

SUSTAIN

National Transport Planning – sustainability, institutions, tools.



PROJECT DESCRIPTION 2012 – 2016

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SUSTAIN – National transport planning – sustainability, institutions and tools

1. Summary

A widespread consensus exists internationally and in Denmark about the relevance of pursuing goals for sustainable transport development but only limited research about how national transportation planning can become a pillar in this process. The goal of SUSTAIN is to expand this research and consolidate a framework on three core domains for a National Sustainable Transport Planning (NSTP): 1) sustainability, 2) institutions and 3) tools. Research within these three domains will address the following questions: How can the concept of sustainability be operationalised and transformed into strategic performance measures for national transport planning? How can these types of knowledge about organisational forms and planning processes contribute to the achievement of such sustainability measures? And how can these new types of knowledge be built into new model-based planning tools that can help advance the strategic planning in the desired sustainable direction? An important feature of SUSTAIN is that it will seek to combine the results of social and technical sciences in planning research with extensive policy relevant knowledge in dialogue with practitioners and international experts. Furthermore, the SUSTAIN research will be underpinned by multi-faceted case research based on both Danish and international cases. Close connection with ongoing Danish planning practice will serve to demonstrate the potential of the formulated NSTP framework, which is expected to have a broad strategic and policy-oriented appeal and impact on promoting future sustainable transport.

2. Objective of the project

SUSTAIN has two main objectives:

- The scientific objective of the project is to help establish National Sustainable Transport Planning (NSTP) as a coherent research topic across the social and technical sciences. Through theoretical analyses, case studies and dialogue with practitioners, the project aims to advance the understanding of factors that enable and constrain the development and implementation of NSTP and to construct a practice framework for NSTP consisting of interconnected and policy relevant principles, processes and tools.
- The societal objective is to promote future-oriented planning for a sustainable transport system, and to help advance a performance-based and learning-oriented approach in Denmark in accordance with international trends. More specifically the project will contribute with concepts, performance measurement frameworks, and tools that can help advance the strategic transport practice called for in parliamentary agreements and government initiatives from 2009 and onwards.

3. The main results of the project

The main results of SUSTAIN will be:

1) The identification, assessment and selection of performance indicators for a National Sustainable Transport Planning (NSTP) framework that will facilitate the operationalisation of sustainability principles. The framework will take into account the complexity involved in applying the sustainability concept to transport as well as the strengths and weaknesses of performance indicators as a linking mechanism between strategic goals and operational monitoring.

2) An evidence based body of theory concerning how institutional conditions and mechanisms contribute to governing NSTP-like processes. It will represent a significant advancement of existing research into strategic transport planning and contribute to the important research field of institutional change, enabling more informed practical choices about institutional designs for strategic transport planning.

3) Flexible planning and evaluation models that can be used for sustainability-oriented comprehensive assessment.

4) The research will further provide a platform for the continued development of theoretical and practical aspects of NSTP:

- At the national level the network established between the project's scientific researchers and practitioners will create a basis for continued dialogue, reflections and experimentation regarding the strategic planning and procedures initiated by the parliamentary agreement on a "Green Transport Policy" and other similar efforts.

- At the international level the network of researchers joining the project will form a strong basis for continued development of NSTP as an interdisciplinary research topic through collaboration in the context of international research programs, exchange of Ph.D. students, projects and conferences.

- At the institutional level the novel collaboration in the area of transport research initiated through this project between the two universities DTU and CBS with their respective international partners can help provide the much needed underpinning for the recruitment of future candidates and young researchers within the field of sustainable transport studies in Denmark.

4. Background and hypothesis

Sustainable transport has become a current and important ambition for transport planners and policy-makers around the world. In Denmark, the Government and Parliament have reconfirmed this ambition in an infrastructure plan on "Sustainable transport" and a political agreement on a "Green Transport Policy", where significant new policies have been announced. The European Commission also promotes this agenda in the recent Transport White Paper (European Commission 2011).

As recent research suggests, a successful transition to sustainable transport, however, raises important questions concerning how to organize strategic planning processes and how to apply knowledge tools in order to support the implementation of new policy goals and instruments for sustainability (Givoni & Banister 2010) and how to manage the associated complexity (Borzacchiello et al. 2009; Lopez and Monzon 2010). In Denmark national transport planning procedures have been up for examination recently. The effectiveness of the previous "ad hoc" approach was indeed questioned by e.g. the Danish Infrastructure Commission (2008), and some planning innovations have now been adopted such as longer time frames and fixed planning cadences. These innovations emerge in a national context characterized by traditions for strong involvement of Danish politicians in infrastructure decision making and implementation (Cars et al. 2009), but also in a sector characterized by significant public management reforms that have included the disintegration of former public monopolies and the marketization of transport services (Hodge et al. 2010). This raises further questions on how the changing institutional frameworks in the transport sector influence the way new planning processes and tools for sustainability can connect to the existing national decision making context (Toleman & Rose 2009), and how this again will influence actual sustainability performance of transport systems and policies.

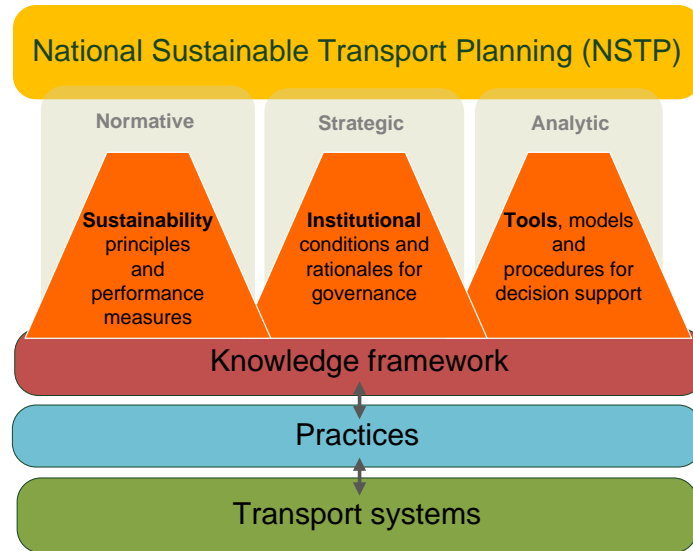
The key assumption behind the SUSTAIN project is that the aim for sustainability transcends existing indicators, tools and institutional structures in transport policy making. National Sustainable Transport Planning (NSTP) therefore constitutes a new strategic field where the above questions need to be studied jointly using as a cross-disciplinary approach combining technical and social sciences.

National transport planning provides a framework for subsequent decisions, projects and practices and connects more or less strongly to implementation and performance management processes (Borzacchiello et al. 2009). Transport planning frameworks are found to vary across countries but there is no widely recognised way to typologise such frameworks to help explain their significance for NSTP outcomes. This area needs to be advanced through a combination of theory, empirical study and methodological experimentation.

SUSTAIN adopts an approach to the study of strategic transport planning that is rooted in cross-disciplinary sustainability research (Becker et al. 1997). This approach recognizes that transition towards sustainability is a process that must involve three dimensions: a normative dimension (referring to the underlying value orientations operationalised through sustainability principles, goals, and indicators), an analytic dimension (addressing the 'objective' conditions for sustainability versus non-sustainability using scientific evidence, models, and other tools), and a strategic dimension (referring to actor strategies and organisational change).

SUSTAIN combines three research themes that each connect to and specify one of these dimensions, namely 'Sustainability', 'Institutions' and 'Tools', see figure below. Within these themes specific research questions and tasks will be pursued with regard to how each theme

can contribute to the field of NSTP. The emphasis within the 'sustainability' theme is on performance indicators as tools to operationalise sustainability (Joumard & Gudmundsson 2010). The main emphasis within the 'institutional' theme is on the role of organisational dis- and reintegration for the ability of governing bodies to manage performance for sustainability (Sørensen & Longva 2010); and the emphasis within the 'tools' theme is on how to develop flexible decision-support tools that allow to combine sustainability indicators with socio-economic appraisal methodology (Leleur 2012).



The SUSTAIN team further assumes that the NSTP field can best be advanced through dialogue between researchers and practitioners (see e.g. te Brömmelstroet & Bertolini 2008).

5. Innovative value, impact and relevance of the project

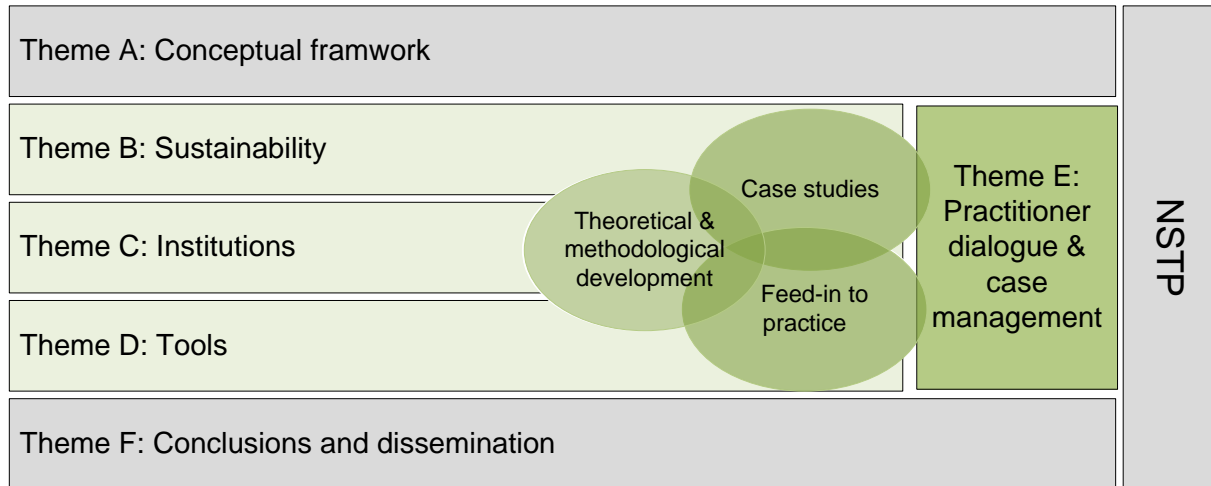
Key elements in SUSTAIN are theoretical development (concepts, methods), case studies from Denmark and abroad (planning procedures, institutions, and tools), and feed-in of preliminary findings to ongoing practice in Danish planning efforts. Often transport planning research is sharply divided between technical prescriptive research, 'tools provision', and social scientific research analysing events and seeking explanations. SUSTAIN will overcome this division by combining these perspectives both in the analysis of cases and in the construction of the practice framework that will seek to integrate sustainability and institutional factors with the proposed procedures and tools applications. The outcome will be products that are more likely to be applied and make an impact on planning.

The project will thus involve dialogue with practitioners and researchers with hands-on knowledge of current transport planning activities. As described in section 6, this dialogue will aim to communicate the possible impact and relevance of the findings to the community of practitioners and researchers.

The initiation of SUSTAIN is very timely with regard to the new emerging planning process in Denmark and the global trend towards a more performance based transport governance approach. The main area of application and potential impact of the results concerns the processes of strategic transport analysis and planning initiated by the Danish Ministry of Transport as a follow-up of the "Green Transport Policy" set out in 2009 and similar processes abroad. The ultimate test of the results is the degree to which the findings, tools and procedures are taken up in these processes, and if the platform created by SUSTAIN will continue and thrive.

6. Project's methodology and results

The methodology includes six themes. Three of the themes focus on a single, domain-specific area (B, C, D), while three other themes (A, E, F) are concerned with the integration across the single research areas as shown in the diagram below. Each theme applies a dedicated set of methods.



Theme A: Conceptual framework

The purpose of this theme is to establish a research platform for crosswise, substantial and methodological issues that contributes to integrating the themes within the project. The substantial issues in this context are the interlinkages between sustainability, institutions and tools within strategic national transport planning (Sager & Sørensen 2011). The methodological issues cover the challenges of learning and transferring knowledge from foreign experience to a Danish context (Marsden & Stead 2010) as well as the difficulties in transferring research results into practice. The work will involve review of literature and sessions of joint conceptual framework development. The result of this theme is a coherent understanding among the project participants of core concepts and connections which will provide the basis for the interdisciplinary synthesis in Theme F.

Theme B: Sustainability

In this theme the operationalisation of sustainability for transport planning will be studied and a performance measurement framework will be conceived. The notion of sustainability offers a comprehensive normative basis for decision support, but to implement it through strategic transport planning raises a number of conceptual as well as managerial challenges (Toleman & Rose 2009). The research into this theme will focus on indicators and performance measurement as the main operational mechanisms through which these challenges are addressed. Key methods will involve review of teoretical and practical sustainability literature, framework construction, and critical review and analysis of potential candidate indicators (Joumard & Gudmundsson 2010). The core outputs of this theme will be a framework and indicators for strategic transport planning as well a test of the performance measurement framework through an ongoing Danish transport case.

Theme C: Institutions

The purpose of this theme is to understand the relationship between new organizational forms (such as privatized corporations and public-private partnerships), transport planning processes, and sustainable transport performance. The analytical framework draws its inspiration from institutional theory in comparative political economy and theories of changing organizational forms in a new governance perspective (Osborne, 2010). The transport sector continues to undergo significant institutional changes. During the era of New Public Management (NPM), services have been outsourced to private sector contractors who are pursuing performance management targets. Recently, governments and private sector companies have formed joint ventures and public-private partnerships for new opportunities in transport management. Post-NPM reforms have emphasized the need of coordination and regulatory reforms (Sørensen & Longva 2011). The analysis will include document analysis and semi-structured interviews with key informants. The core results of the theme will be a comparative analysis of institutional frameworks of national transport planning in selected countries leading to improved knowledge of institutional change, sustainable transport performance and politics.

Theme D: Tools

The purpose of this theme is to develop and adapt flexible tools for planning and evaluation which can be used in national sustainable transport planning (NSTP) for sustainability-oriented comprehensive assessment. These tools will be strategic in scope by the way they need to embrace sustainability objectives as expressed by new indicator sets coming out of Theme B with state-of-the-art appraisal methodology (Haezendonck ed. 2007; Jensen forthcoming) and strategic decision support (Leleur forthcoming). Point of departure will be a major review of recent work of relevance based on current Danish and foreign experience, with the latter including, among other things, recent American models working explicitly with sustainability objectives (Ramani et al. 2009). The outcome of this theme will enable NSTP assessment work to apply wider societal criteria sets including sustainability indicators in combination also with risk analysis. Due to their flexibility the tools will be possible to adapt to the decision-making contexts that are actualised by findings in Theme C and to demonstration and validation with regard to the case work in Theme E.

Theme E: Practitioner dialogue and case management

Much strategic planning work developed by researchers and agencies is not providing the expected effects (Healey 2009). Part of the reasons lies in the 'Valley of Death' between knowledge and practice, and research suggests that interaction between researchers and practitioners are critical with regard to achieving meaningful use of strategic work (Johnson et al. 2009). A key purpose of Theme E will be to help maintain a continuous dialogue with practitioners through a series of workshops and seminars. The theme will further contribute to the management and crosswise analysis of case studies to allow the creation of a common frame of reference that can motivate and support this dialogue with practitioners. A core output in addition to specific research findings from the theme will be a compilation of experience on effective practitioner dialogue for strategic planning.

Theme F: Conclusions and dissemination

The purpose of this theme is to provide synthesis and disseminate results. The results include a framework for NSTP; this will provide guidance on how to connect principles of sustainability with organisational processes and the application of tools. Such a framework can underpin the emergent strategic planning process in Denmark and will provide a significant contribution to the need for sustainable transport performance evaluation programmes internationally (Bongardt et al. 2011). The SUSTAIN work will be summarised and covered in a final report containing all conclusions from SUSTAIN and thereby also providing the scientific foundation for NSTP. The results will be published in popular-science and international journals, presented at conferences, and published in an anthology. The overall outcome of this theme is the establishing of NSTP and related research results in SUSTAIN as a research and practice

platform in transport planning that will continue to develop also after the completion of the project in 2015.

Case Work

The case work comprises both Danish and international cases. The purpose of the Danish cases is to observe and learn from current experience with strategic planning, but also to serve as a forum for feed-in of preliminary, innovative findings. National cases will be selected among the Danish government’s forthcoming railway strategy, the government’s strategic analyses, and a Danish/international case concerning the EU green transport corridor from Sweden to Germany. International cases from at least four countries will be selected. Candidates include Sweden and Norway that both provide a valuable learning potential for Denmark; UK as a major innovator in the transport policy field; Australia, where public-private partnership and alliance contracts have aimed to strengthen political steering; USA, where some transportation authorities are adopting innovative planning tools and practices in this field; and also Japan as a country with significant accomplishments in transport and sustainability planning.

Cases	Theme B Sustainability	Theme C Institutions	Theme D Tools
Danish railway strategy			
Danish strategic analyses			
EU green transport corridor			
Sweden*			
Norway*			
UK*			
Australia*			
USA*			
Japan*			

*Candidate cases of which at least four will be selected

Potential risks within SUSTAIN

The SUSTAIN project relies on the establishment of a cross-disciplinary research environment. The ambition is to combine insights from social and technical sciences within one common framework. In order to meet this goal the project allow the cases (presented in Theme E) to constitute a common frame of reference across disciplines and further run a series of cross-disciplinary seminars encompassing the SUSTAIN research team (as presented in section 11).

Delays within a specific theme are traditionally a major risk in large-scale strategic research projects. In particular this could raise problems for the cross-cutting themes (A, E, F). This potential risk is handled in terms of clear, precise and realistic working plans for each individual theme, by frequent seminars in the Core Scientific Group, and by regular communication between the Management Group and the Theme Leaders.

Finally, a major liability the SUSTAIN approach is the possibility to test the various findings like indicator sets, institutional solutions and planning tools within specific Danish cases. This issue is resolved through the attachment of the Independent User Group (members are shown in section 11) representing a wide variety of Danish stakeholder organisations. If for some reason the findings are currently non-implementable, the alternative solution will be to make a pseudo-test by analysing findings in relation to e.g. the international cases as presented in Theme E.

7. Project plan

The project plan is established to allow for the integration and interdependencies of the individual project themes and to lead to the success of the project. While Themes B, C, D and E run for almost all four years of the project, Theme A (establishing a common conceptual framework) and F (conclusions and dissemination) each runs for a shorter space of time in the beginning and end of the project period, respectively.

The table below shows the SUSTAIN participants' distribution on primary themes for involvement and the resources allocated.

Name		Affiliation	Primary themes	Resources allocation (months)
Core Scientific Group (CSG)				
Steen Leleur	Professor	DTU Transport	D, F	11
Henrik Gudmundsson	Senior Researcher	DTU Transport	A, B	10
Claus H. Sørensen	Senior Researcher	DTU Transport	A, C	10
Michael B. Barfod	Assistant Professor	DTU Transport	E, F	10
Kim B. Salling	Assistant Professor	DTU Transport	B, D	10
Carsten Greve	Professor	CBS	B, C	10
Flemming Poulfelt	Professor	CBS	C	3
NN	Professor	CBS	B, C	3
NN	Professor	CBS	B, C	3
Anders V. Jensen	Post Doc	DTU Transport	B, D	20
Yannick Cornet	Ph.D. student	DTU Transport	B	36
Lene T. Christensen	Ph.D. student	CBS	C	36
International Scientific Contributors (ISC)				
David Banister	Professor	Oxford University, UK	A	1
Yoshitsugu Hayashi	Professor	University of Nagoya, JPN	B	2
Graeme Hodge	Professor	Monash University, AUS	C	2
Joe Zietsman	Head of Div.	Texas A&M Univ., USA	D	2
Independent User Group (IUG)				
Mads R. Christensen	Head of Div.	Danish Ministry of Transport	E	1,3
Birgitte Henriksen	Head of Div.	Danish Road Directorate	E	1,3
Niels Selsmark	Senior Advisor	Danish Transport Authority	E	1,2
Susanne Krawack	Chief Consultant	CONCITO	E	1,3
Patrik Rydén	Senior Analyst	Transport-Economic Society	E	2,0
Arne K. Rønne	Head of Div.	COWI	E	1,9
Brita Saxton	Director General	Transport Analysis, SWE	E	2,0

The Ph.D. students as well as the Post Doc will work mainly within one theme, but they will experience a cross-disciplinarian environment and be encouraged to take advantage of the cross-disciplinarity e.g. by allocating of co-supervisors from other themes and disciplines.

The Ph.D. student, Yannick Cornet related to Theme B, will work primarily within the sub task of formulating a framework and indicators for strategic transport planning as well as testing of the framework and indicator sets. One point of departure will be methodological work on

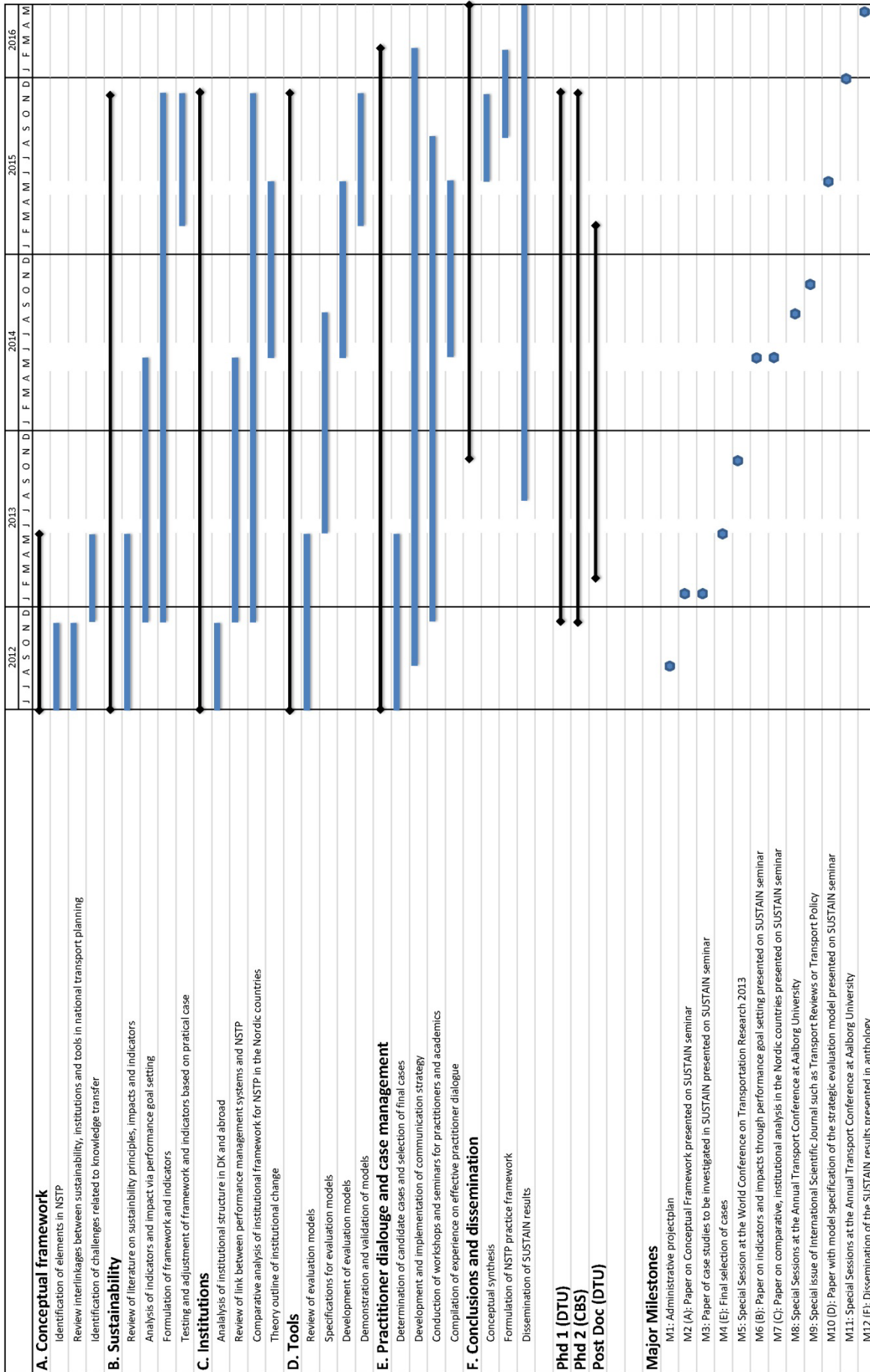
sustainability indicator selection in Joumard and Gudmundsson (2010); another will be critical studies of knowledge use in planning and policy making. The aim will be to develop methods to adapt indicators to the context of strategic transport policy making. Senior Researcher Henrik Gudmundsson, DTU, will be main supervisor assisted in these efforts by Professor Steen Leleur, DTU.

The Ph.D. student Lene Tholstrup Christensen related to Theme C will focus on a comparative analysis of the institutional framework of national sustainable transport planning in the Nordic countries. The Ph.D. student will analyze transport companies in the railway sector and focus on how the governance system has constrained or enabled the management of companies to pursue a sustainable performance agenda. The project will also focus on the political and planning conditions for making sustainable performance an integrated part of the companies' strategy. The analysis will be a comparative case analysis of transport companies in the Nordic countries and will be accompanied by a quantitative analysis of railway performance. Collaboration with Professor Graeme Hodge will take place, and possibly a research stay at Monash University will be organized. The supervisor will be Professor Carsten Greve, CBS, assisted by Senior Researcher Claus Hedegaard Sørensen, DTU.

The Post Doc researcher related to Theme D, Anders Vestergaard Jensen, will address methodologies and tools for assessment of sustainable transport initiatives. This work will link to Theme B and the Ph.D. student within this theme and be based on collaboration with Dr. Zietsman, Texas A.& M. Univ., USA. A research stay at Texas A.M. is planned as part of Anders V. Jensen's study and this will form an important input to the other work in Theme D about sustainability assessment modelling. Professor Steen Leleur will be mentor for the Post Doc. The Post Doc researcher will be affiliated to DTU.

The Post-doc and Ph.D. students will form a study group to benefit from their related studies within the topic area of sustainable transport planning.

The Gantt diagram below shows the working program:



8. Project's international dimension

The SUSTAIN project has a strong international dimension. SUSTAIN will review key leading international case examples where sustainability, institutional frameworks and assessment tools have been addressed in connection with application or management of strategic transport planning frameworks. These examples will be used to inform the emerging Danish strategic transport planning process and similar efforts via presentations at Scandinavian researcher/practitioners conferences and workshops.

Four internationally recognised researchers with expertise and curricula on topic areas directly relevant for SUSTAIN have kindly accepted to participate in the project's International Scientific Contributor (ISC) group. The ISC will be consulted on project findings throughout the project, and each member will be asked to present academic syntheses on SUSTAIN topics within their expertise. These syntheses will together with selected papers and articles be considered for a SUSTAIN anthology by a major international publisher. Members of the ISC are presented in section 11.

The international activities of the Danish SUSTAIN members will provide the project and Danish transport research with direct access to frontline research relating to key global topic areas such as the performance based approach to transport planning, public management generally and strategic evaluation modelling. This will happen, for instance, via their memberships of relevant international research organisations and through participation in international conferences, boards etc. Research stays of the young researchers in SUSTAIN (Ph.D.s and Post Doc) at the universities and research groups of the International Scientific Contributors to SUSTAIN are also seen as an important international achievement to benefit Danish transport research.

9. Legal and ethical aspects, etc.

It is the intention that all project results are made public and thereby generally available.

However, some of the interviews may have to be carried out under a clause of confidentiality. The research team will try to avoid this, but within some organisations this may be the only way to get access to this information.

Participants in the Independent User Group (IUG) are not necessarily obliged to approve results, conclusions and recommendation stemming from the research work.

In the way the project is described and intended to be carried out it does not involve legal and ethical aspects of consideration.

10. Publication and promotional strategy and exploitation of results

The publication and promotional strategy of the project consists of three elements: Dissemination to the research community, dissemination to policy makers and planners, as well as involvement in and dialogue with practice.

As regards dissemination to the research community, research achievements in the project will be published by submitting them to scientific ISI journals within transport studies, planning, sustainability, organisation and political science. In order to get faster feedback, papers will also be submitted to and presented at scientific conferences. Based on the project results a number of best papers will be selected and made available as an anthology from an international publisher such as Springer. A textbook on sustainable transportation intended for teaching graduate students at universities in Denmark and abroad, is currently under preparation and will benefit from the SUSTAIN project.

For dissemination to policy makers and planners several communication platforms will be applied. Frequent publication in popular, professional journals will be an important source of communication and so will be the presentation of research results at professional conferences

such as the 'Annual Transport Conference at Aalborg University' and the larger, similar event 'Transportforum' in Linköping, Sweden. Furthermore a project website will be established to promote, distribute and give information about the SUSTAIN work. The evaluation models developed as part of the work will be made available from the project's website.

Involvement and dialogue with practice is the third and most innovative element in the publication and promotion strategy. One of the Ph.D. projects is devoted to the issue of research-practitioner interaction, and a strategy to facilitate the dialogue will be developed as part of Theme E. Relevant professionals from key organisations will provide useful input to the project in this respect. It is the ambition that the research results can get acceptance from and inspire the SUSTAIN Independent User Group's wider professional networks. The planned seminars with participation of this group and other professionals will play a key role.

It is planned that the Ph.D. students will participate in an internationally recognised summer school such as the Helsinki Summer School at Aalto University.

The table below shows the targeted written output of SUSTAIN.

Written outputs	2012	2013	2014	2015	2016
Working paper series	4	8	6	4	
Conference contributions	1	5	6	6	1
Popular-science articles	1	1	2	2	1
Scientific articles		4	6	6	1
Ph.D. theses				2	
Final report					1
Anthology (Int. publisher)					1

The numbers include the work of the two Ph.D. students

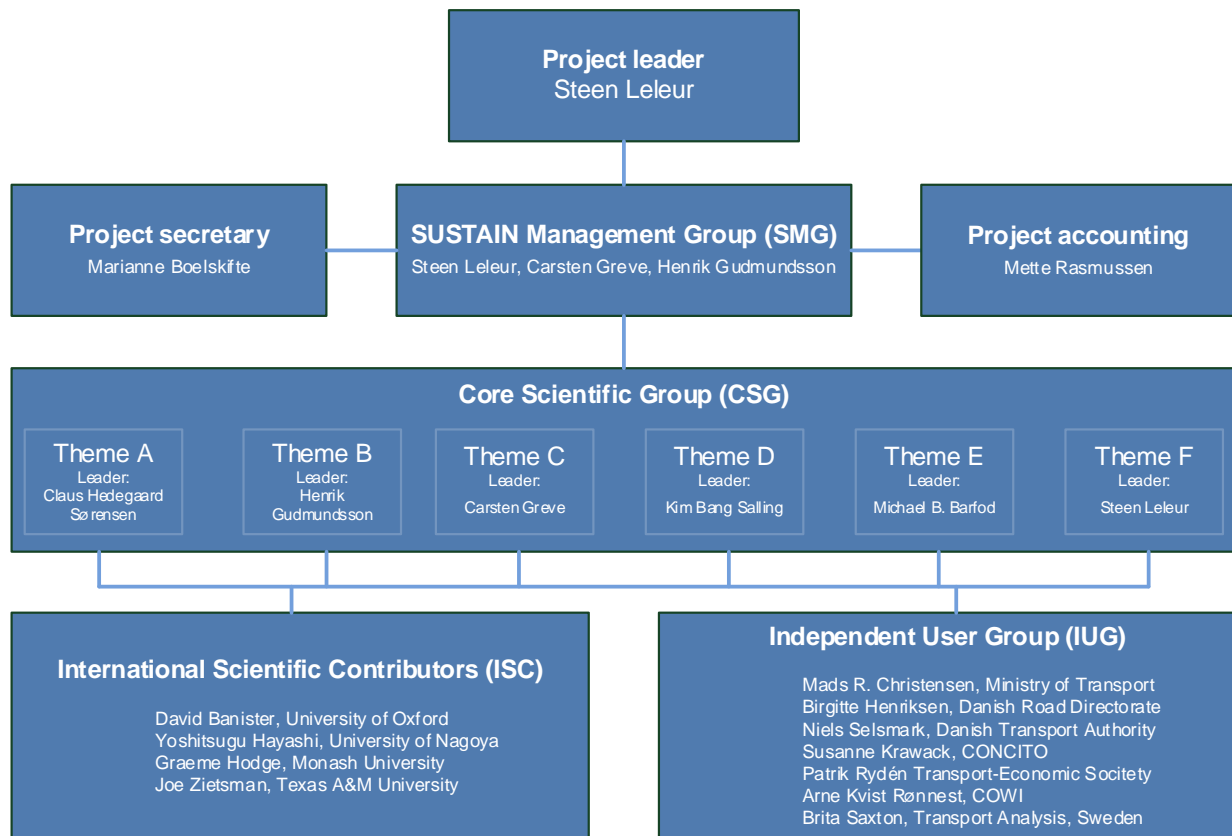
11. The participating parties, project management

The project participants consist of a Core Scientific Group (CSG), a group of International Scientific Contributors (ISC) and an Independent User Group (IUG). The CSG involves senior scholars at DTU Transport and Copenhagen Business School with well-established scientific expertise within all the main dimensions of the project. The CSG also comprises the Ph.D. students and the Post Doc.

Project Management will be the responsibility of the project leader Steen Leleur that together with Carsten Greve and Henrik Gudmundsson constitute the SUSTAIN Management Group. Two times a year a 1-day seminar will be held, which will include the full Core Scientific Group and one or more members of the International Scientific Contributors. Once a year, the Independent User Group members will participate in the seminar.

Project organisation

The project organisation consists of a research structure and a management structure as shown:



Partner capacities and contributions to the project

SUSTAIN Management Group:

Project Leader Professor Steen Leleur, DTU Transport is an internationally renowned expert in transport planning and decision analysis methods. Apart from leading the entire project Steen Leleur leads the SMG and as member of the CSG the work in Theme F. He will be mentor for the Post Doc under Theme D and work within this theme, but he will also make contributions to Theme A.

Steen Leleur has around thirty years of experience with managing of a great variety of projects and acting as project leader. Since 1972 he served as a civil servant in the Danish Road Directorate and from 1986 and onwards Steen Leleur has been employed at DTU. In this position he was initiator of the Danish participation in the EU Framework Programmes (FP) for Strategic Transport and in addition he was responsible for the scientific input to the EURET work committee in the 1990s, which laid the foundation for several European standards in transport appraisal. Specific management competences were achieved in a number of FP research projects as a member of scientific steering committees and as work package leader.

Most recently he has acted as project leader on the new and innovative priority models for the Danish Road Directorate to assist in deciding about cycling projects and ITS funded via the pools in the "Green Transport Policy" from 2009. Currently (2010-2012) he is acting as a project leader in the EU Interreg project EcoMobility for the decision models about green logistics chains and urban consolidation centres. Since 2000 Steen Leleur has been professor and research leader of the DTU Transport research unit Decision Modelling Group (DMG).

Professor Carsten Greve of Copenhagen Business School is a member of the SMG and the CSG. He will lead the work in Theme C 'institutions' and be main supervisor of the Ph.D. project within this theme and assist the supervision of the Ph.D. project in Theme B. He will contribute to Themes A and F.

Carsten Greve has management experience from a number of areas. He was vice-department head at the Department of Political Science in 2002-2004 at Copenhagen University. He has been vice-study director for the Master of Public Administration program at Copenhagen Business School from 2005-2009. Since 2009, he has been study director for the new flexible master in public governance, which is a joint program between Copenhagen Business School and the University of Copenhagen. Together with Niels Ejersbo, Carsten Greve led the research project "The public sector on contract" and most recently the project on "Partnering - policymaking and regulation" in the period 2004-2009 (both projects based on grants from the Danish Council for Independent Research - Social Sciences). Carsten Greve was the head of the local organisation committee of the International Research Society for Public Management's (IRSPM) annual conference at Copenhagen Business School in April 2009.

Senior Researcher Henrik Gudmundsson, DTU Transport is a member of SMG and the CSG. He will lead the work on Theme B and supervise a Ph.D. project concerning this theme. He will also contribute to Theme A and to Theme F.

Henrik Gudmundsson has a broad background in project management. He has a project based education in environmental planning from Roskilde University and has held a position as head of section in the Danish Environmental Protection Agency from 1988 to 1993 in which year he moved into research. Henrik Gudmundsson has been involved in several national and international research projects with a position as work package leader in four of them. From 2006 to 2010 he was the vice-chairman of COST Action 356 'EST – towards a measurable Environmentally Sustainable Transport', with participants from 20 countries. He has had many assignments as facilitator, chairman, and rapporteur at conferences and workshops in more than 15 countries. Henrik has attended basic project management courses in 2003 and at DTU in 2009.

Other CSG members:

Professor Flemming Poufelt will participate in Theme C. He is an expert in strategy and performance in organizations and in knowledge management. He is also vice-dean of communications at CBS. His background is in economics and he holds a PhD in strategy and change from CBS. He can contribute to theme C with expert knowledge on strategy, performance and communication with regard to performance management activities for transport organizations.

Senior Researcher Claus Hedegaard Sørensen, DTU Transport will lead Theme A, participate in Theme C and F and assist in supervision of the Ph.D. project in Theme C. His background is in political science, and his main qualifications are within institutional and organisational aspects of transport policy and planning.

Associate Professor Kim Bang Salling, DTU Transport will lead Theme D and contribute to Theme B, and to Theme C. His background is civil engineering, and his field of research is within risk analysis and decision support in transport projects.

Assistant Professor Michael B Barfod, DTU Transport, will lead Theme E and contribute also to theme F. His background is in transport planning and appraisal methods and his current research addresses appraisal methods for sustainable transport.

In addition the CSG includes one Post Doc and two Ph.D. studies as explained in section 7.

International Scientific Contributors (ISC):

The ISC members will make scientific contributions to specific themes according to their expertise and help convey national case information to Danish research and practice. ISC members will assist in building and sustaining an international research network on NSTP through conference sessions, joint publications, and Ph.D./Post Doc exchanges.

David Banister, Professor, TSU Oxford University is one of the world's most highly regarded experts in transport planning. Via Professor Banister, DTU has extensive working relations with

Oxford University. He will contribute to theme A, and convey case information from the UK. He will also advise SUSTAIN on specific publication strategies.

Yoshitsugu Hayashi, Professor, Univ. of Nagoya, Japan, is one of Asia's and the world's top experts on sustainability assessment of transport. He is a leading member of the World Conference on Transport Research Society. Professor Hayashi will contribute to theme B in addition to a Japanese case.

Graeme Hodge, Professor, Monash University, Australia is the director of the Monash Center for Regulatory Studies. An international expert on public-private partnerships, contracting and regulatory reform Professor Hodge will contribute to theme C in addition to an Australian case.

Dr. Joe Zietsman, Division Head of the Environment and Air Quality Division, Texas Transportation Institute is a top scientist in the US when it comes to the application of multi-criteria analysis relating to transport and sustainability. He currently leads a major project on sustainable transport performance measurement for the 50 US states. Dr. Zietsman will contribute to theme D on the basis of his pioneering work on performance-based sustainability assessment models.

Independent User Group (IUG):

The IUG represents key Danish and Scandinavian experts on the project theme with close involvement in national strategic transport planning. IUG members are: Head of Division Mads R. Christensen (Ministry of Transport), Head of Division Birgitte Henriksen (Road Directorate), Senior Advisor Niels Selsmark (Transport Authority), Director Susanne Krawack (CONCITO), Senior Analyst Patrik Rydén (Transport-Economic Society), Head of Division Arne Kvist Rønne (COWI) as well as Director General Brita Saxton (Transport Analysis, Sweden).

Procedures and collaboration to fulfil project objectives

The SUSTAIN Management Group (SMG) will be in frequent contact throughout the project and will communicate regularly with the Theme Leaders, the ISC and the IUG. The SMG will assist the Project Leader in managing the bilateral contracts and in accounting and budgeting together with the Project Secretary and Accounting Officer. Within the early phase of the project the SMG will provide a more detailed plan for obligations regarding all written outputs, which together with the list of milestones will constitute important check lists for the management of SUSTAIN. The SMG will also establish a procedure ensuring the quality and timely deliverance of all publications from SUSTAIN.

The main part of the research work will take place within the individual themes with the respective Theme Leader as the main responsible. Therefore the Theme Leaders will initially prepare a working plan for the theme including proposed contributions and deadlines for all the involved participants from CSG and ISC.

The theme working plan must be approved by the SMG. The SMG will judge the quality of these plans and their potential contribution to SUSTAIN. Furthermore, as described in section 5, the handling of risks will be an important task for SMG. Main concerns here will be to ensure optimal use of research resources and a maintained focus of the research work with regard to the objectives of SUSTAIN. Possible critical links between activities will get a special attention. The Theme Leaders will be responsible for informing the SMG of any problems that may arise e.g. a deviation from the working plan, delays of milestones and written outputs a.o.

Twice a year a 1-day seminar will be held. It will include the full CSG and one or more members of the ISC. The individual ISC members are expected to participate in one seminar in person and up to three video seminars during the project period. Once a year, the IUG members will participate in the seminars. The SMG will organise the initial Kick-off Seminar and three Progress Seminars during the project period, while Theme Leaders are responsible for the other scheduled seminars.

The focus on the practitioner dialogue in SUSTAIN has been ensured by involving IUG members who represent a high professional standard and have at the same time shown a

great interest in the SUSTAIN proposal. In addition to attending seminars the individual IUG member will be asked to comment on selected material produced in SUSTAIN and to assist in linking to other relevant professionals in their organisations and networks.

Both DTU and CBS are currently implementing research platforms that pay explicit attention to sustainability and both universities offer strong and thriving Ph.D. study environments with established Ph.D. schools. The Ph.D. students will be full members of the SUSTAIN international and national research network, but will not be burdened with research and administrative tasks irrelevant for their individual Ph.D. projects. The ISC researchers' home institutions will form excellent destinations for Ph.D. and Post Doc. visits.

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