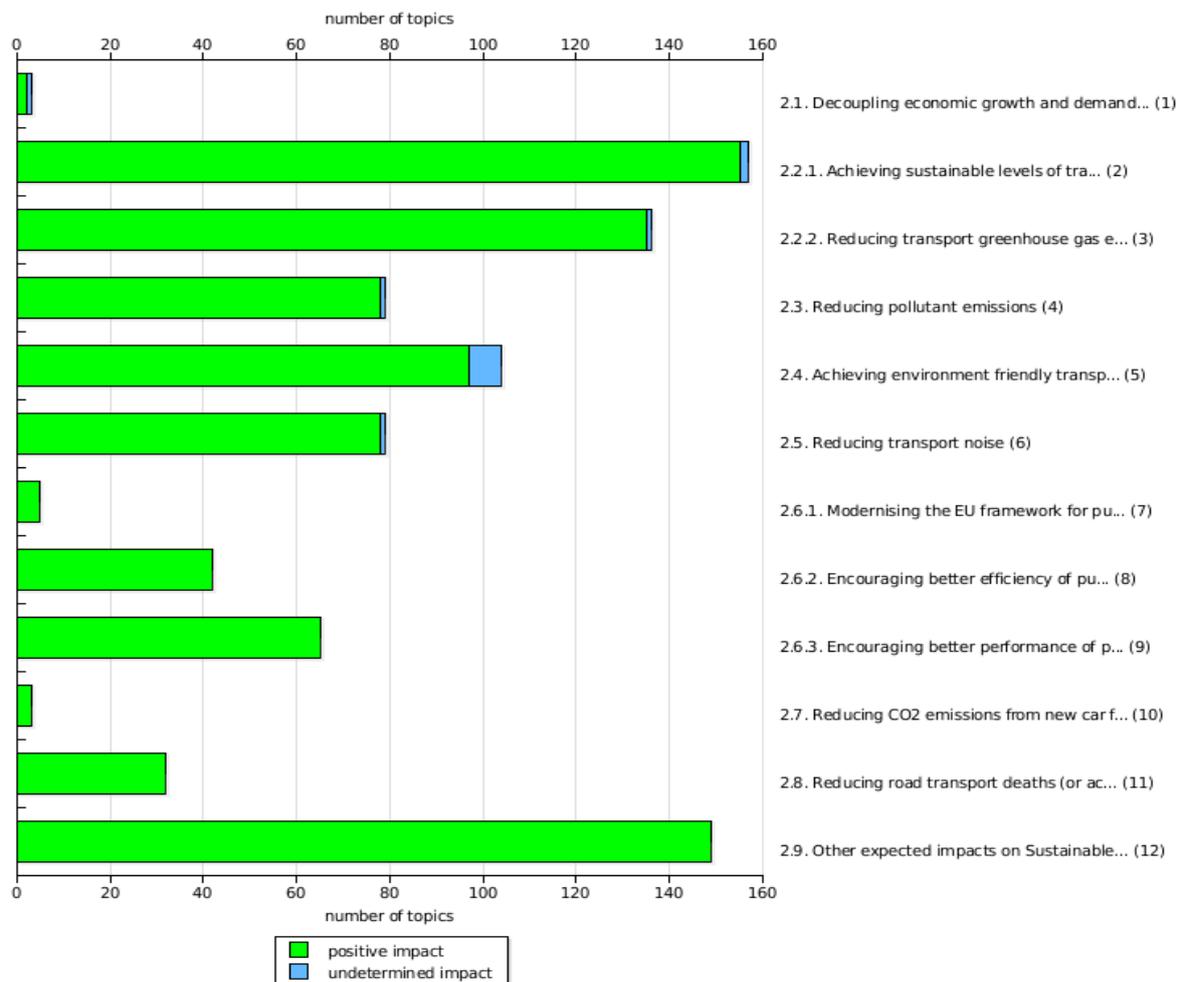


Figure 2: Number of topics with expected impacts on the operational objectives of the 'sustainable transport' key challenge

Which FP7 themes impact most on 'sustainable transport' objectives?

The theme TRANSPORT by far shows the highest contribution to EU SDS objectives on 'sustainable transport'

Not surprisingly, out of the ten SP Cooperation themes, the theme TRANSPORT contributes most to the EU SDS key challenge 'sustainable transport' (see Figure 3). Out of the 596 topics called for under the TRANSPORT theme between 2007 and 2013, 382 (64 %) have a positive impact on objectives related to 'sustainable transport'. In comparison, the impact of the remaining nine SP Cooperation themes on the EU SD strategy's transport objectives is almost negligible.

The 'dominance' of research funded under the theme TRANSPORT is slightly reduced when looking at the numbers of projects and the received EC contribution. Although TRANSPORT is still the biggest contributor to EU SDS objectives on 'sustainable transport', with 327 projects and an EC contribution of € 1.3 billion, an important contribution also comes from the ICT theme, with 94 projects and an EC contribution of € 374 million. This can be explained by the generally huge number of projects funded in the ICT theme, which is more than three times bigger (in terms of projects and EC contribution) than the theme TRANSPORT.

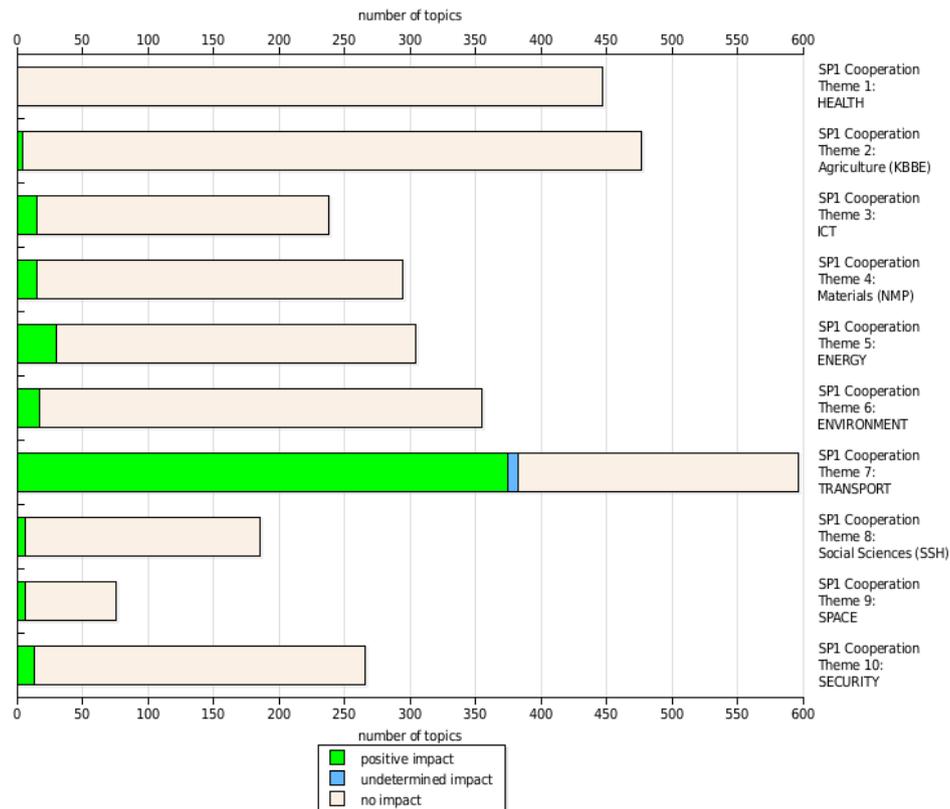


Figure 3: Number of topics with expected impacts on Sustainable transport objectives in the ten 'Cooperation' themes

How does the theme TRANSPORT contribute to the EU SDS objectives in the area of 'sustainable transport'?

Research in "air transport" contributes the most to 'sustainable transport' with 168 topics, while "surface transport" has the highest share of topics with positive impacts

The TRANSPORT theme is divided into three main areas of activity, namely "air transport" (AAT), "surface transport" (SST) and "horizontal activities" (TPT). The part "air transport" contributes the largest amount of topics with 290, out of which 168 (57 %) have a positive impact on at least one of the EU SDS objectives, followed by surface transport with 176 topics (138 topics – 78 % – have positive impact on at least one EU SDS objective) and horizontal activities with 130 topics, out of which 76 topics (58 %) have a positive impact on at least one EU SDS objective.

Greening of transport modes is approached in SST and AAT

Research in "Sustainable Surface Transport" (SST) is dealing with road, rail and waterborne transportation. The goal is inter alia to maintain a transport network throughout Europe, focusing on greening of the latter, hence providing a sustainable mobility and decongesting traffic corridors. Looking at the topics in "Aeronautics and Air Transport" (AAT), besides the importance of greening of transport a focus is put on improving the safety of passengers and addressing the role of the EU in pioneering the future of air transport. Topics attributed to horizontal activities exploit synergies between air transport and the surface transport modes and can make a contribution to the common objectives of advancing competitiveness and responding to the societal challenges of the transport system.

'Achieving sustainable levels of transport energy use' is mostly addressed by research in the area of air transport

The EU SDS objective of 'achieving sustainable levels of transport energy use' is most substantially addressed by topics in the area of "air transport", through 81 topics, followed by "surface transport" with almost 59 topics and horizontal activities with 17 topics, resulting in a total of 157 topics. The objective 'reducing transport greenhouse gases' is second, with 136 topics from all three areas of the TRANSPORT theme, mostly addressed again by the area of "air transport" with 63 topics.

Different research foci of AAT and SST

A comparison between the major research foci between the areas of air (AAT) and surface (SST) transport, it is interesting to note that AAT attributes more topics towards 'achieving sustainable levels of transport energy use' and 'reducing greenhouse gas emissions', while research in SST is more dedicated towards 'reducing pollutant emissions' and 'encouraging better efficiency of public passenger transport'.

How did the contribution to the EU's 'sustainable transport' objectives change over time?

Between 2007 and 2013 the share of topics addressing 'sustainable transport' objectives experienced ups and downs without showing a clear trend

Figure 4 shows no clear trend towards an increase or decrease in the share of SP 'Cooperation' research addressing the EU SDS key challenge 'sustainable transport' over the whole programme period 2007 to 2013. Instead, the share of topics addressing 'sustainable transport' objectives experienced ups and downs over the years, but remaining in a range between 12 % and 23 %.

Similarly, the contribution of the theme TRANSPORT to the EU's 'sustainable transport objectives' has not shown a continuous trend over time. While the share of topics with expected impacts increased from slightly over 60 % in 2007 to about two-thirds in 2011, it dropped back to about 60 % in 2012 and 2013. The "peaks" in 2010 and 2012 (to about 20 %) shown in Figure 4 have therefore also been influenced by disproportionately high annual contributions from other SP 'Cooperation' themes, in particular from ICT, ENERGY and ENVIRONMENT.

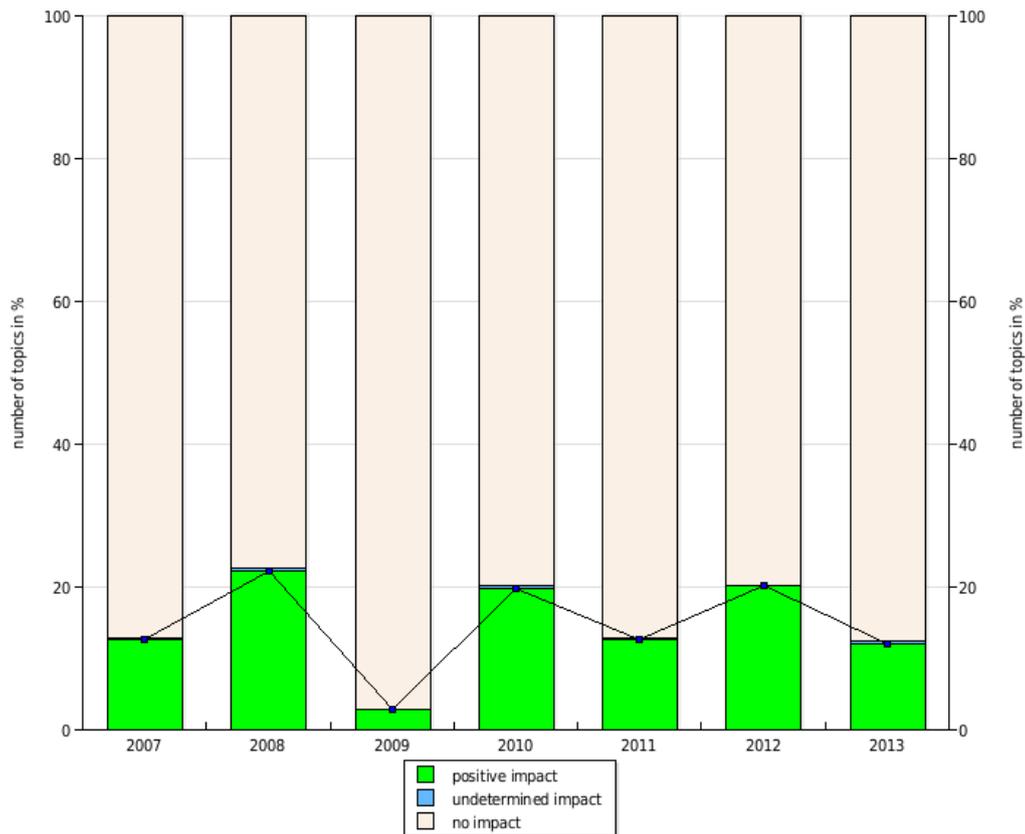


Figure 4: Shares of topics with expected impacts on 'sustainable transport' during the Work Programmes 2007 to 2013

Where are the centres of excellence in 'sustainable transport' related research in Europe?

Germany, France, United Kingdom, Italy and Belgium are the centres of excellence contributing to research on 'sustainable transport'

Figure 5 shows the number of coordinated projects contributing to the EU SDS key challenge 'sustainable transport' in EU Member States and associated countries. Five countries stand out as centres of excellence⁶ in research addressing 'sustainable transport' objectives, namely Germany, France, the United Kingdom, Italy and Belgium. Germany is in the leading position, with 92 coordinated projects, followed by France with 71 and the United Kingdom with 60.

⁶ The assumption has been made that institutions from countries which are responsible for coordinating a project are characterized by an exceptional scientific knowledge base and the essential coordination skills to implement the respective project. Therefore countries with a high number of coordinated projects can be seen as leaders in the respective field of research.

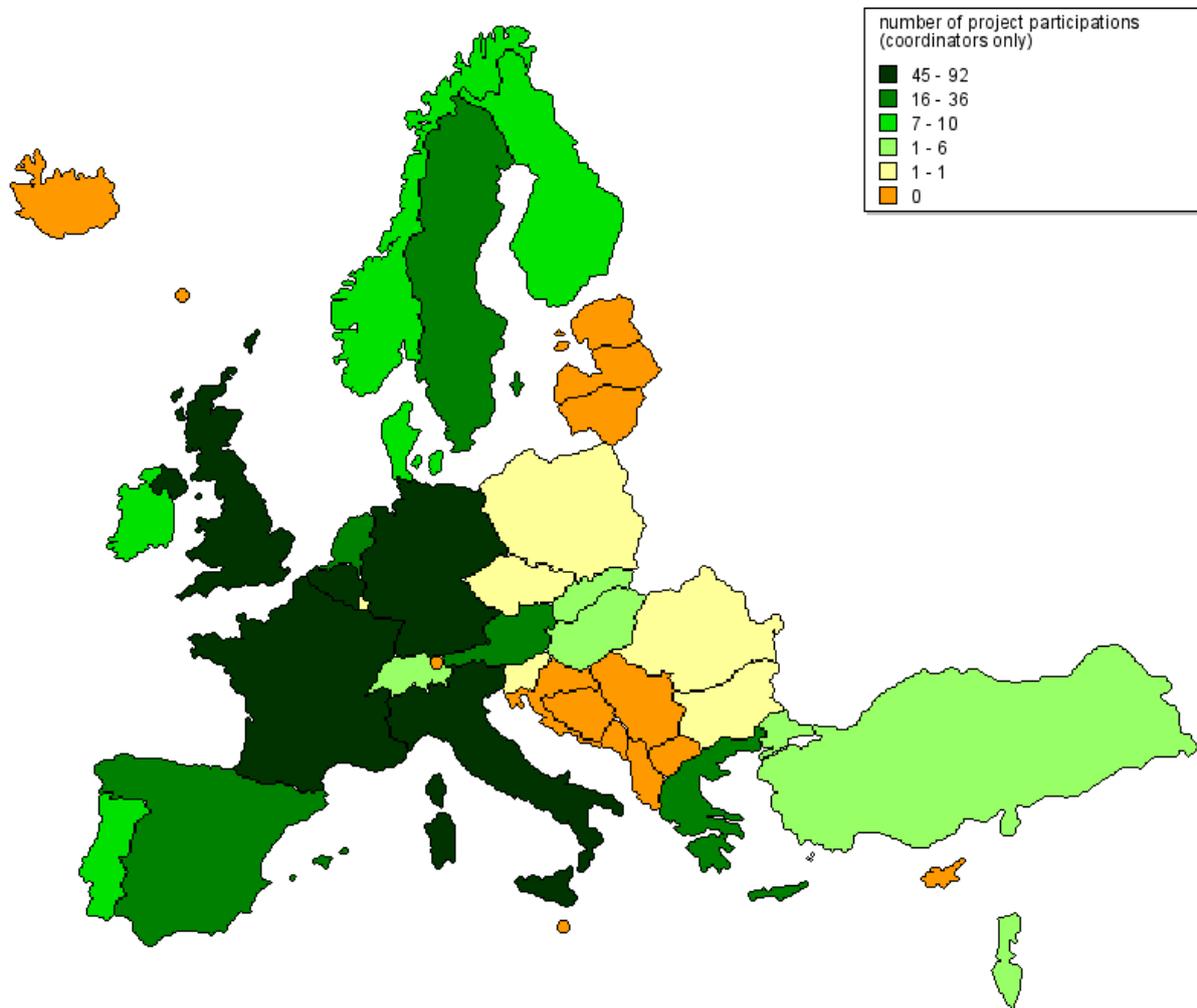


Figure 5: Geographical representation of coordinated SP 'Cooperation' projects impacting on 'sustainable transport' objectives in the EU Member States and associated countries

For research addressing "Sustainable Transport" the ratio of EC contribution to national R&D expenditures is the highest in Greece and Cyprus

The picture changes when switching to a budgetary perspective, looking at the co-financing provided by FP7 in relation to the total national R&D expenditure in each country.

Figure 6 shows that project participants from Greece (€ 37.5 million), Cyprus (€ 33.6 million), Slovakia and Estonia (€ 18.3 million each) as well as Bulgaria (€ 18.1 million) receive the highest amounts of EC contribution per € million national R&D expenditure. Relatively high ratios of EC contribution in relation to national R&D expenditure can also be observed in two of the identified centres of excellence, namely Belgium (€ 16.5 million) and Italy (€ 12.1 million).

The lowest "added value" by the funding provided through FP7 on research addressing 'sustainable transport' is observable in Luxembourg (€ 3.3 million), Latvia (€ 4.2 million) and Ireland (€ 5.8 million). The underlying reason for a rather high ratio of total EC contribution per € million national R&D expenditure is either a relatively low national R&D expenditure and/or a high number of FP7 projects contributing to

'sustainable transport' in the respective country.

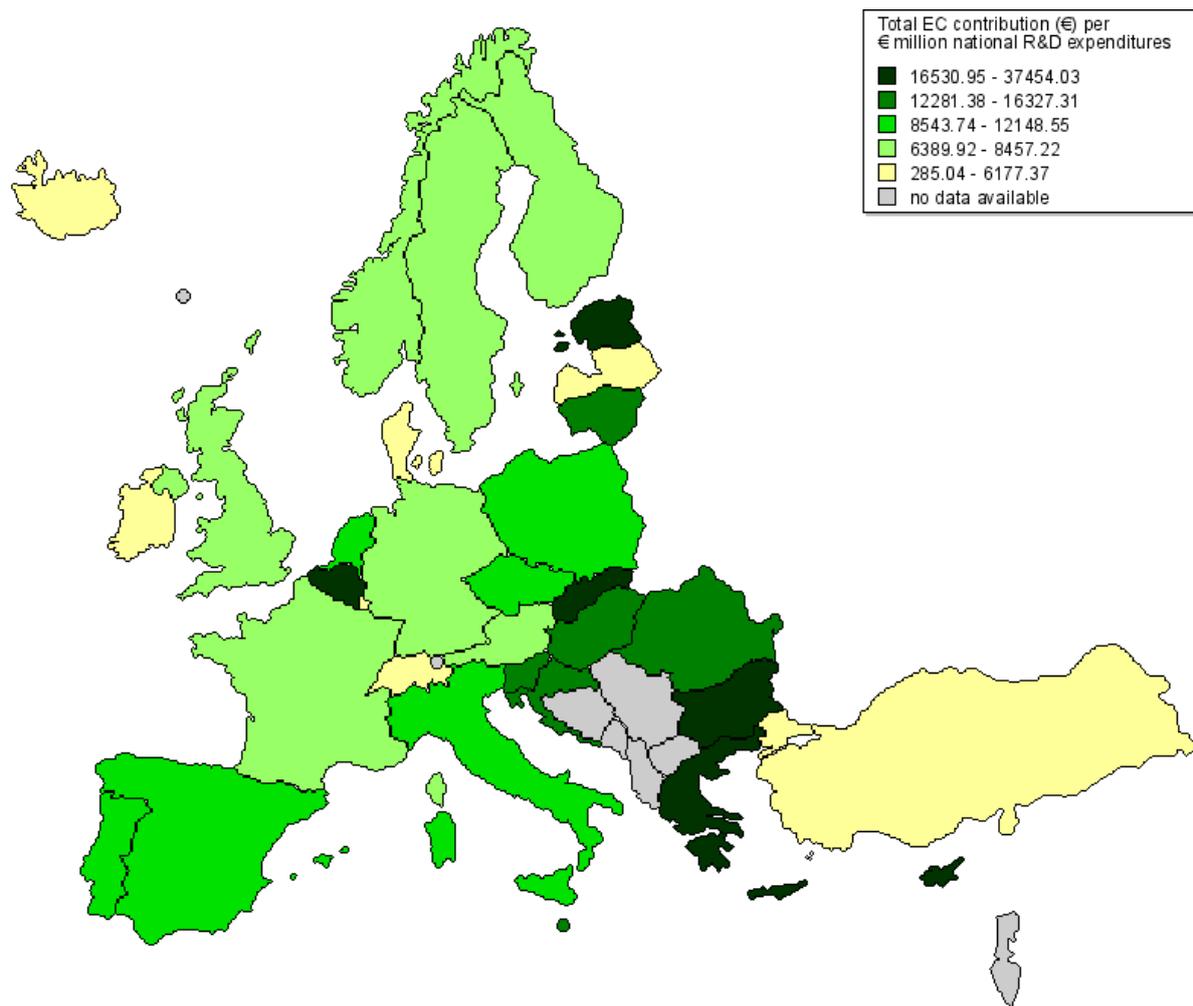


Figure 6: Geographical representation of total EC contribution (€ million) to research addressing 'sustainable transport' objectives per € million national R&D expenditure

The comparison of Figure 5 and Figure 6 reveals that – apart from Belgium and Italy – the countries functioning as centres of excellence for research on 'sustainable transport' are not the same as those receiving the highest amounts of EC contribution compared with their national R&D expenditure. However, it shows the despite their rather low numbers of coordinated projects, Eastern European countries are well integrated into 'sustainable transport' relevant research, which is in line with the European Union's goal of achieving an EU wide research area (ERA).