The role of indicators in European Sustainable Transport Policy
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*For dissemination level of the deliverable see DoW chapter B1.3.4 p. 22*
EXECUTIVE SUMMARY

This study deals with the use and influence of indicators in sustainable transport policy. More specifically it aims to uncover to what extent indicators are actually used, what influence they have and what role they play in strategic transport policy making, if any. It also looks at factors that can explain the kind of use and influence observed. These are primarily factors associated with either the quality and relevance of the indicators themselves; with the characteristics of the users of the indicators, or with the general policy context and institutional setting.

The study looks at two cases, one at national level in Sweden and one at the level of the European Union. The first case concerns indicators for the fulfillment of the national transport policy objectives in Sweden. The second case deals with indicators used to perform a Mid-Term Review of the European Commission’s transport policy White Paper ‘Time to Decide’ (issued in 2001). The cases are studied using the common framework and terminology based in the POINT project and adapted to the present context. Both case studies are based on reviews of key policy documents and indicator reports as well as semi-structured research interviews with selected informants (civil servants, politicians, experts) on both the indicator user and producer side.

Four specific research questions are pursued.

- Does the existence of a Management-By-Objectives (MBO) regime as in Sweden promote the use and influence of indicators?
- Does of a regime based on quantified targets on the other hand lead to a potential bias towards influence of indicators associated with such targets?
- Will a close participation of users and stakeholders in indicator design and development affect and enhance the use and influence of the indicators?
- Does the context of ‘sustainable transport’ policy provide special conditions for the use of indicators and for their influence on policy?

In general both cases illustrate examples where several indicators are actually used in policy processes, like long term planning and annual budgeting in Sweden, and the strategic Mid-Term policy review undertaken by the European Commission. Also external stakeholders use some of the indicators in debates etc. In both cases, however, the indicators are not used in isolation or independent from other information input. In the EU case, the indicators are connected to a range of transport models, which help to forecast future indicator values assuming different policy alternatives In the Swedish case, the studied indicator report is just one out of many analytical inputs the review the fulfillment of transport policy objectives and otherwise give input to policy planning and management.

That the indicators are used does not automatically mean that they influence the policies or the processes leading towards them. Our studies of indicator influence on Swedish transport policy do not enable us to point with certainty to specific political decisions which had been different had it not been for the indicators. The inclusion of the indicators in the national budget seems to be more of a convention than something actually used for prioritizations in the budget process. However some influence may be seen at a conceptual level of policy making, as something with importance for policy makers ‘in the background’; also the regularity of (annual) reporting contribute to maintain an awareness of performance and accountability among civil servants. In the EU case we observe that the policy agenda and the associated objectives are undergoing changes in a way that
conform to the indicator based evaluation. The influence is of a special kind we label it as rationalization, where policy conclusions already ‘in the cards’ become more obvious, justifiable, and expressible through the use of the indicators. All in all we interpret the indicators as playing a very limited instrumental role in some of those areas of transport policy we have looked at, while there are several signs of symbolic, conceptual, and process roles.

We have found that factors that characterize the indicators, the users, the policies, the institutional setting and the economic and political background all contribute to the understanding of positive and negative examples of indicator influence in the two cases. For example indicator factors contributing to influence in the EU case included timeliness of indicators reinforced by forecasting, and actionability provided for through links to policy scenarios. In the Swedish case the supply of available indicators provides better matches for some objectives (safety; partly environment) than for others (regional development; transport needs, accessibility, competitiveness, gender balance), which could be a reason why hints of influence were more often found in the former than in the latter cases.

With regard to the four specific questions, the following summarizes the key conclusions:

The connection of the Swedish indicator report to a MBO system contributes to enhance use but does not produce equivalent significant policy influence of the indicators. One reason was that the particular system is somewhat detached from actual policy making. There were no effective follow-up mechanisms for the results.

It seems to be confirmed that indicators connected to clear (quantitative) targets in both cases attract much attention which could in some situations occur at the expense of topics that do not have quantitative targets and indicators. Much of the interest and debate, both in the EU case and in Sweden was centered on areas with targets, even if the reporting also addressed more qualitative aspects which did receive varying degrees of attention.

Direct involvement of policy users and stakeholders in indicator design was not prominent in the case analyzed for Sweden. In the EU case a crucial factor in the use and influence of the indicators was found to be exactly the involvement of selective key users within the staff of the European Commission. We see this as an example of a process in which indicator users and producers are working closely together in the design, selection and interpretation of the indicator processes. This finding is in broadly line with previous research.

It seems to be that the influence of indicators in the sustainable transport context is affected by the complexity of the field. We interpret the field in both the case of Sweden and the European Union as characterized by a certain degree of consensus on the overall policy goals, but less so on how to reach the goals with strategies and measures. One can see the indicators as part of the dynamics that feed policy debates in a field that is more conflicting with regard to measures than (at least overall) goals. The very limited scope of the cases does not allow identifying one specific role that indicators play in the context of sustainable transport policy. Even if the direct influence of the indicators may be limited and hard to detect we believe the study also demonstrate that indicators have useful and interesting functions, such as: helping to focus efforts, monitor developments, report on positive results, remind of critical lack of accomplishments; fuel debates and controversies; and support learning processes.
1. INTRODUCTION

1.1. Background, purpose and setup of the transport sector study in POINT

This study deals with the use of indicators in transport policy. More specifically it will analyse examples of use and influence of indicators in strategic policy making in the context of a ‘sustainable transport’ agenda. In this section 1 we first briefly introduce some overall trends that characterize transport policy and the application of indicators in this current context. This forms the basis to describe the purpose and focus of the research presented in this report.

Background and general context
Policy making in the transport sector is characterized by significant input of technical information and the use of a variety of tools for planning, appraisal and decision support. The knowledge input informs a broad range of aims, tasks, settings and approaches of transport policy, some have long histories while others are more recent. Among the classical tasks are planning and construction of new infrastructure links, management of transport systems and services, and regulation of negative traffic impacts and market failures (Docherty et. al. 2004). More recently the European integration process has added issues like liberalisation, competitiveness, Trans European connectivity – and multilevel governance to the agenda. Also, in the last decade’s oil dependence, climate change and other large scale environmental effects of transport have become major concerns. Most recently issues like security and climate adaptation have emerged (EC 2009).

Transport policy has thus become an area that faces rising demands, diverse goals, and increasing complexity. It is ‘heavy’ in terms of levels of investments; as well as in terms of controversies over policy interventions; it has been described as a ‘wicked’ or ‘messy’ (Ney 2009) area. As a result a more comprehensive and strategic approach to transport policy has gradually been developed, on top of tactical and operational levels of decision making (Kölbl et. al. 2008). The notion of ‘Sustainable transport’ has been coined as an overarching policy aspiration for the future under these general circumstances. While not clearly definable (Nijkamp et. al. 2004), the notion signifies a positive vision of a transport system that fulfils environmental, together with social and economic requirements now and in the future (Greene 2001; Council of the European Union 2001). The vision of sustainable transport has been embraced more or less enthusiastically in policies and plans by government at all levels around the globe, even if the specific content and implications may vary considerably from place to place (Thynell et. al. 2010).

These changes in the scope of transport policy have created an environment for new information input and knowledge tools to support the planning and decision making processes. A significant new development in this context is the explicit use of indicators to help measure, monitor and assess different aspects of transport systems and policies (Aparicio 2008; Marsden et. al. 2005; Borzacchiello et. al. 2009). The development and use of transport related indicators has taken place in cities, regions, countries, and at the European level (Dobranskyte-Niskota et. al. 2007). Some indicators have been developed with very specific information needs and knowledge tools in mind, such as systems to manage the performance of bus services, or to avoid pollution problems in road tunnels; others have been established as part of more strategic information and communication frameworks, like for example the annual TERM reports on transport and environment from the European Environment Agency (EEA 2009). Several of these new transport indicator initiatives are
directly associated with the ‘sustainable transport’ agenda (see e.g. Dobranskyte-Niskota et. al. 2007), although there is not a general consensus about exactly on which indicators to use for measuring the sustainability of transportation systems or policies (Gudmundsson 2003, Jeon and Amekudzi 2005, Joumard & Gudmundsson 2010).

The focus here is on how the use of such indicators contributes to manage the performance and development of transport policy in this context. So far research on transport indicators has mostly been struggling to produce suitable measuring rods for various tasks of planning and assessment. The general assumption seems to be that indicators are necessary, and – if they are also ‘fit for purpose’ (Tuominen et. al 2008) – they will be useful parts of a toolbox to help transport planners, decision makers and society in general make informed choices in the transport sector (Uhel and Weber 2005). In contrast, however, research in the use of knowledge, science and information for policy making inside and outside the transport sector has often found that to a large extent such input is ignored by decision makers, or used in totally different ways than expected, even in cases where the information has been directly targeted to policy making (Innes 1998; Sager & Ravlum 2005; Eliasson and Lundberg 2010).

Focus of the present study
The present study will look into the use and influence of indicators in connection with policies for sustainable transport, as one application area for the POINT research approach. The aim is to identify to what extent and how indicators are actually used, and to critically examine the conditions under which they influence strategic transport planning and decision making within the ‘Sustainable transport’ agenda. In short the study will explore if indicators are used at all, how they are used, and why they become influential or not. The research together with other POINT studies will hopefully contribute to improve the future application of indicators in policy.

The study will look at two cases of indicators applied for strategic policy making within the broader context of ‘sustainable transport’ aspirations, one at national level in Sweden and one at the level of the European Union. The first case concerns indicators on the fulfilment of the national transport policy objectives in Sweden. The case explores the use and influence of an annual monitoring and evaluation report produced by ‘SIKA’, an agency charged with transport and communication analysis, situated within the Swedish Department of Enterprise, Energy and Communications. These reports have been submitted to the Swedish Government and Parliament to inform ex post on progress with regard to the objectives the policy makers had defined.

The second case deals with indicators used to perform a Mid-Term Review of the European Commission’s transport policy White Paper ‘Time to Decide’ (issued in 2001). We study the use and influence of an indicator based study ‘ASSESS’ conducted in 2005 as a one-time effort undertaken by a group of consultants for the European Commission’s Directorate-General for Energy and Transport (DG TREN) and in close collaboration with DG TREN’s staff.

The cases will be studied using the common framework and terminology to analyse indicator use and influence developed in the POINT project. This will be presented in summary on the following subsections of section 1. The analysis if the first case follows section 2, the second one in section 3. A cross cutting discussion and conclusion will follow in section 4.
1.2 Terminology adopted in POINT fitted to the present study

Indicators and their use and influence in policy are the key objects of study; these basic concepts therefore need to be defined initially, which takes place in this subsection 1.2. The methodological approach and research questions for the study are summarized in the following sub-section 1.3.

Indicators

In the POINT framework (Gudmundsson et. al. 2009) ‘indicators’, have been defined as variables; more specifically variables that are constructed and selected to operationally represent properties of so-called ‘representation targets’ (Franceschini et. al. 2008). By a ‘target’ in this sense is simply meant an entity, condition or goal of interest that the indicator is supposed to represent. This can for example be the movement of vehicles on an urban transport network, the quality of the infrastructure, or a goal to reduce the impact of transport on the global environment. The variable can be simple, or more complex (e.g. a ratio, or a formula). An indicator is only an approximate measure of the ultimate target of interest. A basic issue concerning indicator variables is therefore how well they are perceived to represent target properties, but there are many other aspects involved in the appreciation and use of indicators in policy making as we shall see. In practice the term ‘indicator’ is not always the one used for such variables by practitioners in the field. We try to take into account such variations in terminology.

There is more to indicators than the variables. Three other important aspects are considered. First of all the variables can be fed with corresponding values (=actual data), to allow measurement of change in the variable over time, or compare it across different entities. The (potential or actual) availability of appropriate and timely data is therefore obviously a key concern for indicator use. Secondly, a reference state or trend of the variable (for example a future, or minimal, or comparable, or desirable condition) may be built into or connected with the indicator. This allows the indicator to support an assessment or evaluation of the measured condition compared to the reference, which makes it much more useful, but also potentially more controversial than a purely descriptive indicator. This again evokes a need for agreement over the reference standard or goal. Finally, individual indicators are often used together as sets, or systems of indicators, embedded in frameworks that organize the indicators according to a certain logic, structure, or purpose in regard to the representation targets of interest. The framework logic can be a simple one, such as defined by a set of policy objectives. It can also be more advanced, using for example an economic or other method to aggregate results across several indicators, suggesting conclusions at a higher level of abstraction (say net change in ‘human well being’ rather than simply delays in transport, accidents and pollution). A framework provides a filter that may exclude certain (types of) indicators and promote others (Gudmundsson et. al. 2009). For example, a measure of the degree of satisfaction with public transport service may fit in a quality-of-life-framework, while it would have no place in an environmental impact assessment framework, even if both frameworks may refer to ‘sustainable transport’. Hence the framework is part of the indicator system.

In summary, variables, serving as indicators in transport policy, are studied in the analysis, while associated values, evaluations, and frameworks are also considered as significant indicator elements. In practice the study will focus much on the production and use of the particular reports, in which indicator sets or systems combining these elements are contained.
Policy

POINT has its focus on indicator use in and influence on public policies. To define the policy focus for the present study we address two dimensions. First, public policy is considered in an explicit, functional, way, as an ensemble of a government’s deliberate goals, strategies, and actions in a particular area (see e.g. Jenkins 1978). A national transport policy document can be a manifest example of this, or transport policy White Papers at the European level. Indicators can contribute to policy in several ways; for example to identify key problems for the policy, to help define goals, to assess strategies, to select measures or rank projects, or to monitor and evaluate past policies in order to prepare the next plan (Briguglio 2003; Gallopin 1997; Illner 1984). These can be called direct functional policy applications of indicators. Secondly policy making also involves less explicit aspects such as processes, frameworks and contexts in which these policies are shaped, maintained, debated and possibly revised. Policy making involves actors like politicians, civil servants, experts, media and stakeholders in society. In this perspective indicators may inform also less functional aspects of policy such as for example policy ideas, paradigms and discourses, power struggles, agenda setting, and policy learning (Boulanger 2007; Hezri 2005). In the end, functional and less functional aspects of policy can of course impinge on each other, but the channels of influence of indicators can have different kinds of effects for each of the two dimensions, as we shall return to shortly.

For the two cases the study mainly seeks to uncover the possible influence of indicators on functional aspects such as goals, strategies and measures in the respective policy situations; but the study will also look for influence on less functional aspects such as ideas, agendas and processes. We do not seek to define and distinguish these categories very rigorously; however, since policy is generally a poorly defined research area and we want to avoid imposing too restrictive assumptions about how things work. Nevertheless we provide more specifications to these concepts below.

Knowledge input and pathways

The research literature on ‘utilization’ of knowledge input in policy forms the basis for the study of indicators in POINT and in this report. As already mentioned two important results of this research have been a), that knowledge input to policy is in fact often not used at all (Innes 1998; Sager & Ravlum 2005) that the use that does occur can come in many different forms, some of which may be very far from intended ones (Pollitt 1998; Vedung 2001, Cousins 2004).

A diverse range of possible so-called ‘uses’ of knowledge input were thus identified in this literature. For example ‘Instrumental’ use, which involves applying knowledge or research results as a tool to solve problems or make decisions; it is knowledge applied “in specific, direct ways”. (Beyer and Trice (1982); ‘Conceptual’ use, which was coined as a term for slow long term effects of knowledge input influencing ways to think about a subject, rather than use for specific decisions, or stated otherwise as “...the percolation of new information, ideas and perspectives into the arenas in which decisions are made” (Weiss 1999, 471); ‘Symbolic’ use, was one of the terms coined for the application of knowledge input to justify decisions already made, or to convey an image of legitimacy by reference to the knowledge and nothing else (Weiss 1999; Pollitt 1998; Vedung 2001, 141); ‘Process’ use meant to suggest that the process of producing or consuming a certain knowledge input may affect the policy making, regardless of the content of the information (Shulha et. al. 1997); for example when efforts to report a high performance score leads an agency to adopt new procedures; finally ‘misuse’, has been applied to either simple miss specifications of data but
also to so-called ‘illegitimate suppression’ of knowledge as well as deliberate manipulation of information (Cousins 2004).

In some later literature, however, the focus has shifted away from ‘use’ and sought to specify instead the influence of the knowledge input on various aspects of policy. This has lead to an even wider typology of possible ‘influences’ most elaborately presented by Henry and Mark 2003 (see Table 2). Still the original critical notions of ways in which knowledge can make its mark on decisions such as ‘instrumental’ or ‘symbolic’, have continued to inform the research. We will shortly return to how we have chosen to apply these concepts in the present study.

Several analysts have tried to construct ‘chains’, ‘ladders’, or ‘pathways’, to describe significant steps of events when knowledge enters the policy making process. For example, a scientific result may be traced from its production by a group of researchers via transmission (through channels such as reports, speeches, media coverage, ‘whispering in the ear’, etc) to a receiving policy body, where it may or may not be observed, recognized, used, adopted, and assimilated in a variety of ways, and through this again may or may not obtain influence, effect or impact on plans, decisions, outcomes, or other aspects of policy making. (Beyer & Trice 1982; Rich 1997; Landry et. al. 2001; Kohtaria et. al. 2005). In some models feedbacks and loops between knowledge adoption and policy making are addressed, and phenomena like learning (Nonaka 1994; Hezri 2006), evolution (Tuominen and Himanen 2007), and even ’self-validating narratives’ (Molle 2008) can be identified.

POINT adopts this general idea of a ‘pathway’; meaning that knowledge input – such as indicators; - and policy processes can affect one another in different ways over a course of events. However a simple framework is adopted, recognizing that the full pathways could be very complex, different in each case, and not possible to trace fully with research resources available in the POINT project.

The framework as applied in this study has a focus on three nodes, namely ‘use’; ‘influence’, and ‘role’ of the indicator. For each node a set of categories describe various types of use, influence and role. A crucial but difficult point is thus to distinguish between (mere) use, and influence, which is arguably more interesting (Rich 1997; Henry and Mark 2003), as we describe below. Another point is to identify what kind of influence(s) the indicator exerts, and therefore what role it plays for the policy, as also discussed further below.

‘Use’ of indicators
By policy ‘use’ of an indicator (or an indicator set) we simply mean actions that persons involved in some policy context take with regard to indicators when they receive and recognize them. Use can involve awareness, processing in various ways, use in further communications, or direct application to make a decision, for example to distribute funding to an activity according to results measured by an indicator. The use can involve the indicator in its aspect of variable, value, evaluation or framework, usually in some combination. Four categories of use (each with two examples) are defined in Table 1. These categories are not meant to be exhaustive, but serve as examples in the analysis. It is a descriptive concept. We do not infuse use with normative connotations (e.g. as more or less ‘symbolic use’ or ‘misuse’) as in some literature. This type of assessment is reserved to the subsequent analysis of the influence and the role of the indicators as discussed below.
<table>
<thead>
<tr>
<th>Table 1. Types of policy use of indicators</th>
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<tbody>
<tr>
<td><strong>Reception</strong></td>
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<tr>
<td>Receive, notice, observe</td>
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<tr>
<td>Forward to others (with no further action)</td>
</tr>
<tr>
<td><strong>Internal application</strong></td>
</tr>
<tr>
<td>Use for own work (e.g. calculations)</td>
</tr>
<tr>
<td>Use in internal communication</td>
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<tr>
<td><strong>External application</strong></td>
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<tr>
<td>Communication with external parties</td>
</tr>
<tr>
<td>Use in official policy plan/report/document</td>
</tr>
<tr>
<td><strong>Decision support</strong></td>
</tr>
<tr>
<td>Use in a process where judgments or decisions are made</td>
</tr>
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</table>

‘Influence’ of indicators
The question of influence of the indicators deals with how (the use of) indicators affects policy. In the words of Rich (1997), ‘influence ‘means “…that information has contributed to a decision, an action, or to a way of thinking about a problem” (our emphasis). The distinction from mere use is that these contributions have somehow made a difference to policy functions or processes. Here we recall that policies involve formal, explicit aspects such a goals, strategies, and policy measures, as well as more informal aspects such as ideas, agendas, and processes. In principle all of these can change, under the influence of knowledge delivered by indicators or through the processes that produce them. Change that occurs under the impression of indicators, we define as influence. However, knowledge and indicators may also contribute to confirm or consolidate existing policies (agenda, goal, choice of policy measures, procedures etc). This can also be a form of influence.

Importantly we do not assume indicators as the principle cause of changes or confirmations in policy. It may in fact be appropriate to ask if one should expect indicators to have any influence on policies at all. We would typically not expect a dramatic influence, as indicators are only small elements in the policy making process. Some indicator reports may provide a prescriptive message; for example that to reach the European traffic safety target of 50% reduction, “...stronger accident prevention policies and measures will be necessary” (EEA 2010). Such an evaluation might inspire someone to react, or not. Other indicators may also allow a clear judgement, such as a cost benefit ratio in favour of a particular road project over another. However, different indicators together often provide ambiguous or mixed recommendations even in economic assessment. An example could be the infrastructure project Rail Baltic (COWI et. al. 2007), where Net Present Value (NPV) indicator points to a different solution than the Internal Rate of Return (IRR) variable. On the other hand all policy making takes place through communication, and indicators are increasingly among the major communication devices. As noted, they may shape the process and the outcomes in several ways. This influence cannot be read out of the indicator reports alone, but must be studied in the context a policy process, and the (potential) users of the information.

As mentioned above, Henry and Mark (2003) have proposed a comprehensive research framework where a broad set of possible ‘influences’ of knowledge input on policy are outlined (in their case: evaluation studies). A condensed version of the Henry and Mark framework is shown in Table 2.
The main idea of this framework is that knowledge input can influence policy in different ways and at different levels. At the ‘individual’ level, an information receiver can for example change his or her attitude towards a solution, or acquire new skills, by being involved in processing new information. At the ‘interpersonal’ level the communication within an organization or network can be affected, for example if the information provides new opportunities to persuade others, or to challenge existing social norms. Finally at the ‘collective’ level, the knowledge may contribute to change the policy agenda, the actual decisions, and the diffusion of solutions to new areas etc. A logical assumption is that influence at higher level (say, change in policy decisions) will depend on initial influence at the lower ones (say changes in perceptions or discourse), However, Henry & Mark (2003) themselves leave it open to explore any possible elements, levels and pathways, without prescribing a particular direction of causality.

POINT is inspired by the Henry and Mark framework but does not apply it in full, as it is quite broad and some of its influence categories are not necessarily the most relevant for indicators. The main interest for this study is the possible influence at the ‘collective’ level, which is very close to what we call ‘policy’. The study will thus address if indicators seem to exert influence in connection with changes or confirmations of policies, considering both policy functions (goals, strategies, measures) and less functional policy aspects (e.g. ideas, discourses). The detailed kinds of influence to expect will not be defined in advance, although some more specifications are provided in the next section. In accordance with the Henry and Mark approach our methodology uses interviews that may allow information about influences occurring at the lower, individual and interpersonal levels (i.e. micro and meso levels of ‘policy making’) to be utilized in the interpretation of functional policy effects. The study approach differs somewhat among the two cases, as will be explained.

‘Role’ of indicators
To categorize the observed influences further in regard to their role in promoting (sustainable transport) policy we will consult another set of categories. These categories are also drawn from the knowledge utilization literature as referred to in the above. However, instead of seeing these types as manifestations of ‘use’ (which we have defined in a more neutral way above) they are here applied to interpret what observed uses and influences of indicators mean; to what extent are indicators predominantly instruments for direct policy functions, to what extent are they more conceptual or enlightening input; and to what extent are they mainly symbols, that seem to make policies appear legitimate? Each role represents a certain combination of use and influence with regard to either policy functions or less functional aspects. This typology we have developed is

<table>
<thead>
<tr>
<th>Level</th>
<th>Types of influence</th>
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<tbody>
<tr>
<td>Individual</td>
<td>Attitude change; Salience (e.g. increase awareness about an issue); Elaboration (e.g. stimulate new expectations); Priming; Skill acquisition; Behaviour change</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Persuasion; Justification; Change agent; Minority-opinion influence: Social norms</td>
</tr>
<tr>
<td>Collective</td>
<td>Agenda setting; Policy-oriented learning; Policy change; Diffusion</td>
</tr>
</tbody>
</table>
shown in Table 3. It should be noted, however, that the categories are only tentative guideposts for a general discussion. We are not able to detect indicator use and influence in such richness that a rigid or detailed categorization is fully possible. Finally it should be noted that indicators could be expected to play several different roles in different applications or different stages along a policy trajectory or even for different participants or points of view in the same process.

Table 3 Types of roles indicators can play

<table>
<thead>
<tr>
<th>Role Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>An instrumental role</td>
<td>Indicates that indicators are used and directly influence the functional aspects of policy, goals, strategies, or measures; either serving to promote change or to confirm existing policy. This is the conventional understanding of what indicators do.</td>
</tr>
<tr>
<td>A conceptual role</td>
<td>Indicates that indicators contribute to expand a knowledge base or introduce new ideas, but are not immediately used or influential with regard to functional aspects such as goals, and actions. They may influence less functional aspects such as concepts, agendas, etc.</td>
</tr>
<tr>
<td>A process role</td>
<td>Indicates that indicators (or rather indicator systems, with a recurring schedule) affect the way some aspect of policy making in conducted; in this role they are not directly used or influential with regard to functional aspects, but may affect the way things are processed.</td>
</tr>
<tr>
<td>A symbolic role</td>
<td>Indicates that indicators justify decisions that have in fact already been taken, or give a rational appearance to some policy. The indicators are not used or influential with regard to functional aspects, but may influence less functional aspects such as process or power positions.</td>
</tr>
<tr>
<td>A distortive role</td>
<td>Indicates that indicators misinform policy or foster counterproductive behaviour with regard to policy intentions; The indicators can be used and be influential in both functional and less functional aspects. It involves highly subjective judgment and may be impossible to distinguish a distortive role from a ‘non-distortive’ one.</td>
</tr>
</tbody>
</table>

Explanatory factors
As the final component in the framework, POINT has the ambition to explore why certain uses, influences and roles may be observed in each situation. In addition to the knowledge utilization literature wider research in policy sciences, performance management, communication research, and of course indicators science in particular, contribute insights and concepts to this topic.

POINT hypothesizes that drivers behind indicator use and influence are grouped in three areas that each provide sets of possible explanatory factors, namely indicator factors, user factors, and policy factors. ‘Indicator factors’ refer to the qualities of indicators as appropriate tools for measurement and communication to support policy functions as well as more non-functional aspects of policy making. Indicator factors can be associated with the variable, value, evaluation, or framework, aspects of indicators. For example, Alvarez (2004) found a particular set of leading economic indicator variables to be unable to predict the pending Argentinean Financial crisis. In contrast Ben-Arieh (2008) found that indicators used in two health programs for children possessed qualities such as validity, reliability, and significance for the topic, which made them useful. Rosenström and Lyytimäki (2006) found the timeliness of the data values rather than the variable themselves to be a
problem for indicators that were intended for use in a number of international environmental reports. Table 4 define some typical indicator factors or criteria often claimed to be of importance for a (mostly) instrumental role of indicators across a range of studies. Cash et. al. (2002) have studied how to summarize factors that are essential for the acceptance of scientific input in general among policy makers and found the categories salience, credibility and legitimacy of the input to be essential and exhaustive. In this study we do not seek a rigorous test of the explanatory power of either individual criteria or broader categories of factors but we will refer to several of them in the analysis.

Table 4. Criteria of supposed indicator effectiveness selected from a range of studies (OECD 2003; WHO 2006; Joumard and Gudmundsson 2010)

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validity</td>
<td>A valid indicator must actually measure the issue or factor it is supposed to measure</td>
</tr>
<tr>
<td>Reliability</td>
<td>A reliable indicator must give the same value if its measurement were repeated in the same way on the same population and at almost the same time</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>A sensitive indicator must be able to reveal important changes in the factor of interest</td>
</tr>
<tr>
<td>Measurability</td>
<td>A measurable indicator should be straight-forward and relatively inexpensive to measure</td>
</tr>
<tr>
<td>Data availability</td>
<td>Data available indicators are indicators based on (input) data that should be readily available or made available at reasonable cost and time</td>
</tr>
<tr>
<td>Timeliness</td>
<td>A timely indicator has a short interval between the period to which data refer and the date when data are released</td>
</tr>
<tr>
<td>Ethical acceptability</td>
<td>An indicator must comply with fundamental human rights and must require only data that are consistent with morals, beliefs or values of the population</td>
</tr>
<tr>
<td>Transparency</td>
<td>A transparent indicator is one which is feasible to understand and possible to reproduce for intended users</td>
</tr>
<tr>
<td>Interpretability</td>
<td>An interpretable indicator allows an intuitive and unambiguous reading.</td>
</tr>
<tr>
<td>Target Relevance</td>
<td>A target relevant indicator must measure performance with regard to articulated goals objectives, targets or thresholds.</td>
</tr>
<tr>
<td>Actionability</td>
<td>An actionable indicator is one which measure factors that can be changed or influenced directly by management or policy action.</td>
</tr>
</tbody>
</table>

‘User factors’ we define as perceptions, capabilities, and positions of people involved in indicator and policy application processes (Henry & Mark 2003; van der Meer 1999). The users are obviously important since they provide connection of the indicators to the policy context. Characteristics that may affect the use and hence influence of indicators include the actors’ educational background, and/or their role in the policy process (e.g. as expert, civil servant, communicator, decision maker, etc). Pollitt (2006) for example illustrates significant differences in the use of performance information among politicians, citizens, experts, and managers. In the present study the user groups involved mainly cover policy and decision makers in central government (or EU) functions as well as indicator producers themselves. Even within these groups there could be differences in how various kinds of information is collected, and applied, for example due to academic discipline, past experience, or level in the hierarchy.
'Policy factors' have to do with the policy context for the use of indicators. ‘Policy context’ is certainly a wide phenomenon, including potentially important aspects such as what kind of sector the policy is about, what kind of institutions that receive and possibly adopt the indicators, what type of or stage of policy action it is intended for, and what kind of general governance or steering regime is in place. Polliit (2005) found that both differences in legal and administrative cultures among policy sectors and between different countries could influence the way performance information is used. Rydin (2002) illustrates that many factors, including the political ‘colour’ of the local government can make a difference for the adoption of sustainability indicators. Kotharia et. al. (2005) observes a difference in which factors influence use of knowledge in an adoption phase of a policy compared to the implementation phase. Atkinson et. al. (2004) found that policy targets were essential if indicator based monitoring in the context of European Social inclusion policy was to compete for attention with macroeconomic policies.

More generally Turnhout et. al. (2007) suggest that the use of knowledge in policy making will depend on how ‘structured’ a policy is, in two dimensions, a) with regard to consensus (or not) over objectives, and b) with regard to agreement (or not) over appropriate types of policy measures to use. The combination of the two dimensions creates a matrix with four types of situations called, respectively ‘Well structured’, ‘Unstructured’, ‘Badly structured’ and ‘Moderately structured’. Each arch type situation provides distinct conditions for the role of the researcher, and the use of knowledge as shown in Table 5.

**Table 5 Dimensions of policy structuredness, according to Turnhout et. al. (2007)**

<table>
<thead>
<tr>
<th></th>
<th>Well structured</th>
<th>Unstructured</th>
<th>Badly structured</th>
<th>Moderately structured</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy process</strong></td>
<td>Rule</td>
<td>Learning</td>
<td>Compromise</td>
<td>Negotiation</td>
</tr>
<tr>
<td><strong>Role of scientist</strong></td>
<td>Problem solver</td>
<td>Problem signalling</td>
<td>Accommodation</td>
<td>Advocacy</td>
</tr>
<tr>
<td><strong>Use of knowledge</strong></td>
<td>Data</td>
<td>Ideas</td>
<td>Concepts</td>
<td>Arguments</td>
</tr>
</tbody>
</table>

According to Turnhout et. al. an instrumental role of knowledge is only likely to occur in situations that is well structured in both dimensions; an observation echoing what Weiss found, namely that such a role is mostly found for “…relatively low-level, narrow-gauge decisions” (Weiss 1979, p 428). In other cases, with less consensus, it is more likely that indicator would have strategic functions, or play symbolic, tactical or conceptual roles, if they are heeded at all.

In addition to the three types of factors above, what we call ‘background factor’s may also play important roles for how indicators are used and exert influence, for example in the case of changes in the general economic conditions; changes in the political environment, for example shifts in government, or the introduction of EU regulations in areas where none were before (Sabatier 1987); potentially this could also include natural disasters, or significant media events.

As part of the following section we pin down a more narrow set of research questions associated with some of these factors focussing on what we see as key issues for transport sector cases.
1.3 Methodology, cases and research questions

Having defined the key terminologies and issues this subsection will outline the approach and methodology of the study and summarize the initial research questions.

The study involves the two cases that are studied using broadly similar layouts. The use of two cases was decided in the POINT project in order to address indicator use in two different contexts of high significance for sustainable transport, namely a national one and the European one.

The national case of Sweden was chosen because it represents a policy regime, in which a Management-By-Objectives system is generally prevalent. In such a system we would expect indicators to fulfil a prominent function with regard to monitoring of objective achievement. The study focus is on a particular annual report requested by the Swedish government to measure the follow-up to the national transport policy objectives, as described further in Section 2.

The EU case was chosen because the European Union is obviously a significant venue for sustainable transport policy making in Europe, and because the particular situation being studied is an interesting one where an indicator based assessment was specifically commissioned for a major, important policy review, and where there were therefore good conditions for interaction among indicator ‘producers’ and policy stakeholders. This is described further in section 3.

Both case studies are based on reviews of key policy documents and indicator reports as well as semi-structured research interviews with selected informants (civil servants, politicians, experts) on both the indicator user and producer side. The policy documents have in both cases been identified through literature review, consultation of websites, and input from interview persons and other informants. The interview persons were identified using web based searches, consultation of documents, and personal contacts to involved institutions and individuals. The identification of relevant documents and interviewees was also facilitated by previous research in other projects.

Each case study proceeds in approximately the following five steps:

In the first step the policy context and background is outlined. A description is given of the policy situation and the general institutional framework in which the indicators to be studied are introduced.

In the second step follows a short description of the particular indicator set that is studied; its content and structure and its intended functions, according to official documents and other information.

These two descriptive elements provide the necessary framing for the three following ones, which involve analysis based on the conceptual framework described in the above, of,

- the use of the indicators
- the influence and role of the indicators
- the possible explanations for the types of use and influence observed

The two cases are not considered as directly comparable in their context or application, and will therefore not be subject to a strictly comparative analysis. Rather they illustrate different ways that
indicators have been used in strategic transport policy making for sustainability. Nevertheless a cross-cutting discussion will be conducted as part of the conclusions in section 4, in order to identify any common or contrasting points.

We have formulated a limited set of research questions for the two studies. They are derived from a set of general propositions concerning the use and influence of indicators that were formulated in the POINT framework (see further in Gudmundsson et. al. 2009), and narrowed down to issues we consider particularly pertinent for the sustainable transport policy context and the two case situations.

The general research question for this study is as already outlined; to what extent indicators are used and become influential in strategic policy making for sustainable transport, what role they play in this context, and how we can explain why it is so. The following are more specific questions that we will pursue in this study:

- Does the existence of a Management-By-Objectives regime as in Sweden promote the use and influence of indicators?
- Does of a regime based on quantified targets on the other hand lead to a potential bias towards influence of indicators associated with such targets compared to others without them.
- Will a close participation of users and stakeholders in indicator design and development affect and enhance the use and influence of the indicators.
- Does the context of ‘sustainable transport’ policy provide special conditions for the use of indicators and for their influence on policy; more specifically will the ‘structuredness’ (Turnhout et. al. 2007) of the policy determine the influence of the indicators?

These research questions are not considered as hypotheses to be rigorously ‘tested’, nor are they intended to be very restrictive for the investigation. We will return to discuss them specifically in the final section of the report.
2. SWEDISH CASE – INDICATORS IN A 'MANAGEMENT- BY-OBJECTIVES' REGIME

2.1 Introduction to the case study

The case study proceeds in five steps. We first clarify the context for the case, namely the system of Management by Objectives and Results in Sweden as well as the institutional set-up. Second, we describe the production, content and dissemination of the ‘SIKA’ reports on follow-up of the Swedish transport policy objectives, and in the last three steps we analyze the use and influence of the ‘SIKA’ indicators and attempt to explain the observations found, using the framework defined in section 1.

2.2 Context: Key features of Sweden’s transport policy

Swedish public governance in general
Sweden is a Scandinavian parliamentary democracy with a large public sector. A special feature of Swedish government is the constitutional separation of policy and administration, where many decisions are delegated to independent agencies, and government influence policy implementation through general prescriptions to the agencies. (Lindbom 1997; Yesilkagit & Christensen, 2010). The model is sometimes called ‘dualism’ or the ‘East Nordic Government Model’. In practice it does not differ all that much from what is the case in other Nordic or European countries.

Since the late 1980s, the governance system in Sweden has been widely based on the idea of Management by Objectives (MBO), where the overall annual budget appropriation and reporting is one of the key processes to manage policy performance (Modell and Wiesel 2008). This idea has been adopted as a gradual process and is implemented into the ‘dualism’ context in somewhat different ways for each sector, such as for example transport. Within the general literature on MBO it is common to distinguish between MBO as a ‘philosophy’ versus as a ‘steering technique’. As a philosophy MBO generally seeks to provide public organizations some freedom from detailed steering by rules, provided they are able to deliver on the overall objectives defined politically. As a steering technique MBO embraces three elements: 1) Clear, stable, operational objectives, often subdivided into a hierarchy of objectives; 2) Performance measurement including reporting on goal achievements through indicators; and 3) Following up on performance with good performance rewarded and bad performance is punished (Christensen & Lægreid 2002: 156; Rieper et. al.. 2000: 182; Rombach 1991: 18-19). Without some of the MBO technique elements it is difficult achieve a coherent management system integrating administrative and political activities (Sørensen & Gudmundsson 2010).

Sweden is currently governed by a centre-right coalition including members from four political parties, the prime minister belonging to “The Moderate Party”. Between 2006 and 2010 the coalition had the majority, which was lost in 2010 elections. In the previous four-year period a one-party Social Democrat government was in office. The study is focussed on the period before 2010.
Transport policy institutions
Transport policy is managed by the Swedish Department of Enterprise, Energy and Communications (hereafter SDEEC). There are two elected ministers, one for Enterprise and Energy, and one for Communications (including transport). There is also several politically appointed State Secretaries.

The SDEEC is responsible for a number of government agencies and public enterprises. At the time of the case study\(^1\), the main transport agencies and enterprises were the following:

- Swedish Road Administration
- National Rail Administration
- Swedish Maritime Administration
- Swedish Transport Agency
- National Public Transport Agency
- Swedish Institute for Transport and Communications Analysis (SIKA)
- Swedish National Road and Transport Research Institute

Another important Government agency of relevance for sustainable transport is the Swedish Environmental Protection Agency connected to the Ministry of the Environment. This agency is responsible for a set of 15 national environmental objectives, which also applies to transport.

In ‘Riksdagen’, the Swedish Parliament, seven parties were represented up to the 2010 elections. The parliament is organized in 15 committees, each with its own area of responsibility. The committee responsible for transport is the Committee on Transport and Communications.

Transport policy and Management by Objectives
Key components of the MBO regime in transport policy consist of a long-term overarching objective for transport in Sweden, with a set of subsidiary objectives, and a range of intermediate or short term targets for each of those. The objectives are all agreed by the Swedish parliament and government. Overarching objectives have been formulated since 1963 and have been revised on a number of occasions. A new formulation of the objective with an emphasis on sustainability was given with the 1998 transport strategy. In 2001 equal gender balance was added as a subsidiary objective. This goal structure prevailed mostly intact until 2009, where the next major revision was undertaken, although the overall objective was still kept (Näringsdepartementet (2009b))

The present overall objective of transport policy is “to ensure socially and economically efficient and long-term sustainable transport resources for the public and industry throughout Sweden.”

Until 2009 there were six subsidiary objectives. For each subsidiary objective there were from one to five intermediate targets. In 2009 the six subsidiary objectives were collapsed into only two; but the previous subsidiary ones were more or less maintained as ‘themes’ within the two new subsidiary objectives. The sets of objectives are shown in Table 6. For some of the objectives, such

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\(^1\) By April 2010 two new government agencies were established. The Swedish Transport Administration was formed by merging activities of the former Swedish Road Administration, Swedish National Rail Administration, and some parts of other bodies. Another new agency, Transport Analysis, was formed, including most of the activities of SIKA. The case study address the time before these changes.
as traffic safety and emissions of carbon dioxide there are quantitative targets, for others there are not, and in some cases only broad qualitative formulations of objectives are given.

**Table 6 Transport political objectives in Sweden**

<table>
<thead>
<tr>
<th>Overall objective</th>
<th>Objectives until 2009</th>
<th>New objectives from 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall objective</td>
<td>The overall objective of transport policy is to ensure socially and economically efficient and long-term sustainable transport resources for the public and industry throughout Sweden.</td>
<td></td>
</tr>
</tbody>
</table>

**Subsidiary objectives**

- Basic transport needs of the public and industry may be satisfied.
- Promote positive regional development.
- Meets both men’s and women’s transport requirements.
- Allow high transport quality for the public and industry
- No one should be killed or seriously injured as a result of traffic accidents.
- Nature and the environment are protected from damage.

- Functionality objective focusing on accessibility.
- Integration objective focusing on safety, environment and health.

The cornerstones for the delivery of the transport political objectives in Sweden are the long term strategy planning and the short term action planning. These plans are renewed with ca 5 year intervals. Strategy planning regards the overall frameworks, objectives and priorities for the entire transport sector (Lundberg & Persson 2002: 20). The strategy plan is prepared the SDEEC with input from the agencies, and then approved in Parliament (Hultkrantz & Nilsson 2004: 3, Lundberg & Persson 2002: 20).

After the approval the Government issues a so-called planning directive for the state agencies, which are responsible for the subsequent action planning. Action plans contain for example specific infrastructure investments. The Action Plans are approved by the Government, but not by the Parliament (Hultkrantz & Nilsson 2004: 3). A special feature of the latest set of plans was that they were made jointly and integrated for road and rail (helping to pave the way for the recent merger of the two organisations).

There is also an annual cycle, in connection with adoption of the national budget. Here the final decisions to allocate funding to investments mentioned in the Action Plans and other measures are made. The section on transport and communications in the state budget typically consists of more than 100 pages. (see e.g. Regeringen 2009). They include a review of progress towards the transport political objectives (see more below).

After the budget is approved the government issues so-called Letters of Appropriation to the transport agencies, with instructions concerning implementation of the decisions. This is the main mechanism to convey the governmental prescriptions to the agencies. The agencies incorporate the instructions into their own strategic and business plans.
The transport political objectives prevail in some form through all of these levels. However, not all of the objectives and targets are necessarily transposed to each level or agency or year. Moreover, at each level the general objectives are usually supplemented by others, defined from more ad hoc political concerns, and from internal strategic plans for the individual agencies.

2.3 The indicators of the case study: SIKA Reports

A range of documents and other mechanism are used to support and control progress towards the fulfilment of the transport political objectives. A central document is the annual reports Follow-up of the Swedish Transport Policy Objectives, produced by the Swedish Institute for Transport and Communications Analysis, ‘SIKA’ (e.g. SIKA 2009). These reports have been published annually since 1999; they are the key focus in this case study. The SIKA reports are partly based on individual reports produced by each transport agency. SIKA consolidates these reports, and provides an overall assessment to the government and parliament.

A main function of the SIKA report is to provide input in time to prepare the ‘communications’ section in the annual state budget as part of the MBO strategy. There is limited time (typically only one month) to process the agency reports and prepare the SIKA report for submission to the budget process each year. The report also feeds into preparations of the governmental strategy plans for transport as mentioned above. The main element in the SIKA report is an assessment of progress and results with regard to the overall, subsidiary, and intermediate objectives. Several indicators are used. However, a specific unique set of indicators to be used in each annual report has not been defined; hence it is not strictly an ‘indicator’ report as such, the main focus is the assessment of progress towards objectives with indicators as one of the instruments.

We have studied the use and influence of these reports, in general, and with a special emphasis on the 2008 follow up report (SIKA 2008) which was used, e.g. for preparing the budget for 2009 (Regeringen 2008) and the transport strategy plan proposed by the Government in autumn 2008 (Näringsdepartementet 2008).

The 2008 report has 80 pages divided into six main chapters, a general one for the overall objective and one for each of the subsidiary objectives (two are collapsed into one chapter). In several of the chapters the analysis is divided into sections dealing with each transport mode. Often different indicators are used to report developments for each transport mode. In the report SIKA also discusses the relevance and quality of the used indicators (e.g. SIKA 2008: 20) as well as the availability of data (e.g. SIKA 2008: 5).

The reporting for each objective differs with regard to the application of indicators. Each chapter has a combination of statistical or other quantitative indicators, and qualitative assessments. Some data are presented in tables, others as figures. Some of the indicators are purely descriptive, while others are more directly evaluative with regard to certain objectives and targets. Most indicators applies time series data values while the timeframes used vary greatly from just two years to more

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2 By April 2010 SIKA is changed into a new authority, ‘Traffic Analyses’, the follow-up reports are expected to continue in a renewed form.
than 30 years for some general transport trends. Other indicators present cross sectional comparisons, such as the difference in accessibility from each airport; or differences in numbers of fatalities across transport modes. For one objective, the total number of fatalities in traffic, there is a clearly normative indicator showing explicitly the gap between the actual trend and the political target. For several other objectives, the indicators show a situation that allows an evaluation to be made in the text. For assessment of the overall objective no indicators or composites are used, only text.

A few examples are given here. Figure 1 shows the development in the marks car drivers gave on their satisfaction on the operation and maintenance of state roads, which is measured annually. This is used as one of seven indicators of performance for the objective of ‘a high transport quality’ (SIKA 2008: 29). Some comments but no clear evaluation of the trend is provided in the text.

![Figure 1. Satisfaction with road conditions among road users. (blue=private; red=commercial) (extract from SIKA 2008:29)](image)

![Figure 2. CO2 emissions from road transport. Index 1990=100. (green= private cars; red=trucks; blue= total). (extract from SIKA 2008: 47)](image)
Another example is emissions of CO2 from road transport (Figure 2), which is used as one of the indicators to report on the subsidiary objective to protect nature and the environment from damage, and more specifically an intermediate target to stabilize emissions form transport in 2010 at the 1990 level. The evaluation states that ‘very strong new measures’ would be required to reach the existing objective (SIKA 2008: 47).

<table>
<thead>
<tr>
<th>OVERALL OBJECTIVE</th>
<th>Development towards the long-term objective</th>
<th>Are the subsidiary objectives complied with by the decisions made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>Yes</td>
<td>Yes?</td>
</tr>
<tr>
<td>Regional development</td>
<td>Uncertain</td>
<td>Objective lacking</td>
</tr>
<tr>
<td>Gender equality</td>
<td>No</td>
<td>Objective lacking</td>
</tr>
<tr>
<td>Transport quality</td>
<td>Yes</td>
<td>Yes?</td>
</tr>
<tr>
<td>Safe traffic</td>
<td>Uncertain</td>
<td>No</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Effect on climate (CO2)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>- Air pollution (SO2, NOx, VOC)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>- Noise</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>- Ecocycle adaptation</td>
<td>Uncertain</td>
<td>Objective lacking</td>
</tr>
<tr>
<td>- Impact on natural and cultural environment</td>
<td>Uncertain</td>
<td>Objective lacking</td>
</tr>
</tbody>
</table>

Figure 3 Overall assessment of objective fulfilment in a SIKA report (2006).

All in all the assessment of the fulfilment of objectives is mixed (SIKA 2008: 5-8). For several objectives a ‘partial’ fulfilment is reported, for several others the objectives are not fulfilled. For many intermediate targets an assessment cannot be made due to lack of proper data, indicators, or goal specifications. There is no attempt to provide an aggregate assessment for the overall objective; the discussion mentions that only one agency has made an attempt to make such a summary assessment for their subsector but referred to a lack of methodology to aggregate across the diverse range of effects. Nothing is said with regard to overall sustainability, or the social and economical efficiency of the observed development as a whole.

Figure 3 shows a summary table provided on the 2006 report (which was translated to English). The message conveyed is quite similar to the one in the 2008 report that we study more closely.
2.4. Analysing the use and influence

The use of the indicators

The primary official application of the SIKA report is to help prepare the annual budget proposition from the government.

The document review shows that the 2008 SIKA report is indeed directly used in this function as it forms the basis for a two page section with a current status for fulfilment of transport policy objectives in the ca 100 page long chapter on ‘communications’ in the budget proposition (Finansdepartementet 2008). The section uses only text and no tables or graphics. It often quotes directly the summary of the SIKA report, while in some cases the assessments are reformulated and deviates slightly from the report. It is mostly the indicator based evaluations that are used, although the text cites many numbers from the SIKA report. The 2008 section is very similar to the ones in budget propositions in earlier years, which also are based on the SIKA reports sometimes even more directly than in the 2008 version. The SIKA report seems to be the only source for the section on general objective fulfilment in the budget proposition’s communications chapter, but there are other review sections based on other sources, such as the national audit office and individual agency reports. The (longer) sections on each mode (road, rail etc) in the communications chapter have their own subsections with review of goal fulfilment, based directly on agency level reports.

Another use of the SIKA report is as feed in to the governmental strategy plan, in those (ca. every five) years where they are prepared. SIKA had several roles in the process to prepare the 2008 strategy plan. This includes the preparation of transport forecasts and other data for the plan, giving advice on a range of topics from assessment methods to policy objectives (SIKA 2007), and even to provide critical comments to other elements of the draft plan in the hearing process. Other government agencies and external stakeholders also refer to the transport political objectives and associated indicators in their - sometimes openly critical - comments to the draft plans (e.g. as reported in Näringsdepartementet 2008: 160 and throughout the document). These comments sometimes, but not necessarily always, use the same indicators as SIKA.

The plan contains a brief section directly using the SIKA assessment report on the transport political objectives. It is very similar to the section in the budget proposal mentioned above, to a large extent quoting and concurring with SIKA’s assessment, also with regard to areas where objectives are not met. This section covers ca two pages of the 246 page proposition. The SIKA assessment is also cited in several other sections of the plan, for example where specific issues such as environment are discussed. Again it must be stressed that these quotes and uses are not explicitly indicator based; it is a more qualitative review with a basis in SIKA’s summary evaluations per objective in the follow-up report. At the end the plan lists 22 reports that form the main analytic foundations for the plan (Näringsdepartementet 2008:216) among which the SIKA report is mentioned.

Interviewees from the central government department (SDEEC) also described these kinds of uses of the SIKA follow up report as input to formulate text in policy documents, although one interviewee in particular stressed that it is also used by the department in other ways. For example the report also contributes to the evaluation of the individual agencies’ goal achievement, and also for drawing up their Letter of Appropriation for the coming year, even if these functions have their own reports. The transport agencies themselves use the SIKA report to a lesser extent and for the
agencies the role of the SIKA report is generally seen as limited. An executive in a transport agency emphasized that he had not considered that particular publication for the last several years. It seems that the agencies do not engage in these reports to be informed, but to avoid undesired mentioning of their own agency in the reports.

Politicians serving as members of the Transport Committee in the Swedish Parliament were also interviewed. They reported some, if limited use overall. One of the interviewed politicians reported to have used the SIKA follow up reports regularly, in particular when that member’s party was a part of the governing coalition. The SIKA report was used, for example when the distribution of funding between road and rail was debated, and debating the funding for traffic safety, arguing that a reallocation of funds was needed to be able to reach the objectives. This member also reported using SIKA follow-up reports for external communication (writing newspaper articles etc). Other parliamentarians among the interviewees also expressed that they read for instance the summary or conclusions of the SIKA report in question, or could recall a presentation by a SIKA employee. But overall, the report from SIKA seemed to be of little direct use by the Members of Parliament. They were not keenly aware of them or their conclusions in particular.

The influence of the indicators
One thing is use, another is influence. Our studies of the SIKA report on Swedish transport policy do not enable us to point to specific political decisions which would have been different had it not been for indicators put forward or evaluations made based on them in the SIKA follow up reports. The key policy documents (budget proposition; strategy plan proposition) do not directly reveal any influence of the report or the indicators as such. The indicators and the policy elaborations are in separate sections of the documents.

Nevertheless, interviews allow us to suggest some limited degree of indicator influence, partly at the interpersonal level where strategies and policies are debated and the collective level where policy making processes are organized and performed. We will discuss this in terms of the different roles of indicators introduced in section 1.2.

As noted an instrumental role of indicators means that indicators are used and directly influence the functional aspects of policy, goals, strategies, or measures; either serving to promote change or to confirm existing policy. This is the conventional understanding of what indicators do. The SIKA indicators do generally not have such a role in a direct sense. The inclusion of the SIKA indicators in the chapter in the Transport Budget Section seems to be more of a convention or habit than it is actually used as a starting point for the subsequent prioritizations in the Budget. The interviewees indicate that the reporting of status on policy objectives does not have any direct consequences for the actual budget. The indicators are one of the many input that informs the SDEEC in their dealing with policy planning and management of agencies, but it is difficult to point to a direct instrumental use of these reports. Among the Members of Parliament the instrumental role also seems to be very limited. It is illustrative for more parliamentarians when one of them said that when there are so many objectives, where some are on the track and others are not, the reaction can be indifference. For example, even though indicators for several years revealed that traffic safety and the emissions of carbon dioxide were on the wrong track according to the objectives, and these topics were discussed, no extraordinary measures were taken to reach the objectives. As noted above one of the interviewed Members of Parliament believe the use of the indicators was influential, in the sense that the member was able to convince associates about the need to change budget priorities.
regarding rail versus road investments. In this particular case we could suggest that the SIKA indicator evaluation played an instrumental role at the level of functional policy. However, the study cannot exclude that counterparts involved in this decision would have different views on the process, and even if not so this could have been a sole example. The general impression from the interviews is that this kind of influence was rarely occurring.

A conceptual role is that indicators contribute to expand a knowledge base or introduce new ideas; they are not directly used or influential with regard to functional aspects such as goals, and actions, but influence less functional, explicit or tangible aspects such as concepts, discourses, etc. This is what we see as a more likely role of the SIKA report which was backed by almost all interviewees. Interviewees in government agencies thus point out that the reporting in the budget section on transport objectives by use of the SIKA indicators might have indirect and conceptual consequences in the sense that the indicators influence the knowledge and awareness of the civil servants dealing with the budget. Also for the Members of Parliament the influence of the SIKA indicators is partly conceptual, as illustrated in an interview by one Member, who referred to the chapter in the Transport Budget Section on achievements of objectives and said that the text on attainment of transport policy objectives is not applied directly in the Parliamentary Transport Committee, but is something being read and noticed; and of importance somehow but mainly as background material.

Some interviewees stress that the continuous information on weak performance with regard to the traffic safety objective had political impact. One member stated that the number of 500 fatalities annually in the reports was somehow important, it became a reminder, particularly because of the stability of the number year by year maintained a disturbing distance to the objective. Hence, the figure of fatalities became important, though indirectly and in a longer term perspective. The information on traffic safety has increased the political awareness, and created a larger scope for research and factual debate, another interviewee stressed. The constant figure seems to have played a conceptual role, by influencing the concerns and also the sense of responsibility of the members. Generally it seems that a combination of continuity and uniformity in the reporting, a dissonance observed between goals and status created, and some sense of responsibility or accountability can support this type of influence. However it is not always possible to clearly distinguish the effect of indicators in SIKA reports from other sources of information.

A symbolic role is that indicators are used to justify decisions that appear to be already taken or are used to give a rational appearance to some policy. The indicators are not used or influential with regard to functional aspects, but may influence other aspects such as process and power positions, e.g. by allowing a status quo to prevail uncontested or an institutional practice to be maintained. It is safe to say that the SIKA reports and indicators generally play a symbolic role in some sense, as they serve to confirm the systems’ and the involved actors continued commitment to the set of policy objectives and the associated values behind them, which are rather widely agreed. This would be generally consistent with Sweden’s government model of managing-by-objectives. On page 1 in the government’s strategy plan it is stated that the measures that will be adopted based on the plan will and must contribute to fulfil the transport political objectives (Näringsdepartementet 2008:1). When the indicator assessment of the objectives is included in official policy documents, which state the government’s policies and proposed budget in such a way, it gives the impression that these policies and allocations are in accordance with the assessments; if not, there would be inconsistency. As noted we did not encounter many examples where any specific decision or policy change is adopted with direct reference to an indicator; hence one could be tempted to assume a mainly symbolic role by default. A direct example of a symbolic role is if indicators allow
legitimizing decisions that are already taken. Interviewees on the indicator producer side would not exclude that Government, agencies or industry at times do apply SIKA follow up report indicators selectively in successful areas to demonstrate that policy and plans are on track. Actors on the user or policy side did not make such concessions explicitly, although a leading parliamentarian said that often the goals are just nice words on paper. That the role is only symbolic would be contradicted for example by the fact that the SIKA reports are frequently used as reference in critical written hearing responses to the government propositions, which are then quoted extensively throughout Swedish government policy documents, in this case particularly the Strategy Plan (Näringsdepartementet 2008). ” The hearing comments illustrate that the reports with indicators included do feed debates. However that indicator-based critical comments are quoted in government reports does not necessarily mean that the comments imply an instrumental role for the indicators. The quotes could also be interpreted as a mechanism to merely symbolize accountability of Swedish democracy.

A process role is that indicators affect the way some aspect of policy making in conducted; in this role they are not directly used or influential with regard to functional aspects such as explicit goals or measures. One central interviewee from the SDEEC emphasized that the most important role of the SIKA indicators exactly is that they show the state agencies that their activities are scrutinized by an independent authority. This role of indicators is influential because – as it was expressed, what is followed up is done. This role of indicators could be seen as a process role, in the sense that the production of the indicator report itself influences the transport agencies’ activities; it raises their attention to performance.

Finally, a distortive role involves indicators misinforming policy or fostering counterproductive behaviour with regard to intended policy functions. That could for instance be the case if topics covered by quantitative and seemingly objective indicators steer attention away from topics that might be more relevant but difficult to pin down and measure with indicators. We formulated as a research question if the existence of quantified targets could lead to a bias towards influence of indicators associated with such objectives compared to others without them. The SIKA reports themselves tend to be more clear and easy to use in the areas where there are quantitative targets and available data to measures progress, such as traffic safety and some environmental impacts. We heard several times in interviews that measurable goals and indicators obtain the most attention. This is stressed by politicians as well as civil servants although not necessarily with direct reference to the SIKA report. The continuous reporting on a non—declining number of fatalities each year mentioned above could be a specific example. These references were predominantly to the objectives, not the indicators in themselves, even if it is sometimes the availability of measurable indicators that allow objectives to become quantified. We do not have any evidence to suggest that any of the existing indicators are considered directly distortive, but of course there were various critiques of the current assessment process and the limitations to existing indicator set. Rather than abandoning certain indicators the predominant strategy seems to be wish to develop the framework for evaluating the objectives and policies in various directions, some involving indicators, others not.

All in all it seems confirmed that the instrumental role of the SIKA indicators is very limited. Some conceptual influence may have emerged through the continued focus on reporting objectives and results and a more symbolic role with regard to confirmation of existing concerns, priorities and procedures may be pervasive, if also vague. The SIKA report with its indicators does not seem to be totally without influence. However, first of all indicators do not have a very clear, or prominent
place throughout the reports, and secondly the SIKA reports themselves compete with many other sources of influence on policy making. The reports may have some role with regard to process, helping to maintain a generally performance oriented working approach. We will now look at possible factors to explain these observations.

**Explaining the influence**

We will discuss the importance of indicator, user and policy factors for explaining the results as defined in section 1 (see also Gudmundsson et. al. 2009: 60-65). We will mainly focus on the key issue for the Swedish case study namely the expected significance of a Management-By-Objectives regime for promoting the use and influence of indicators. We can consider this as predominantly a policy factor in the sense of the analytical framework, but we will also touch upon other factors.

Overall it appears that the attachment of SIKA reported indicators to the transport political objectives of Sweden is so strong that most interviewees do not distinguish clearly between the use influence of the objectives and the impact of the indicators. In the analysed documents it is mainly the evaluative statements with regard to fulfilment of objectives that are quoted not so much individual variables or values. In the interviews it is also the objectives that stand out, while associated indicators are not referred much to in themselves. When asked about the importance of the linkage, one interviewee stated that also without connection to the objectives, the SIKA indicator report would have an impact, although the impact increases when the indicators are connected to objectives, because one can say the objective will not be attained. The linkage between objectives and indicators allows for supplementing the numbers with an evaluation about goal achievement, and it seems to strengthen or even determine the use of the indicators, at least those for which some targets and associated indicators exist.

The policy influence of the indicators therefore depends to a large degree on the strength of the objectives themselves and the way they are perceived and dealt with. Here the results suggest that the transport political objectives are not as important in Swedish transport policy as one might expect from the frequent official references to them. First of all the goal and indicator reporting is not clearly connected to the ‘decisive’ parts of national budget or transport strategy plans. The six interviewed politicians were asked about their view on the objectives. None rejected that Sweden should have such overall transport objectives, but the interviewees’ involvement in the objectives differ. Some politicians are sceptical, and state that there is little political debate about the objectives, that they are mostly words on paper, or that they are not possible to accomplish, so that that goal achievement has less importance in the debates. Others find that although the objectives are not sufficiently clear they are important, or at least that the objectives should play a more prominent role in the debates.

It seems that within the Swedish transport sector the SIKA reporting is associated more with MBO as a philosophy than as a steering technique. The transport policy objectives are not uniformly clear and operational, and no attempt is made to prioritize or explicitly trade off among them. Moreover the performance measurement is not followed up at the political level, and the overall performance is for example not subject to reward or penalties. In addition there are other sets of objectives, principles, and priorities inserted politically into plans and policies, than the official transport political objectives. This limits the effects of any reporting only on the official objectives. The situation seems a little different for reporting at the level of the individual agencies, where some degree of steering takes place based in the annual appropriations letters, but this process is separate
from the reporting of performance at the level of the SIKA reports. Based on the observations in the case study we would propose that policy use of the SIKA indicators in the Budget, the Strategy Plan and by the parliamentarians reading summary and conclusions are increased by the connection of the indicators to objectives and a system of MBO, because it is required by the management system that everyone formally subscribe to. However, the policy influence of the indicators seems not to increase similarly, since the MBO system with regard to the political objectives and the SIKA indicators to some extent is decoupled from actual policy making and influence. Attaching indicators to objectives and MBO systems increase use, but seem not to increase influence in the same degree. Hence, the relative decoupling of the objectives and associated indicators from the general system of MBO steering, and a disorientation of this system through ‘competing’ sets of objectives may partly explain the limited influence of the SIKA follow up reporting. The decoupling seems most significant with regard to limiting the indicators in playing an instrumental role, whereas it seems that the process of recurring reporting may still contribute to maintain a conceptual level of influence. The reporting appears also partly to be there for symbolic reasons; to reconfirm a shared commitment to the MBO philosophy as such, even if the objectives are not always vigorously pursued in a steering mode.

Indicator and user factors also come into play here. First of all the SIKA report provides what can be called ‘system’ condition indicators, rather than indicators measuring the performance of individual agencies. The report does not help much to interpret the performance of the individual agencies management-wise neither for the politicians nor for the central leading civil servants in the SDEEC, a fact that most likely further limits the influence of the SIKA-report on the agencies activities. Also the 84 page report itself is not very easily read as an indicator report. It contains a mix of tables, graphs and evaluative statements (probably in part due to the dissimilar degree of operationalisation of each objective) and for some themes there are neither data, nor conclusions. There is a qualitative, evaluative summary, and this is what is mostly referred to in the various government documents. The use of the indicators in the SIKA follow-up reports seem to be more widespread in the civil service of the SDEEC where the reports are after all systematically read and used both for internal and external communication, compared to low use among the politicians. This may be because the ministry is populated by academics whose job is to handle measurable and quantifiable data according to procedures, while the role of Members of Parliament differs in this regard. However, even if this was not said explicitly in interviews, it may also be in the interest of the central civil service to maintain this kind of activity in order to tap into the degrees of freedom and power offered by the MBO system, that is to pursue objectives and report performance rather than being steered by direct legal instruction. Similarly, according to general studies of MBO in Sweden politicians have adopted a ‘two decisions-model’ which allows them to lean on the rationality of MBO as a steering model rhetorically, while they at the same time can downplay it in practice and make actual political decisions somewhat independently of it (Holmblad Brunsson 2002).

Other indicator factors can help explain some variation in influence across topics. In particular the areas with clear objectives and associated measurable and perceived reliable indicators according to some interviewees appear to also dominate in the debates, in accordance with the second research question. This is for example reportedly the case for some environmental and safety objectives. Some politicians raise the issue that certain functional qualities of the transport system (e.g. contributions to economic growth and regional development) were not adequately dealt with in the SIKA reports, exactly because there had been too little attention to treat them on par with the easily
quantifiable objectives On the other hand we can note that the SIKA reports also comment on and discuss the objectives where goals and associated indicators are less clear, which would support some attention to those areas in the debates as well.

If we return to the policy factors we can consider the wider issue of policy ‘structuredness’ introduced by Turnhout et. al. (2007). Among the four policy situations (well structured, unstructured, badly structured and moderately structured), Swedish transport policy appears from the interviews to have features similar to the moderately structured situation, characterized by quite large consensus on the policy goals, but less so on how to reach the goals. In these types of problems science can become part of the debate, as the different sides tend to strengthen their position by the use of knowledge as arguments (Turnhout 2007: 224). We saw some evidence of this when different political parties and governmental agencies apply and advocate for different positions using reference to various figures. However, the controversies appear not so much to be about the objectives or how to measure them, they are more about whether or not the proposed strategies and measures are sufficient to fulfil the already agreed objectives in the future; and hence more whether the government’s forward analysis and efforts are sufficient. Again we see that the word ‘indicator’ is practically not used in the comments to official documents and that ex post data issues do not appear to be a prominent element in comments to for example the government’s strategy plan. The relatively low explicit controversy over the objectives and associated indicators could have several explanations. SIKAs several years of reporting on the objectives could have contributed to the shaping of a common conceptual understanding. However the explanation could also simply rest with limited interest in objectives, compared with the often keen awareness of different policy alternatives.

In parallel to developing the budget and the 2008 strategy plan, government in fact requested SIKA to propose a new structure to the transport political objectives and a new processes for their assessment with indicators. The official purpose of this initiative was to make the objectives more clear and understandable, and more easy to follow up and use for trading off alternatives (Näringsdepartementet 2009:7). It was put forward that the foundation for all MBO must be measurable objectives, performance measurement, and follow up analysis, which amounts to exactly the elements that would turn the ‘philosophy’ of MBO into the ‘steering technique’. A revision of the target structure was undertaken, whereas the other elements (follow up etc) were still being elaborated after the period studied here. The first report from SIKA’s successor agency after the revision of the objectives (Trafikanalys 2010) appears quite similar to the SIKA reports, although the results are illustrated with in more easily interpreted graphics. It is also mentioned that a more comprehensive and consistent set of indicators is under development. The relatively long period in which the objectives, the reporting procedures and the associated indicators now have been under review and development may also have contributed to reduce the use and influence of the SIKA follow-up reports. One interviewee found that in a transition period they operated in a “goal vacuum”, which probably contributed to limit the use and influence of the indicators, because SIKA to some extent was reporting on the attainment of other objectives than those objectives that the government in reality subscribed to.
2.5 Summary and conclusions on the Swedish case

All in all, the report from SIKA with associated indicators seems to have been used to some degree by a few Members of Parliament but less or not at all by most other members; it has been used somewhat more by parts of the civil service in the SDEEC, and some by a number of external agencies and stakeholders, in connection with preparation, assessment and commenting on strategic Swedish transport policy, if we consider specifically the key 2008 transport policy documents. There may have been somewhat different patterns of use for previous editions of the same report since 1999 with regard to previous policies as the recent period has seen relatively lengthy reform processes that may have further weakening efforts to ‘push’ the SIKA report forward, although the present study does not suggest a dramatically different situation earlier.

The influence of the report appears to be low generally and its instrumental role for functional policy content quite limited, compared to what we would expect in a MBO regime like Swedish policy. It is possible that the report has influenced policy making both at the political level and in the SDEEC by playing a conceptual role in policy making processes, where it helps maintain and confirm some degree of awareness of and commitment to the set of transport political objectives, and it seems rather obvious that it plays a symbolic role with regard to maintain a MBO-like approach in the area of transport policy generally. The explanations for the relatively low influence and mainly conceptual and symbolic roles seems to lie with several factors in connection with the general policy setting and in connection with the specific/historical situation and character of the specific reports. First of all the SIKA report is a rather broad output, which is not built up around a set of indicators as such, but provides a more qualitative evaluative assessment of the fulfilment of a diverse set of objectives. The indicators that are used in it are only to a limited degree connected to the MBO regime used to manage the individual transport agencies. They are – even if cited ’loyally’ in policy documents – first of all not clearly linked to sections where specific decisions or plans are defined, and secondly only reporting on a limited ‘official’ set of objectives, not the full set that the government or the agencies pursue in practice. The reports are moreover not particularly well designed to serve a background for political decisions as they are long, partly inconclusive, and not directly actionable, and the politicians see them as one out of many inputs to their processes of policy making. The reports are connected to a general MBO approach, but the politicians are apparently not fully bound by this system in general. It could have been a shared interest among politicians and civil servants to maintain this form of system as more of a ‘philosophy’ approach with a mix of limits and freedoms for both sides, than as a strict steering tool.

Over time the SIKA reports may have contributed to stabilise this system, but since it also has provided for continuous critiques of existing objectives and data it may also have contributed to the present reform process that appears to be aiming towards a more consolidated and ‘control like’ regime, although it remains to be seen if such a system will actually emerge. The study suggests that an MBO system can lead to more use, but not necessarily stronger instrumental influence of indicators; that conceptual and symbolic roles can have some influence and that quantitative targets and indicators can contribute to emphasize some issues in policy over others.
3. EU CASE – INDICATORS IN A POLICY ASSESSMENT CONTEXT

3.1 Introduction to the case study

As the Common EU transport policy has emerged and materialised in significant decisions over the last decades it has been considered increasingly important to predict and monitor its results. Various sets of data and methods have been used to help in assessing the effects of the EU transport policy in parts or in the whole. A basic element is European transport statistics as published by the European Commission (EC 2009a) but there are a wide range of other information sources and tools used including sets of indicators. This case will look at a set of indicators developed and applied for one particular strategic policy review in 2005-6.

A keystone of recent European common transport policy was the 2001 White Paper “European transport policy for 2010: time to decide” (EC 2001) setting out priorities and initiatives for the next decade to come. In this document was included a specific pledge to undertake a Mid-Term Review in 2005, to check if the measures were implemented and the objectives fulfilled. The results of this review were reported in the communication Keep Europe moving (EC 2006a) and an associated Impact Assessment (EC 2006b). While the communication in many ways represent a continuation of the Common Transport Policy, it also proposed a number of adjustments to the existing policy objectives and priorities that some observers see as significant (Jarzembowski 2007; Stead 2006).

As part of this review sets of transport policy indicators were developed and applied, most significantly through the so-called ASSESS study (=’Assessment of the contribution of the TEN and other transport policy measures to the midterm implementation of the White Paper on the European Transport Policy for 2010’). In the ASSESS study indicators were connected to a range of models and used to forecast effects of various scenarios for the adoption of transport policy measures towards 2010 and 2020.

In this case study, the aim is to analyze and explain the influence of the indicator set developed in ASSESS on the process of the Mid-Term Review (hereafter MTR) and its main outputs Keep Europe Moving (hereafter KEM) and the Impact Assessment (hereafter IA). We will in particular focus on some the role of the ASSESS indicators in the adjustment to key policy objectives.

This case study also proceeds in the five steps. First we very briefly explain the context for the case study (section 3.2), namely the European transport policy and the institutional set-up with a focus on the 2001 White Paper and the MTR. Second (section 3.3.), we introduce the ASSESS indicators and the process of its application to the MTR, and in the following section (4.3) we analyse the steps of use influence and explanations according to the approach defined in section 1 of this report.

3.2 Context: Key features of European transport policy

European transport policy
Even though already the Treaty of Rome saw transport as one of the foundation for the European community, for several years very little happened in terms of a common policy. In 1983 a senior member of the Commission’s Transport Directorate talked about transport as “the saddest chapter in
the history of European integration” (Stevens 2004: 36). This changed from 1985 onwards, where stronger common rules governing transport policy started to be applied at a European level\(^3\), although at a pace which means the still today significant parts of the envisaged frameworks are not fully implemented.

Transport policy has thus been a part of general community policies from the early beginning but it has a relatively short effective history behind it. Today, the common transport policy has a central place in the European integration project, with key features such as liberalisation and integration of markets for road, rail and air transport, and the development of the TransEuropean Transport Networks. Transport is addressed in the current version of European Treaties notably under Title IV ‘Transport’ and Title XIV on the Trans European Networks (EU 2010; 85ff and 124ff). It is also important to note that according to Article 4 of the Treaty Transport is an area where competence is shared with Member states; many aspects of transport policy remain under the jurisdiction of national and local authorities, with a limited or no role for the European Community,

At the time of the case study European transport policy belonged to the so-called first of the three pillars of community policy along with economic, social and environmental policies (Warleigh-Lack & Drachenberg 2010: 210-213). In the first pillar the ‘Community Method’ prevails, in which the legislative functioning is a triangle between the Council, the Parliament and the Commission, with the Commission as the only body to formally propose legislation to be adopted by the other two institutions according to specified procedures.

There are various tools available for EU transport policy making, such as decisions, directives and regulations (Warleigh-Lack & Drackenberg 2010: 213). It has been observed, however, that compliance with EU legislation at national level is far from complete, which poses a barrier to implementation and effectiveness of the adopted policies (Transport Studies Unit et. al. 2010: 10). The EU also applies measures such as guidelines, research and financing of transport infrastructure to influence transport policy at national and local levels (Transport Studies Unit et. al. 2010: 11).

**Transport policy White Papers**

*White Papers* charting a framework for about a decade ahead of specific measures that the Commission intends to propose to the other institutions have become major nodes in the development of the common transport policy. The first one was the 1992-White Paper, *The Future Development of the Common Transport Policy, A Global Approach to the Construction of a Community Framework for Sustainable Mobility*. The title illustrates the strong influence of the international political debate about sustainable development at that time (Stevens 2004: 62) The notion of sustainability has however continued to exist as a headline feature through the second White Paper in 2001, its Mid-Term Review in 2005/6 and towards the third one expected in 2011,

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\(^3\) A number of reasons for this change have been pointed out. These include chiefly the ruling in the Court of Justice in 1985 stating that the Council had failed to act as regard the common transport policy; the lobby group European Round Table that pushed for a common framework; the then president of the European Commission Jacques Delors, who saw infrastructure as a job creating mechanism and as a crucial element of the internal market; and also favourable changes made to the EU institutionssuch as qualified majority voting in the Council on almost all transport policy areas (Brömmelstroet & Nowak 2008: 41-42; European Commission 2001: 11; Stevens 2004: 45-47, 56-60).
as outlined in the communication from 2009, *A sustainable future for transport: Towards an integrated, technology led and user friendly system* (EC 2009). 4

The White Papers are prepared by the European Commission. They are ‘communicated’ to and often discussed by Council and Parliament, but not formally approved by these bodies. 5 White Papers are thus Commission policy statements and not legislation in themselves. Specific actions and measures proposed in them must be adopted formally typically through the normal Community Method before they become effective, where agreement may not in all cases be reached easily, and national implementation may be incomplete or delayed even for adopted instruments. Therefore the direct or final impacts of White Papers on, say, Member State transport policy, physical transport systems or the environmental and economic conditions, cannot easily be established. In this case study we do not seek to identify this kind of outcome effects, but will mainly look at changes in policy formulations and outputs on the Commission side, which are only a minor, if central, part of European transport policy.

**The European Commission**

The Commission is – somewhat like national governments – composed of a political executive wing, which is the Commissioners and their Cabinets, and an administrative wing, the services. The Commissioners are collectively responsible for all decisions taken, and strive to achieve consensus through arguing and bargaining, although if consensus is not achieved, voting may take place (Egeberg 2010: 126-129).

Like national governments, the Commissioners have policy portfolios, which usually involve oversight of one Directorate-General (DG) of the Commission services. Thus the Transport Commissioner is responsible for a DG which at the time of the case study was ‘DG TREN’ containing both energy and transport policy. It has since 2010 been split and renamed to ‘DG MOVE’ (Mobility & Transport). The DGs are led by a Director-General. The DGs to varying degrees consult and collaborate with each other on policy initiatives in order to support subsequent joint decisions in the Commission.

The transport DG (TREN as well as now MOVE) is organised sectorally, e.g. with individual Directorates for each transport mode as well as for various cross-cutting aspects, although the specific organisation changes from time to time.

The individuals serving as Commissioners as well as the Director-Generals change from time to time, generally when the Commission changes and a new President is appointed. In July 2004 Mr Barroso became president of the Commission replacing Mr Prodi. Subsequently, and concerning the

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4 It is still debated what the notion of sustainability implies for transport within an overarching aim of European market integration, but according to typical official definitions it signifies the need to address environmental, social and economic impacts of transport in this process (Council (Transport/Telecommunications) (2001)).

5 For example the transport and telecommunications formation of the Council discussed the MTR in October 2006. It was stated that “Member States welcome the Commission Communication "Keep Europe moving (…)" and “…in general value the extensive Impact Assessment made by the Commission considering it a proper basis for discussing the new orientations of the EU Transport Policy for the coming years” and further “… broadly recognize the need for re-orienting the EU Transport Policy in line with this evolving context, having available a broader, more flexible, transport policy toolbox which enables, where necessary, tailor-made measures and mutually complementary action by all interested parties “ (Council of the European Union 2006: 7-8)
The Impact Assessment system
Another contextual factor for the case study is the Commission’s Impact Assessment (IA) system. The system was introduced in 2003 and its origin was two-fold: It was a response to the so-called Better Regulation agenda, aiming to make European policy making more effective and transparent and also to the EU’s Sustainable Development Strategy, according to which policies should assessed with regard to their sustainability implications. According to the Commission’s Impact Assessment Guidelines the assessments aim to “structure the preparation of policy proposals [by] deepening the analysis and formalising the results in an autonomous report […] The IA work should run in parallel with and feed into the development of the Commission’s proposal. The College of the Commissioners will take the IA findings into consideration in its deliberations” (EC 2005b: 4).

The Guidelines underwent changes in 2005 and 2006. As of 2005 the guidelines require that all items on the Commission’s annual Work Programme undergo a full Impact Assessment, while earlier some items only required a so-called Preliminary Impact Assessment. The guidelines stress the necessity to “ensure early coordination within the Commission” (The Evaluation Partnership 2007, quote p. 18). The 2005-guidelines were updated in March 2006 for example to include new requirements on the composition of Inter-Service Steering Groups for Impact Assessment “… for all items of a cross-cutting nature” (EC 2005b: 9).

The 2001-Transport White Paper
The 2001 White Paper on transport was adopted and communicated by the European Commission on September 12, 2001. The paper does not define one overall purpose of European Transport policy. It refers to an overarching need to ‘…redirect the common transport policy towards meeting the need for sustainable development’ (EC 2001 p 19) and provides a set of so-called ‘policy guidelines’ pointing to a range of objectives and challenges, which are then spelled out in four part of the main body of text, each with a focus on one set of challenges and a series of policy principles and measures to address them:

- Shifting the balance between modes of transport;
- Eliminating bottlenecks;
- Placing users at the heart of transport policy, and
- Managing the globalization of transport.

Two of the general objectives stated in the policy guidelines, which will be the focus in this study concern respectively the so-called ‘decoupling’ of economic growth from transport growth and the aim to obtain a ‘modal shift’ in the European transport systems (see further below). Both aims had been on the agenda for a while but were given a high profile as objectives by the European Council meeting held in Gothenburg summer 2001, which had Sustainable Development as it overarching theme. These objectives were included in the White Paper policy guideline section stating that “greater efforts in order to break the link gradually between transport growth and economic growth and make for a modal shift, as called for by the European Council in Gothenburg” (EC 2001: 14-15). The objectives were fleshed out in quantitative expressions; the desired decoupling modal shift
objective was defined as returning by 2010 to the 1998 modal split level which would produce an increase of 38% rather than an expected 50% between 1998 and 2010 in freight transport and as an increase in passenger transport by car by only 21% against a projected rise in GDP of 43%. (EC 2001: 12). Decoupling would come from avoiding further modal split deterioration and from a better use of the different means of transport without restricting the mobility of people and goods. The return to 1998 modal split levels shift in modal split was defined so that the market shares of other modes than road transport “would to return to their 1998 levels and would prepare the ground for thus make for a bigger shift of balance from 2010 onwards.” (EC 2001: 11). This was recognised as significant breaks from past and current trends, requiring a comprehensive set of measures to be implemented at the member state level (EC 2001: 12).

The White Paper also included an action programme with more than 60 measures to help fulfil the above and other objectives (EC 2001: 100-104) The paper furthermore specified that a mid-term review should be made in 2005 “to check whether the precise targets (for example, on modal split or road safety) are being attained or whether adjustments need making” (EC 2001: 15).

The Mid-Term Review
The Commission started its preparations for the Mid-Term Review (MTR) before 2004. A series of projects were undertaken to prepare and assist in the assessment. The main part of the work was conducted in 2005 and in June 2006 the resulting document ‘Keep Europe Moving- Sustainable mobility for our continent’ (KEM) was published (EC 2006a) (29 pages) along with the more detailed Impact Assessment (IA) study (EC 2006b) (102 pages). The KEM communication largely proposed to continue in the directions set in the past policies primarily the 2001 White Paper (EC 2001 p 3), still emphasizing the need to “…contain the negative environmental and other effects of transport growth whilst facilitating mobility as the quintessential purpose of transport policy” (p 6), and promoting similar sets of policy measures as already agreed, but not yet completed.

![Figure 4 Annual growth of GDP in EU and other regions of the world (Eurostat 2011)](image)

However, the KEM document also takes stock of developments since 2001 and the current economic situation and asks for ‘A renewed agenda’ (EC 2006a: 21). Progress achieved in a range of areas is noted as well as emerging needs in a context of partly new and more difficult conditions.
for European transport policy. The (then) so-called ‘New Lisbon agenda’ for growth and jobs is highlighted, to emphasize that the economic situation being less favourable for the European community than when the White Paper was prepared around 2000.

Some changes to policy objectives and measures were also put forward. The objective of ‘decoupling’ economic growth from transport growth, which was one of the overarching aims in the White Paper was reformulated in the communication as the statement that “[m]obility must be disconnected from its negative side effects using a broad range of policy tools”, further stressing that “[t]he potential for technology to make transport more environmentally friendly must be enhanced” (EC 2006a: 4). This has been termed as a modification of emphasis from a “hard” to a “soft” kind of decoupling. The quantified expectations of the White Paper for achieving a relative reduction in road haulage and passenger car transport compared with economic growth are not retained in the KEM communication.

Also the issue of modal shift, another main topic in the White Paper, was now expressed differently. While KEM still does mention modal shift to more environmentally friendly modes to be achieved ‘where appropriate’, this is partly superseded by the concept of ‘co-modality’, which is here defined as “the efficient use of different modes on their own and in combination” (EC 2006a: 4). The specific objective to return modal shares to 1998 levels is not retained, although it is stipulated that modal split “…will be roughly stabilized in the longer term” (EC 2006a: 8).

In other words, the ambitions concerning significant changes in overall transport activity trends that were stressed and targeted in the White Paper are somewhat modified and de-emphasized.

In parallel there was a shift in emphasis of the recommended types of measures to be adopted. It is stated that the existing proposed measures while important will “…not be sufficient on their own to continue achieving the fundamental objectives of EU policy”, and that “… a broader, more flexible, transport policy toolbox” (EC 2006a: 6) is required. Instruments to promote alternatives to road and air transport is downplayed – but kept, and measures to optimize each mode of transport so that they become more environmentally friendly, safe and energy efficient are highlighted. The need for technical improvements to vehicles and national and regional measures (all of which are outside the scope of the common transport policy) is emphasized. Finally, as noted, the concept of ‘co-modality’, is introduced to emphasize the efficient use of different modes on their own and in combination rather than necessarily shifting between modes (EC 2006a: 21).

An Impact Assessment (IA) was prepared by the Commission staff in parallel to KEM, as specified in community guidelines, although the guidelines were revised during the process. The IA was conducted by the DG TREN, while an Inter-Service Group was consulted. The IA presented three so-called “options for the future policy orientations” labelled ‘Current’, ‘Deepening’ and ‘Widening’. The first option comprised the continuation and implementation of current actions already approved. The ‘Deepening’ option assumed more efforts would be made to achieve the modal shift target of the White Paper, while the ‘Widening’ option focussed more directly on end outcomes for transport sustainability (e.g. economic development, environmental impacts, safety), and included assumptions of more measures to improve transport technology and organisation (logistics, urban transport). The new term “co-modality between transport modes” was introduced in connection to explaining the ‘Widening’ option. The conclusion and summary of the IA recommended a policy based on the approach of ‘widening’ option (EC 2006b: 6).
In spring 2006 a draft of the IA was submitted for formal consultation among the Directorate-Generals. DG ENV commented that the Inter-Service Steering Group has not been sufficiently involved in the preparation of IA and criticized particularly that the arguments for a reorientation of European transport policy according to the ‘Widening’ approach was “…short-sighted and not based on sound economic analysis”, and did not have a basis in the ASSESS study scenarios (DG Environment 2006) (see further in the following analysis). DG ENV criticisms pointed in particular at the limited degree of correspondence between the IA and the quantitative study preceding and backing it. They wanted more quantified assessments of the policy impacts. According to DG TREN representatives, other Directorates General (notably DG ECFIN) were satisfied with the more qualitative analysis developed in the IA taking into account the open nature of the strategy and the fact that individual measures were going to undergo their own IA. In any case DG ENV made sure that a number of robust environmental protection measures were included in the final Communication and the Mid-Term Review was adopted by the Commission by unanimity.

The IA is referred to at several points in the main body of text of the KEM (e.g. EC 2006a: 6) besides being itself an Annex to it. The three different scenarios and the predicted effects are not directly cited in the main text of KEM, while some of the quantitative results are. The policy conclusion suggesting “…a broader, more flexible, transport policy toolbox” is much in line with the ‘widening’ recommendations of the IA, with its emphasis on measures like technological as well as logistics and urban transport improvements, rather than interventions to obtain hard decoupling and modal shift.

There were a number of other adjustments following the MTR. For examples new initiatives were proposed in areas of logistics, urban transport, and innovation. We will not deal with these or other specific measures here. Also we do not consider the subsequent adoption process by the Council and Parliament, nor the implementation of agreed measures at the at member state level.

3.3 The indicators of the case study: The ASSESS study

This section will describe the identification and application of indicators in the process of making the Mid Term Review (MTR) and producing the associated policy documents KEM and the IA. The aim is to trace the role of the indicators in the policy development, emphasising the policy shifts mentioned in the previous sub-section. The main focus is on the so-called ASSESS study, which was directly informing the review process. The description of the indicators and the process will form the basis for the analysis of use and influence of indicators in the following section. The description is based on available documents supported by interviews with three individuals who served in key positions in the process.

As mentioned, the MTR was foreseen already in the White Paper. In 2004 DG TREN commissioned a study to identify indicators to assess the implementation of the White Paper. The tender was won by a consortium led by the consultant ISIS, who undertook the project called INDIC (‘Identification of Indicators to assess the implementation of the White Paper on European transport policy’). The aim was to propose operational definitions of policy objectives and measures in the White Paper, and to identify for each of the measures the representative indicators which would be appropriate to use at the time of the Mid-term review in 2005” (INDIC 2004: 9). The final report of the INDIC-study includes a list of 76 measures related to White Paper
objectives. For each one or more variables are proposed to indicate assessment of their fulfilment. Also a statistical tool to analyse trends was produced in INDIC. However only very limited actual data values were included for the indicators in the final report, so the study was not directly operational for assessing outcomes of the White Paper, although the classification of policy measures provided by the study was used afterwards. There was also a more explorative research project on sustainable transport indicators SUMMA (SUstainable Mobility, policy Measures and Assessment), which ran in 2003-2004. (Rahman and van Grol 2005), as well as some other studies.

During summer 2004 DG TREN invited tenders for a project with the specific aim to assist in the MTR process. It was to have a so-called three pillar approach, based on the use of analysis, indicators and model. It was meant to be a mainly quantitative approach using models and indicators to predict outcomes of policy measures (EC2004b: 1). The research company, Transport & Mobility Leuven (T&ML), specialized in quantitative transport research and transport modelling, formed an consortium with nine other partners for tendering, and won it. The acronym chosen for the study was ASSESS (‘Assessment of the contribution of the TEN and other transport policy measures to the midterm implementation of the White Paper on the European Transport Policy for 2010’). The consortium had at their disposal a range of forecasting models in areas such as passenger and freight transport, emissions, and safety. It was a large project, with a budget of 700,000 EURO, possibly the most expensive one in the area so far.

An Inter-Service Steering Group was formed including representatives from Commission services DG ENV (Directorate-General for the Environment) and DG ECFIN (Directorate-General for Economic and Financial Affairs) in addition to several representatives from DG TREN, who led the exercise. The consortium of consultants mostly interacted with the chairperson of the steering group, a project officer from DG TREN.

The ASSESS consortium began work January 2005 and the final report was published October 2005. The project had two main parts. One part was an assessment of the progress in Member States and European level so far with regard to the implementation of the White Paper measures, The other part was the ex ante application of indicators to forecast and assess the future sustainability effects of implementation on the White Paper measures in 2010 and 2020. It is the latter, indicator based assessment which is the focus of this case study.

The ASSESS indicator based assessment process
Three key components of this second process were:
- the identification of indicators,
- the construction of scenarios for the future anticipated adoption of measures, and
- forecasting the effects for each scenario using the models.

These processes were not completely separated but had some interaction.

The indicators for the study first of all had to reflect the objectives of the European Transport policy to be useful and productive for analyzing the impacts of the measures. The consultant included

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6 Seven models were applied: SCENES, ASTRA (European transport models), TREMOVE (vehicle and emissions model), CGE (regional welfare model), SWOV model (Dutch safety model),, TNO model (a noise model) and a macroeconomic model (De Ceuster et. al. 2006)
indicators for those direct objectives of the White Paper that could be quantified, as well as indicators relating to wider sustainability objectives (De Ceuster et. al. 2005a: 68). The indicators also had to connect with model system outputs as far as possible.

Table 7 ASSESS Indicators related to policy objectives (De Ceuster 2006) [A]

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Scope</th>
<th>Unit</th>
<th>Quantitative objective in the White Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport volume</td>
<td>Freight</td>
<td>Tkm</td>
<td>• Breaking the link between the growth of car transport and economic growth: road haulage +35 % instead of predicted 50 %.</td>
</tr>
<tr>
<td></td>
<td>• rail</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• road</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• inland waterways</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• short sea shipping</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Passenger car transport</td>
<td>Pkm</td>
<td>Passenger car transport +21 % against a rise in GDP of 43 %.</td>
</tr>
<tr>
<td></td>
<td>• car</td>
<td></td>
<td>• Maintain and improve the competitive position of Europe’s air industry by creating of the single European sky and regulating the unavoidable expansion of airport infrastructure.</td>
</tr>
<tr>
<td></td>
<td>• bus/coach</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• train/metro</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• air</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• walk/cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modal share</td>
<td>freight</td>
<td>% of tkm</td>
<td>• Realising a modal shift from road and air to rail and water by providing fair competition between modes and link-up modes for successful intermodality.</td>
</tr>
<tr>
<td></td>
<td>• rail</td>
<td></td>
<td>• Maintain rail freight market share in the central and eastern European countries (35 %). (White Paper p. 89)</td>
</tr>
<tr>
<td></td>
<td>• road</td>
<td></td>
<td>• Raising the modal share of short sea shipping by linking up waterways on sea with an inland traffic.</td>
</tr>
<tr>
<td></td>
<td>• inland waterways</td>
<td></td>
<td>• Raising the modal share of inland waterway transport f. ex. by establishing ‘waterways branches’ and transhipment facilities.</td>
</tr>
<tr>
<td></td>
<td>passengers</td>
<td>% of pkm</td>
<td>• Improve the organisation of intermodal transport.</td>
</tr>
<tr>
<td></td>
<td>• car</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• bus/coach</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• train/metro</td>
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</tr>
<tr>
<td></td>
<td>• air</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• walk/cycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport intensity</td>
<td>freight</td>
<td>pkm/population</td>
<td>• No quantitative targets</td>
</tr>
<tr>
<td></td>
<td>passengers</td>
<td>tkm/ton</td>
<td>• No quantitative targets</td>
</tr>
<tr>
<td>Economic growth</td>
<td>GDP</td>
<td></td>
<td>• No quantitative targets, but a 3% annual growth had been assumed in the 2001 WP</td>
</tr>
<tr>
<td>Employment</td>
<td>working places</td>
<td></td>
<td>• No quantitative targets</td>
</tr>
</tbody>
</table>
### Table 7 ASSESS Indicators related to policy objectives (De Ceuster 2006) [B]

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial distribution of economic impacts</td>
<td>GDP/capita</td>
<td>Completing the routes identified as the priorities for absorbing the traffic flows generated by enlargement, and improving access to outlying areas (White Paper p.18 and 50)</td>
</tr>
<tr>
<td>Transport growth and decoupling</td>
<td>passengers, freight pkm/GDP tkm/GDP</td>
<td>• Internalisation of external costs by gradually replacement of existing transport taxes with infrastructure charges and fuel taxes</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Hours</td>
<td>• Removing the bottlenecks in the railway network. • Developing motorways of the sea and airport capacity. • Completing the Alpine routes and providing a better passage of the Pyrenees. • Everyone should enjoy a transport system that meets their needs and expectations, in terms safety, costs, user rights and obligations and clean (public) transport accessibility.</td>
</tr>
<tr>
<td>Vehicle stock and ownership</td>
<td>• car, truck (number)</td>
<td>• No quantitative targets</td>
</tr>
<tr>
<td>Safety</td>
<td>Road # fatalities</td>
<td>• Everyone should enjoy a transport system that meets their needs and expectations, in terms safety, costs, user rights and obligations and clean (public) transport accessibility. • Reduce the (human) costs of traffic accident and the number of deaths on the road with 50 %. (White Paper p. 66) • Improve safety of long tunnels in the TENs. (White Paper p. 58)</td>
</tr>
<tr>
<td>Energy consumption</td>
<td>ktoe</td>
<td>• Raising the share of substitute fuels (6 % biofuel penetration rate by 2010) (White Paper p. 83) • Replacement of 20 % of conventional fuels with substitute fuels by 2020 (White Paper p. 83)</td>
</tr>
<tr>
<td>Climate change</td>
<td>ton GHG</td>
<td>• No quantitative targets</td>
</tr>
<tr>
<td>Air quality</td>
<td>ton NOx, PM, SO2</td>
<td>• No quantitative targets</td>
</tr>
<tr>
<td>Noise exposure</td>
<td>% Ln&gt; 55dB(A)</td>
<td>• No quantitative targets</td>
</tr>
<tr>
<td>Land take and fragmentation</td>
<td>Road km²</td>
<td>• Everyone should enjoy a transport system that meets their needs and expectations, in terms safety, costs, user rights and obligations and clean (public) transport accessibility.</td>
</tr>
</tbody>
</table>
The basic indicators were identified by the leader of the consortium personally in collaboration with several partners (De Ceuster et. al. 2006). The indicators include various combinations of standard transport variables used in statistics such as volumes of transport by mode, as well as indicators on key economic, social and environmental outcomes of interest, in addition to several indicators purely derived from the models (such as travel time as indicator of accessibility). The indicators were grouped under 15 main variables, each with one or more specific quantitative measures or metrics associated with it (Table 7). The process to identify and select the indicator variables for the study drew widely on the previous INDIC and SUMMA studies. It does not seem that the selection of indicators was a point of major controversy within the consortium or with regard to the Commission steering Group. In contrast there were more intense discussions about which indicators to actually focus on in the conclusions for the MTR, as we will return to below.

The scenarios were to specify different levels of possible implementation of the measures of the White paper. 2010 and 2020 were defined as the future target years. The specification of the scenarios was discussed more extensively between the ASSESS consortium and the Commission representatives than the indicators themselves. The specification involved assumptions on the level of adoption of measures at EU and Member State level, as well as on the effects of each measure on transport system and impact variables. These specifications were undertaken in a dialogue and exchange of information between the consortium and the Commission. The specification process took longer than anticipated in the project description and went until June 2005. Initially, the following three scenarios were defined (De Ceuster et. al. 2005a: 51-52).

- A null scenario, which assumes that none of the White Paper measures has been implemented.
- A partial implementation scenario, which includes only measures that will most likely be implemented before 2010. This scenario represents what is expected to actually happen in the future, and
- A full implementation scenario, which includes all the White Paper measures.

During summer 2005 the consortium went into what we here call the third phase, running the scenarios on all the models in combination. This had never been done before, and it was a demanding process, but it was generally successful in the sense that results emerged, which formed the basis for further analysis and review.

There was a dynamic interaction between the consultants and the Commission representatives in which scenarios were discussed and adjusted in light of the results of the first model runs. According to interviews the Commission representatives were mostly concerned with results for the objectives as stated in the White Paper, including but not restricted to decoupling and modal split. The consortium, on the other hand, saw these as intermediate variables and was more keen to assess the final sustainability outcomes in areas like emissions, safety and economic growth, some of which were not directly targeted in the White Paper. Moreover there was a discussion about how optimistic assumptions should be made in terms of policy adoption and effectiveness in each scenario. The consortium and the Commission in some cases had different expectations in this regard. Also assumptions about issues like economic growth and oil prices, which would obviously influence the results, had to be made. Commission representatives were deeply involved in the process, even almost as ‘part of the team’ and sometimes challenged the consortium on their methodological assumptions. However, it was always very clear that the consortium was
responsible for the study and the choices involved; the Commission would never intentionally seek to interfere in the process or determine assumptions etc.

The results of the first full model runs on the three scenarios showed that not even the full implementation scenario would deliver the stated White Paper objectives for decoupling or modal split towards rail. The discussion of these and other results lead to the definition of a fourth scenario, called the ‘Extended scenario’. In this scenario more measures that were expected to be helpful to achieve model change were included (such as higher prices for freight haulage and introduction of road pricing for passengers), and also faster implementation was assumed of various technological improvements for inland waterways and rail, as well as more efforts on competitive tendering and market opening in the rail sector (De Ceuster et. al. 2005a: 51-52). The results were more favourable towards the sustainability effects but not even this scenario fulfilled all stated objectives.

The ASSESS reports
The reports from the ASSESS study were published by the end of October 2005. They include a main report (De Ceuster et.al. 2005a) and 21 annexes, one of which dealt specifically with the indicator based analysis (De Ceuster et. al 2005b). The main report contains a summary of the assessment on Member State and EU implementation of White paper measures. It is shown that at the European level 50 % of the White Paper measures have been adopted by the European Parliament and the Council, while another 15 % have been adopted by the Commission. At the member states level much less are implemented However, the measures that were not yet implemented were typically the more difficult ones with the highest expected impact on the transport system, e.g. pricing measures to internalise external costs. (De Ceuster et. al. 2005a: 9).

The report also has a summary of the indicator based assessment of the implementation scenarios for 2010 and 2020 (see Table 8). The report further provides a set of conclusions and recommendations. With regard to the scenarios for 2010 and 2020, the overall conclusion was that while improvements in all parameters are observed for scenarios with gradually more measures implemented, the objectives of the White Paper are generally not met (De Ceuster 2006). For example all scenarios see significant growth in freight and passenger transport volumes, although in 2010 less so for freight transport in the full and extended scenario and for passenger transport in the extended one than in the null scenario (De Ceuster et. al. 2005b: 56). Some decoupling is seen, but little of it is found to be due to implementation of the policy measures. The indicators for modal split in 2010 and 2020 were not more positive (De Ceuster et. al. 2005b: 42). The results are shown in relative terms, allowing to compare trends over time and across scenarios without a need for direct comparison with quantitative targets.
Table 8 Transport performance in EU25 for all four scenarios, relative to 2000 (= 100). N = Null scenario, P = Partial scenario, F = Full scenario and E = Extended scenario (De Ceuster et. al. 2005a : 70).

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</thead>
<tbody>
<tr>
<td>pkm</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>tkm/year</td>
<td>82</td>
<td>98</td>
<td>100</td>
<td>108</td>
<td>117</td>
<td>118</td>
</tr>
<tr>
<td>intensity pass.</td>
<td></td>
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<tr>
<td>pkm/population</td>
<td></td>
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<td></td>
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<tr>
<td>intensity freight</td>
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<tr>
<td>tkm/ton</td>
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<tr>
<td>accessibility (travel time)</td>
<td>hours</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>100</td>
<td>99</td>
<td>99</td>
<td>96</td>
<td>95</td>
<td>94</td>
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<tr>
<td>GDP (baseline)</td>
<td></td>
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<tr>
<td>euro</td>
<td>101</td>
<td>113</td>
<td>127</td>
<td>127</td>
<td>127</td>
<td>127</td>
</tr>
<tr>
<td>GDP* (impact)</td>
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</tr>
<tr>
<td>euro</td>
<td>101</td>
<td>113</td>
<td>127</td>
<td>127</td>
<td>127</td>
<td>127</td>
</tr>
<tr>
<td>employment (baseline)</td>
<td>euro</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>101</td>
<td>105</td>
<td>108</td>
<td>108</td>
<td>108</td>
<td>108</td>
</tr>
<tr>
<td>employment* (impact)</td>
<td>euro</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>101</td>
<td>105</td>
<td>108</td>
<td>108</td>
<td>108</td>
<td>108</td>
</tr>
<tr>
<td>car park</td>
<td>1000 cars</td>
<td>79</td>
<td>88</td>
<td>100</td>
<td>106</td>
<td>114</td>
</tr>
<tr>
<td>truck park</td>
<td>1000 trucks</td>
<td>66</td>
<td>82</td>
<td>100</td>
<td>115</td>
<td>119</td>
</tr>
<tr>
<td>safety</td>
<td>road fatalities</td>
<td>134</td>
<td>112</td>
<td>100</td>
<td>86</td>
<td>77</td>
</tr>
<tr>
<td>energy</td>
<td>toe</td>
<td></td>
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</tr>
<tr>
<td>CO2</td>
<td>ton</td>
<td></td>
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<td></td>
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<tr>
<td>PM</td>
<td>ton</td>
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<td></td>
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<tr>
<td>NOx</td>
<td>ton</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SO2</td>
<td>ton</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>noise</td>
<td>% hindered persons</td>
<td>100</td>
<td>104</td>
<td>107</td>
<td>107</td>
<td>108</td>
</tr>
<tr>
<td>land take</td>
<td>km² road</td>
<td>100</td>
<td>102</td>
<td>107</td>
<td>120</td>
<td>118</td>
</tr>
<tr>
<td>fragmentation</td>
<td>km² road</td>
<td>100</td>
<td>102</td>
<td>110</td>
<td>130</td>
<td>130</td>
</tr>
</tbody>
</table>

The study also diagnostically compares for 2010 and 2020 three different determinants of energy consumption in (and thus CO2 emissions from) transport, namely the impacts of growth in transport volume, of modal shift, and of technological improvements. The comparison shows that the influence of modal shift is rather modest, while the technological component almost balances out the impact of growth in transport volume (De Ceuster et. al. 2005b: 76-77). Another table in the main report shows that the technological contribution is even more evident as regard to traditional air quality emissions, thus PM, NOx and SO2 (De Ceuster et. al. 2005a: 84).

On this background the report concludes that “the target of decoupling transport growth from economic growth does not influence the sustainability effects of transport”, and recommends that “[i]t should be revised towards a decoupling of the negative consequences of traffic, not traffic itself” (De Ceuster et. al. 2005a: 15). The consortium further states that “[t]he potential environmental benefits of a modal shift from road transport to rail transport should not be overestimated. The modal share of rail transport is only 6 % in passenger transport and 13 % in freight transport. Even in a very optimistic scenario in which rail shares would be doubled [a scenario not included in the study, our comment] this would only lead to a reduction of road transport emissions which is smaller than 10 %. The potential effects of technological improvements in the road transport sector are much larger.”

On this background the consortium recommends “[a] possible shift of environmental priority towards enhanced motor technology instead of modal change” (De Ceuster et. al. 2005a: 84 + 107).
It can be concluded that the ASSESS study managed to define indicator variables, populate them with associated data values, as well outline evaluative statements and recommendations related to the policy assessment it was supposed to inform. It can also be noted that the recommendations not only addressed the produced policy scenarios (to what extent would each scenario obtain stated objectives etc), but also advice on revising key indicator variables to assess policy success in terms of sustainable transport, namely away from transport variables like ‘decoupling of transport from economic growth’ and ‘modal shift/split’, towards measures of the economic, environmental and social impacts of transport.

3.4 Analysing the use and influence of the indicators

The use of the indicators
We will now analyse the use and influence of the ASSESS indicators. We begin with identifying the use made of the indicators, then we proceed to discuss the kind of influence their exerted on the process and the results. We round of with a discussion of possible explanations for the kind of influences observed.

It is without any doubt that the ASSESS study indicators were used in the MTR, in the sense of the term applied in section 1 of this report. The indicators were certainly received, noticed, and observed by the Commission; they were applied in its internal work such as calculations and were forwarded from DG TREN to other branches of the services. The indicators were used in internal as well as external communication, and they were cited directly in official policy documents. We are not aware if the indicators were used in direct decision making, other than in the obvious sense of decisions within the MTR process concerning the production of its key documents. The KEM includes explicit reference to forecasts prepared in the ASSESS study in the main text and in annexes, particularly in the accompanying IA, which formally constitutes an annex of the communication (EC 2006a: 7-8, 26-27, European Commission 2006b, Annex 3). We proceed now to look at these documents in the reverse order.

The IA was prepared by the Commission staff under the principal supervision of the officer also responsible for the ASSESS study. The IA draw significantly on the ASSESS study and its indicators as regard estimation of future developments and effects of measures. The ASSESS study is quoted 16 times in the main body of text of the IA, and its important role is stated for example in the Executive Summary, according to which “...this study complemented by other studies and other information has served to analyse the possible options for the future transport policy orientations” (EC 2006b: 4). The IA section 5.2 ’Impacts of the 2001 White Paper’ cites the ASSESS study using several of the indicators variables (e.g. transport volume by mode, congestion measured as average trip time, traffic fatalities, CO2 emissions, etc) as well as the associated values of the study (EC 2006b: 36-38).

The IA report also has an annex which explicitly over 10 pages deals with the “Results from the ASSESS study”, including presentation of the ex ante indicators, the scenarios and some of the main conclusive highlights from the ASSESS main report (EC 2006b).

As noted the IA itself presents three ‘options for the future policy orientations’ labelled ‘Current’, ‘Deepening’ and ‘Widening’. The ‘Current’ option to some degree corresponds to the ‘Partial’
scenario in the ASSESS study. The ‘Deepening’ option has similarities with the ‘Extended’ scenario of the ASSESS study with its focus on efforts that could help deliver the modal shift target of the White Paper, while the ‘Widening’ option can be seen as parallel to a recommendation from the ASSESS study, namely to emphasize less decoupling and modal shift targets, and focus more directly on end outcomes for sustainability such as emissions including the use of technological means. The recommendation of the IA for a policy based on the approach of ‘widening’ option (EC 2006b: 6), is quite in agreement with recommendations given in the ASSESS study such as revising the objectives “….towards a decoupling of the negative consequences of traffic, not traffic itself” (De Ceuster et. al. 2005a: 15); lowering expectations to “potential environmental benefits of a modal shift from road transport to rail transport…” and towards a “… possible shift of environmental priority towards enhanced motor technology instead of modal change” (De Ceuster et. al. 2005a: 84 + 107).

The ASSESS study and indicators are also cited (= used) in the MTR main document (KEM) with four direct references to ASSESS. The ASSESS indicators are for example referred to in a chapter describing the ‘Situation in the transport sector’ where in dealing with CO₂ and other air pollution emissions the Commission states that “[t]he 2001 White Paper measures will, however, have only minor effects on these environmental trends, particularly as far as the CO₂-emissions are concerned” (EC2006a: 8). There is also a series of tables and graphs of future expected developments shown in Annex 2 of the KEM. In addition there are a couple of references to IA, which again is based on ASSESS projections.

The interviews made support the observation that the ASSESS study had important use in preparing the MTR as a whole, specifically in the IA and thereby also indirectly in the KEM. The emphasis in the interviews is mostly put on the usefulness of the ASSESS models and the modelling undertaken, rather than the indicators as such. The models are the key tools; the indicators are more like a necessary medium in which the model results are operationally displayed. It can however also be noted that further efforts to develop and consolidate indicators (not only models) for future policy development and assessment were made following the MTR, including the so-called REFIT project. Furthermore the ASSESS results and hence its indicators appears to have been used in various subsequent assessments and reviews.

The influence of the ASSESS indicators
In this section we will discuss if the ASSESS indicators were not only used, but also influential in the policy changes we observed in the MTR compared to the White Paper of 2001, notably the changes in policy objectives and associated measures, from ‘hard’ towards ‘soft’ decoupling and from ‘modal shift’ towards ‘co-modality’, to state the matter in a simplified way.

For the further analysis it is first of all important to state that these changes are not necessarily so significant from a final impact point of view, as the changes refer to wordings in Commission documents and not actually adopted policies, let alone subsequent physical or economic effects. We do not analyse results at these further levels. Moreover we would of course not attempt to ascribe these changes to ASSESS indicators alone or in isolation, since the indicators were only one part of the study and the policy reformulation is part of a series of processes taking place at macro and micro level, several of which were hardly informed by the ASSESS study (arguably the relation could work the other way around – ASSESS recommendation being informed by other processes). These aspects will be discussed more in the following subsection addressing possible explanations
of the observed influence, supplementing document based analysis with information from interviews.

To briefly reiterate observations from the document review so far, KEM attaches less importance to restraining transport growth compared to the White Paper. The objective to decouple economic growth from transport growth, which was stated in the policy guidelines of the White Paper is reformulated in the KEM communication to a statement that “[m]obility must be disconnected from its negative side effects using a broad range of policy tools”, stressing that “[t]he potential for technology to make transport more environmentally friendly must be enhanced” (EC 2006a: 4, our emphasis). Also modal shift, which was central to the White Paper, is now expressed differently. Even if it is still referred to as an objective ‘where appropriate’, more prominently ‘co-modality’ is promoted meaning “the efficient use of different modes on their own and in combination” (EC 2006a: 4). The quantitative expectations and targets years for decoupling and modal shift of the White Paper are not retained in KEM. The new policy directions are launched as a ‘renewed agenda’ using “a broader, more flexible, transport policy toolbox” This has been noted by observers as among the major changes in European transport policy instigated by the MTR (Stead 2006: 367).

These changes are in broad agreement with the so-called ‘widening’ approach of the IA, which again corresponds to, and seems to have been inspired directly by the recommendations of the ASSESS conclusions, recommending exactly such changes at the level of overall policy variables. We can thus establish at the basis of documents that there is a broad level of correspondence between the ASSESS recommendation to refocus policy objectives and variables away from ‘decoupling’ and ‘modal split’ and the KEM conclusions in terms of ‘renewed agenda’ emphasizing measures that target impacts more directly than interfere with the transport activity as such. We do not directly observe a full correspondence with the recommendations however, which could speculatively involve, for example, a setting of new policy objectives based solely on the environmental, economic and social sustainability impacts of transport policy.

We will now see an apparent partial influence from the ASSESS indicators on the collective level of policy agenda setting as defined in section 2 of this report. We cannot yet conclude on the causality of the correspondence, or the type of influence and role the indicators enjoyed in the process. We will now seek to corroborate any such policy influence taking into account observations as reflected in interviews, where influence at the generative individual and interpersonal levels as well as other contextual factors may for example be more apparent.

The main channel through which ASSESS indicators would have had influence is the use of the ASSESS study in drafting the MTR and particularly the IA. Key players in this process were interviewed, namely Commission officers involved in the process and a representative of the ASSESS consortium who was also involved in selecting and interpreting the indicators for the study. The interviewee’s provide different perspectives on this relation.

The ASSESS consortium representative offers the view that the formulations of policy changes in the MTR was indeed directly influenced by the ASSESS study. The interpretation is backed by reference to the process that involved discussions between the consortium and the Commission about which indicators to rely on in the policy analysis of the future scenarios and how to conclude. According to the consortium interviewee the Commission representatives were mainly interested in effects concerning the ‘White Paper’ objectives such as modal shift and decoupling while the
ASSESS consultants wanted to focus more on indicators dealing with the end result such as emissions, safety and economic growth. However, when the results of the scenario analysis emerged and were consolidated through several model runs it became clear that the assumed policies would not perform well to reach the White Paper modal split and decoupling targets. Moreover, the modal split and decoupling objectives were revealed as not as instrumental for reaching final impact on the environment, safety, economics as previously assumed. According to the consortium representative, the Commission services gradually accepted and adopted these implications, based on the intense dialogue which induced them to propose changes in the key policy variables, de-emphasizing modal split and decoupling as the most appropriate key variables for the future.

In the present analysis we would characterize this type of effect as influence occurring at an individual and interpersonal level, where new evidence stimulate new expectations, and is used persuasively by the consortium to promote change; and where the consortium and subsequently the Commission representatives becoming change agents through the IA in setting the ‘renewed policy agenda’ formulated in the KEM. In this way influence moves from the interpersonal to the collective or policy level. If this interpretation is taken at face value then the role played by the indicators are mostly what we call instrumental, in the sense that the indicators inform and influence a process that leads to re-formulating functional aspects of policy such as goals and strategies; however, this role could also be interpreted as a more indirect conceptual one as the indicators give input to de-emphasize some concepts and shape a new agenda, rather than being directly applied to decide on a choice between making such changes or not.

The Commission representatives provide a different and somewhat broader perspective to interpret the situation. First of all the continuity of the policy is emphasized more than the change elements. Main variables of the White Paper (hard decoupling; modal shift) are in fact also still retained in the new policy although with a lower emphasis. The main reasons for the adjustments to the policy formulations are economic and political. For example, as there was slower economic growth than expected before, transport had not become such a big threat to the environment as anticipated, which means less necessity to promote hard decoupling and modal change. There was more political concern building up over how to stimulate the economy and less interest in how to put brakes on it. Efficiency of each mode, hence co-modality, becomes more important.

New political priorities such as Commission President Barroso’s emphasis on making compatible competitiveness and environmental protection the environment and climate change makes it also more appropriate to highlight the soft decoupling, again with reducing environmental impact without reducing mobility (Hence:"Keep Europe Moving") as being a key concern. Also change in the transport policy leadership influenced the policy priorities. For example the modal shift objective, which had been a key priority for the Director General during the preparation of the White Paper and accepted by Commission Vice-President Loyola de Palacio, was less vigorously emphasized after he was replaced as Director General already under the mandate of a different commissioner (Vice-President Barrot) before the MTR was completed. The changes and adjustments were thus building up over years after the White Paper; they were not ones suddenly emerging during the MTR. Many concepts and ideas are continuously present in the development of the transport policy; they are emphasized or deemphasized in different ways according to many circumstances such as current economic outlook and political climate in favour of or against more market regulations. Even the public stakeholder and Member State comments for the MTR brought
forward viewpoints on the need for policy changes in the same direction as the ones taken (EC 2006b; p 7 ff). In conclusion the ASSESS study and indicators were far from the only nor necessarily the most important impetus to the changes following the review process.

The stipulation that ASSESS indicators were directly instrumental for the policy shift seems thus not to be confirmed when the broader view is taken. It is important to note that this moderate view on the influence is not based in a disregard for indicators generally or the ASSESS study as useful input. The Commission representatives recognise the importance of good and relevant indicators for policy assessment. In fact it was originally believed that the MTR could be done using indicators only rather than models. Identification of relevant variables was successfully performed in INDIC and SUMMA studies, but indicators with actual data values were often too old or too limited to be of much use. The value of the ASSESS study for the MTR process in this regard was well acknowledged by DG TREN representatives expressing a continued satisfaction with the project. An officer from another DG who was involved in the MTR and made critical comments to the IA process, nevertheless also expressed confidence with the ASSESS study and the associated indicators. The ASSESS indicators are generally recognized as useful in the process, it was “a real list” with actual data for the indicators, and the study delivered timely evaluations that were broadly trusted. The interpretation offered by the broader perspective is thus not that ASSESS indicators were inconsequential, rather that they was not determining but rather supporting the adjustments that had to be made any way to the policy goals; the indicator study did so by way of helping to rationalize and systematize ideas that were already present. Quantitative formalisation helped to confirm a less systematic qualitative appraisal which was generally going in the same direction.

If this interpretation is adopted the role played by the indicators is not to be seen as instrumental, in the classical sense that the indicators directly triggered a decision to re-formulate functional policy aspects such as goals and strategies, but seems closer to what we identified in section 1 as a symbolic role where indicators are used to justify or rationalize decisions that appear to have already been taken. However, considering that the studied policy changes themselves are mainly policy formulations at a general level rather than substantive measures, it should rather be argued that this ‘rationalizing’ (or formalising) function of the indicators is directly important and consequential in the reformulation process, and that it would rather sit somewhere in between an instrumental and a symbolic role, since the new policy formulations were not directly pre-given facts or ‘already taken’; the changes captures a sort of ‘Zeitgeist’ that had to be given a shape in this process, where the substantiated critical perspective on existing policy variables such as ‘hard decoupling’ and ‘modal shift’ offered by the ASSESS study must have been a clearly facilitating or contributing factor for the reformulation process.

Our interpretation based on the documents and the different perspectives presented in the interviews is that the ASSESS study and its associated indicators did influence the policy changes reflected in the MTR although only to a limited degree; only in correspondence with several other more decisive influences, (as we will discuss further in the following sub-section), and in a way which is hard to classify as either purely instrumental, conceptual, or symbolic. The influence arose through the intense and extended interpersonal communications between the consortium and the Commission officers, based in the set model outputs for indicators that allowed to assess both ‘official’ European objectives, and other sustainable transport objectives, leading to conclusions that would make it hard to justify maintaining the existing policy formulations unchanged; this
influence was transmitted from the interpersonal exchange to the collective level of policy goals and agenda setting during the preparation and drafting of the MTR; possibly with a more instrumental-type role for the IA, which was widely based on the ASSESS conclusions, and a more conceptual and symbolic role for the KEM, which has several more sources and a more complex genesis, that we have not fully unpacked. The notion of a formal rationalisation, suggested by Commission representatives, seems to capture well the overlapping interface of the instrumental, conceptual and symbolic roles drawn from the academic literature in section 1, namely as a role where the indicators in connection with modelling tools provide conceptual and analytical building blocks to make an emergent change process explicit and justifiable. At the level of policy formulations (goals, agenda) we see this rationalisation as having a combination of instrumental, conceptual and symbolic roles. If we had studied influence of the indicators on subsequent policy measures and decisions the effect would most likely have been further diluted by many other factors towards less instrumental, and perhaps a process use in the context of formalised IA, and as well as more symbolic and vaguely conceptual effects.

We thus call this type of indicator role as rationalization, and see it as a special, but quite likely common form of the instrumental indicator role connected to processing of policy re-formulation. The rationalization role of indicators is distinguishable from the symbolic role, in the sense that the indicator are not just legitimizing a decision taken in advance, rather the indicators contribute actively to utter and instate the changes through a process of systematisation and rationalisation. In that way the indicator enters more as a tool, an instrument, rather than merely a symbol.

Another influence that the ASSESS study may have had, which would also confirm its more general significance, concerns the transport policy making framework. The ASSESS work demonstrated to the Commission how valuable it was to have a comprehensive overview of key transport figures at the disposal for the review, which helped the DG to focus even more on the provision of indicators and figures in subsequent work; this would become a preferred way to work ahead. As one follow-up the project REFIT (‘Refinement and test of sustainability indicators and tools with regard to European Transport policies’) was initiated with one of its aims as providing a set of sustainability indicators for future assessments of various policies/packages in European transport policy.

If such a trend was consolidated we could speak of a process role in the sense defined in section 1 where indicator systems affect the way policy making is processed in addition to any effect on functional policy aspects such a goals and measures. If the ASSESS study indicators had indeed been clearly groundbreaking and formative in this sense one could s speak of them as having a constitutive role on the policy making process or methodology, that is, a role that would constitute indicator based assessment as a normal procedure. However, such a role does not seem to be fully confirmed by other observations. It can for example be noted that the ASSESS study five years later is still regularly being referred to in newer assessment studies as more or less the only material available providing transport policy indicators with numbers, at least while the Commission has been developing the new so-called TRANS-TOOLS model. Hence, while indicators may be in increased demand a more indicator based process seem in fact not yet to have materialized as the

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7 Flyvbjerg (1998) discusses rationalization in policy and planning context extensively, and uses the term in a critical sense of power and manipulation; power disguised as reason. (“Rationalization presented as rationality is shown to be a principal strategy in the exercise of power” (Flyvbjerg 1998:2) We apply the term in a more neutral connotation, as a process in which something is being given a structure that has a basis in reasoning.  
8 Peter Dahler-Larsen, lecture at DTU in workshop in Center of Facility Management, May 4, 2010.
dominant one in transport policy making, even if efforts in that direction have been pursued. In any case we do not have material to systematically confirm or reject such a hypothesis of a process role.

**Interpreting the influence**

In the previous sub-sections we concluded that the ASSESS indicators were used and most likely had some influence on the process that lead to the adjustment of the policy agenda and objectives. In this section we will see how we can explain the use, influence and role of the ASSESS indicators that we have just identified applying the three types of explanatory factors described in section 1, namely indicator factors, user factors and policy factors.

First concerning *indicator factors* the variables used in the ASSESS study were selected by the consortium based on what was available and predictable with the models and these variables were seemingly accepted and used also by the Commission in the IA and further on in the MTR without much controversy or dispute. Based on policy formulations (e.g. White Paper) previous projects, and other experience there was a common understanding of the kinds of variables that were relevant for the assessment, and apparently also of the limits to what was realistic due to data availability, modellability etc. It was important for the Commission that the ASSESS indicators – unlike the INDIC ones— were not only variables but included values for each indicator, which allowed them to substantially underpin policy review in the IA and the KEM. These output values seem to have been generally trusted, although also in full awareness of uncertainties in models and ambiguity associated with indicators. This trust likely had a basis in several factors, including a confidence with the models, which were mostly well known to the Commission, confidence in the skills of the modelling team, and a close interactive process in which the forecasts were prepared and results could be challenged and discussed in a relatively closed forum over a concentrated period of time. As noted, besides the variables and the values, even several of the more evaluative statements remarks in ASSESS final report were taken into account or cited by the Commission in the IA, which also indicates a degree of confidence with the results and the methods behind them. The Commission stressed that indicators with figures were required, and a consortium representative confirmed that the numbers were what appeared most important for the Commission, along with the ability to provide explanations for each outcome. The relevance and applicability of the indicators, or their salience, credibility and legitimacy (Clack et. al 2002) was accepted rather than challenged or disregarded by the prospective users, which most likely contributed to their use and rationalising influence in the process.

A particular and very important feature boosting the influence of the indicators was that the indicators were connected to models that allowed *forecasts* to be made rather than only ex post assessments. Moreover it was not only business-as usual forecasts, but alternative scenarios. Actual value filled indicators drawn from official statistics would have been available of alternative only a few years after publishing of the White Paper would have been available, which would have been of limited value in a process of justifying policy changes. In other words, considering the factors introduced in section 1, the connection to models increased the *timeliness* of the indicators, their connection to policy objectives secured their *target relevance*, and their connection to alternative policy packages increased their *actionability*. We are not able to detect which of these aspects were the most important for the rationalising influence of the indicators, beyond being confirmed by Commission representatives in our interpretation that the three mattered a lot.
User factors concern the perceptions, capacities, ‘repertoires’, or positions of individuals or groups involved in indicator and policy application processes. We tend to include also the individuals who produce the indicators and not strictly users on the policy side only. Characteristics of users may include their skills, educational background, and role in the policy process (e.g. as expert, civil servant, communicator, decision maker, etc). As regard user factors in the case study we are able to suggest a few points. First of all it can be noted that the case delimitation to the use of ASSESS indicators in the preparation of the MTR provides a narrow focus where the number of direct users and individuals involved is very low. As noted one important element here was a degree of trust of the users towards the results. This partly existed in advance because the consortium applied models that was known and in some cases developed by the Commission itself, while the indicators were also mostly quite familiar to the involved Commission services. The trusting relationship between consortium and DG TREN was arguably further developed in the process due to the intense closed exchange forum where consortium members were able to respond to comments and provide explanations for seemingly debatable modelling results. A Commission representative emphasises active participation, practically as a part of the team, while a consortium representative in the same way describes the relationship as one where extensive discussions and explanations established a common understanding.

As a basis for this one can further point to the skills of the consortium and its leader as a factor; skills concerning ability to define which indicators would be relevant and feasible to connect policy objectives with modelling output; skills in running the models, even if it was a novel undertaking, and skills in interpreting and communicating output to users. On the user (Commission) side there was also significant skill concerning e.g. applicable knowledge of transport policy measures and their effects. The direct users were experienced academics (economists etc) used to handle quantitative data with policy significance. An interesting facilitating factor suggested in interviews is the common background in transport economics among the consortium and the principal users which means that many assumptions and concepts was already broadly shared. A disposition to rely solely on quantitative, (economic) modelling approaches could however also have been restrictive for which issues and indicators that were taken into account; in the worst case there could have been what we call a distortive role in section 1, where selective indicator use could misinform policy or foster counterproductive behaviour with regard to the policy conclusions. While we cannot exclude some degree of ‘tunnel’ vision’ effect where the quantitative results based on the modelling exercises may have captured more attention than other factors, the process did reportedly also take several more qualitative factors into account, which could not be modelled, including legal aspects, liberalization, financing of infrastructure, etc. Hence we see no clear evidence of such a distortive role. However it can still hardly be excluded that the ‘repertoire’ of producer and user team focussing on a modelling approach and its results may have lead to enhanced awareness of these quantifiable results. A further user factor of significance may have been the shift in Director General in the early stages of the MTR, especially since the outgoing one had been deeply involved in creating the policy directions of the White Paper, including the modal shift objective. The Commissioner responsible for transport had also changed a year before and the Commission as a whole as well. However, even if these changes may have facilitated a revision of the White Paper objectives we can only speculate if this would also have made it easier to accommodate the corresponding recommendations from the ASSESS study.

Again we can say that the narrow and confined scope with a high proximity between the indicator producers and users are likely to have facilitated the influence of the ASSESS indicators on the IA,
whereas the influence on the KEM where many more actors were active is likely to have been more limited and more indirect. We did not analyse this wider user group, but can safely assume that it is more diverse in terms of skills, interests and backgrounds than those responsible for the ASSESS and the IA. One could stipulate a contradiction between the ‘depth’ of an influence facilitated by confinement and homogeneity, versus a ‘width’ of influence facilitated by number and diversity of participants. However, it is not to say which setting in the end produces more lasting influence.

**Policy factors** have to do with the policy context for the use of indicators, such as what topic the policy is about, what kind of institutions govern the area, and what type of or policy function or stage they are applied in. The wider context of the current case is the common transport policy, which we identified as effectively a rather new policy field, although considered of long lasting central importance for the European integration project. The 2001 White Paper was only the second attempt to make comprehensive policy plan and it was not itself based on the use of models or indicators to any large degree, although different models had been used as references. The policy covers a complex area, where many concerns are confronted and community policy results depend on decisions in other sectors as well as at national and local levels. One could probably stipulate that - despite the MTR and similar efforts - European transport policy is not (yet) generally based on a ‘performance oriented’ type of strategic approach with policy making based on agreed models, scenarios, and indicators to design or review policies. It resembles more a traditional regulatory/deregulatory approach based on related but individual pieces of legislation, and shaped by interest- and sector-driven initiatives framed in a multilevel governance setting. Such a setting will generally not be strongly conducive to influence from strategic indicators beyond a symbolic and possibly conceptual role.

If we again consider the stipulations of Turnhout et. al. (2007) with regard to the structuredness of policy and the associated role for information it may be possible to categorize the EU common transport policy and its aims towards sustainability as ‘moderately structured’ with a certain degree of stability and consensus on the policy goals (sustainability aiming to ‘balance’ mobility, environment, safety, security, efficiency, cohesion) but with a much lower degree of consensus on how to start reaching these goals, e.g. via hard’ versus ‘ soft’ decoupling strategies. In such a policy situation the influence of indicators should mostly be through their use as ammunition in a strategic confrontation between proponents of different strategies rather than as instrument to establish a factual or conceptual basis. The same indicators can be used to support different, perhaps opposite positions However, in the case study as such we did not observe such effects much, which is most likely because its focus has not been on the level of the general policy development, but the much more specific task of preparing the MTR and the associated revisions of policy objectives within the much more confined institutional setting.

With regard to the institutional setting of the case study it involved primarily the European Commission and its service of DG TREN. This entity solicited and funded (with considerable means), the ASSESS study and processed to use its results with a specific purpose in mind; it then prepared the IA and also to a lesser extent the KEM with what appears to be limited interference from the outside as consultations had taken place in a previous stage. A high degree of control over the process would generally provide structure to the process and be conducive for indicator influence if indicator and user factors are also favourable as discussed above. The full MTR process was of course not a singular one institutionally since it involved all Directorates of the DG TREN, other Commission services, via the Inter Service Steering Group of the IA, and also included
hearing processes of external stakeholders, member states etc. Nevertheless it seems that DG TREN and the Unit conducting the IA were able to institutionally fence in much of the potential interference in the process of interpreting the analytic material. According to comments from other DGs, notably DG ENV, the process of the IA had for example formal, but limited real involvement of other DGs in the definition and analysis of the proposed policy options, called ‘Current’, ‘Deepening’ and ‘Widening’ which was the approach recommended in the IA. DG TREN applied the ASSESS indicators in a process to rationalize and structure policy changes in a way not fully endorsed by at least one other DG. However this potential conflict is not focussed on the indicators which are generally accepted, but in different interpretation of which policies are to be pursued. This seems to echo the proposition by Turnhout et. al. on the role of indicators in a ‘moderately structured’ policy situation; however, it is interesting that the indicators themselves are not very disputed. Perhaps we see them work as building blocks to structure the policy towards higher consensus on policy measures in the future.

Finally the framework outlined in section 1 referred to the role of ‘background factors’ to explain why indicators may become influential or not, for example changes in the general economic conditions or in the political environment. In this case study it is evident that the general economic background, and how it was perceived by dominant actors, is a strong factor behind the proposed changes in the transport policy agenda and the associated objectives. The background include a sense of economic pressure with lower growth and less jobs than expected and a political emphasis on the renewed ‘Lisbon’ strategy with its focus exactly on jobs and growth creation. This is clear from the reasoning in the key policy document KEM9 and IA as well as in interviews. Since the implications for transport policy drawn from this background development (= to deemphasize direct interventions in transport growth and modal shares; refocus to economic and environmental efficiency) correspond to the changes proposed via the ASSESS indicators it could be said that the background factors serve as a sounding board that allows the recommendations concerning a shift in the key policy variables recommended through ASSESS to be taken into account. Rather than the indicators ‘explaining’ the change as if they were applied in a purely instrumental way, it is more likely the understanding of the economic situation as well as the analysis of the limited degree of policy effectiveness compared to previous assumptions that together create a situation where the indicator based recommendations are found useful in the rationalisation of the change. In a different economic or political clime different indicators or different interpretations of the same ones might have been feasible. Hence, the observance of ‘background factors’ is highly important for explaining the influence of the indicators.

### 3.5 Summary

The case study has looked at the use and influence of a dedicated set of indicators for a particular strategic policy review exercise undertaken by a service of the European Commission. The indicators were used broadly in the functions for which they were intended, namely the review

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9For example: “It needs to be taken into account that the White Paper expected a strong economic growth which did not materialise as such”. (EC 2006a:6);” Extensive consultation has taken place over the past year. This consultation has highlighted the central role of transport in economic growth and the need to re-adjust the policy measures. (EC 2006a:6); “The transport policy toolbox needs to evolve to take into account the experience gained and to reflect the evolving industrial, political and international environment. Stronger international competition, but also weaker than predicted economic growth have made the task of ensuring sustainable mobility even more challenging”. (EC 2006a; 21)
process and the production of associated documents. It was observed that the indicators were carefully developed through a number of projects over a period of time, bringing together variables, values and producing evaluations that were perceived as salient, accurate and legitimate enough to be taken into account and applied by officers involved in parts of the policy review process.

That use was made of the indicators was almost given by the setting where the review formally had to be performed, considerable investment was made to allow the production of indicators for it, and an institutional framework with competent personnel and sufficient time was in place to take the information into account. The use is confirmed by direct observation of documents as well as interviews with key informants. There were even examples given on subsequent uses of the same indicators in other reviews but we have not pursued a study of any such uses (or their effectiveness).

The influence of the indicators on the policy changes that were in focus – the revision of key strategic policy objectives of ‘decoupling’ and ‘modal shift’ - is clearly more difficult to unravel. First of all it was found that many factors contributed to the observed policy changes. Secondly the changes may be less dramatic than they seem on paper (shifting emphasis rather than new direction). Thirdly different perspectives on the role of indicators were offered by different informants. Finally one needs to recall the elusiveness of the concept of ‘influence’ itself. However we find that the information allows to propose that indicators did influence the process and its results, although only as a minor contribution that was in correspondence with a number of other factors pointing towards the same changes, such as a changing economic and political environment, and advise from policy stakeholders. The influence was generated at an interpersonal level, through close involvement of indicator producers and users together in a focussed, technically well equipped, interactive process where scenarios were defined and models were used to forecast future policy outcomes for the indicators. This process pointed towards results where some policy variables were revealed as not adequate or realistic presentations of policy aims, as also stated in the ASSESS final report, and these results contributed to convince the Commission of a need to reformulate the objectives. This interpersonal influence travelled to the level of collective of policy influence (goals and agenda setting) via the production of an Impact Assessment and (more indirectly) the main policy document, the KEM communication.

We identify the influence with a novel label called a rationalization role, which combines elements of the ‘standard’ types of instrumental, conceptual and symbolic roles introduced in the theoretical framework. It is instrumental in the sense that the indicators inform a process where policy objectives are re-formulated (previous policy objectives are de-emphasized in accordance with the results); conceptual in the sense that the change is mostly terminological, strategic and frame-shaping rather than directly pointing towards implementation, and symbolic in the sense that it mostly codifies a change that has already in part been foreseen and accepted in light of changes in economic, political and more local leadership conditions.

We explain the (limited but positive) influence by a combination of indicator, user, policy and background factors. Among the indicator factors are the generally high level of acceptance of the metrics composing the indicators, and not least their connection to a series of models (known and trusted to a certain level by users) which allows to overcome timeliness problems with historic indicators, and the production of alternative policy scenarios, which promote policy actionability of the indicators. Among user factors are involvement of a low number of involved persons, who had moreover been connected though various projects before, who broadly shared a similar transport
economic worldview, and who were skilled in handling and interpreting complex quantitative transport data. Among the policy factors we observe the newness and complexity of the European transport policy in general as something that rather creates obstacles for indicator use, at least in an instrumental sense, whereas the more specific institutional setting seems conducive as it allows one DG and units within it to control at least parts of the process and the flow of indicators from an analytical to a policy context; even if there are also some divergence among DGs and issues over the Impact Assessment procedure. Finally it is clear that general background factors like economic and political climate are important for the policy changes in which the indicators are part, and therefore also the degree of influence they can have. In this respect it could also be noted, however, that the reference to economic and political conditions itself make use of indicators such as GDP growth figures and major policy symbols like ‘Lisbon’, so to some extent it might be argued that the policy processes widely entail the manoeuvring of different sets and layers of indicators, rather than solely confronting indicators with ‘facts’ and possibilities.
4. FINAL DISCUSSIONS AND CONCLUSIONS

The study has looked at two different cases of indicators applied for strategic policy making in the context of a sustainable transport agenda, one at national level in Sweden and one at the EU level involving the European Commission. Even if the cases refer to the same sector and the same overall strategic policy agenda, they are very different in several respects. Before revisiting the research questions for making the final summary of results we will highlight some of the differences among the cases, some of which are due to genuinely different settings others due to different delimitations of the studies.

- The Swedish case concerns SIKA’s annual reports on the performance of Sweden’s transport systems with regard to a set of transport political objectives, whereas the EU case looks at a onetime focussed effort to undertake a policy review
- The Swedish report is backwards looking, on past results with a view to inform policy making, while the EU one is forwards looking with a strict focus on implications for future policies.
- The Sweden study looks broadly on the use and influence of the reports across a range of potential political and administrative users, whereas the EU study looks at the application of the ASSESS indicators for a particular policy task of the European Commission services.

This means that the findings in terms of use and influence should not be expected to be similar.

In the conclusion we revisit the research question posed in section 1. The general question for this study was to what extent indicators are used, how they influenced policy in the context of strategic policy making for sustainable transport, and how we can explain why it is so. We address this general set of questions before addressing the more specific ones.

Use of the indicators

First of all both cases illustrate examples where several indicators are actually used in policy processes, like long term planning and annual budgeting in Sweden, and the strategic Mid-Term policy review undertaken by the European Commission. The evidence of use is found in documents referencing the specific variables (like ton-km/year, or tons of emissions, or delayed trains), actual values measured or predicted, and (sometimes) associated evaluations based more or less directly on indicators shown in reports or communicated otherwise. The use of indicators has also been referred to in interviews in both cases, especially with experts and civil servants directly involved in policy review and development. In Sweden opposition politicians also mention uses, whereas this seems less the case for politicians from the government. We thus observe examples of indicators used to illustrate general transport systems trends, to assess and compare effects of potential future policies, to evaluate results of current efforts, and to feed reflections, negotiations, and debates more broadly. We did not make systematic observations about non-use of indicators, but clearly there were situations where this occurred even when indicators were available and potentially relevant. We can note that limited use (or non-use) definitely occurs among politicians.

Most evident (and most unsurprising) is use in the EU case where the ASSESS study was produced, exactly and only to inform a particular mandated policy review effort, the ‘Keep Europe Moving’ report and its accompanying Impact Assessment. In Sweden the annual reports of SIKA is less targeted to a particular policy function, but with a broader scope and a seemingly wider circulation in policy circles compared to the EU ASSESS study. Hence we observe a much wider range of references and uses in general for Sweden, but the intensity of use is lower than in the EU case,
where policy officers followed the process closely over several months and could be considered co-producers of the indicator variables, and highly informed users of the resulting values and evaluations.

In both cases, however, the indicators are not used in isolation or independent from other information input. In the EU case, the ASSESS indicators are connected to, and sits ‘atop of’ a range of transport models, and the evaluations are conditioned by series of policy scenarios constructed in the process. The model and scenario link allows the indicators to perform a highly useful function: ex ante assessment of alternative policy measures. In the Swedish case, the SIKA indicator report is just one out of many analytical and evaluative inputs given to policy planning and management, and the reports themselves also include various other types of data and information in addition to indicators. The targets themselves are more known, debated and used than associated indicators.

**Influence of the indicators**

That the indicators are used does not automatically mean that they influence the policies or the processes leading towards them in more than the most superficial manner. It is much less simple to detect influence than use. The findings are interpretations based on the analysis of documents and interviews.

In the EU case we clearly observe that the policy agenda and the associated objectives are undergoing changes in a way that conform to the indicator based evaluation. The projected indicator values suggest that existing policy objectives are unobtainable and existing policy measures insufficient. The political outcome of the review is to downplay and modify these objectives and to introduce new policy strategies and measures.

Depending on which interpretation of the process we lean on the influence of the indicators in this process and outcome appears to be more or less significant. *More* if we adopt a narrow view of the indicators and the specific Impact Assessment document being produced and *less* if we take a broad view including external factors like economic set-back that was already underway, and shifts in the political leadership. Would the policy change have been less or different if it had not been for the ASSESS study? Or is the role of the indicators purely symbolic? Obviously this cannot be answered for sure, but it is clear that the indicators must have reinforced the tendency towards change and influenced the process of wording and underpinnings of conclusions. This we see as a specific kind of role, in a way, an instrumental one at a semantic level of functional policy; but perhaps rather as partly instrumental, conceptual and symbolic one. We label it as *rationalization*, where policy conclusions already ‘in the cards’ as a result of some form of qualitative assessment backed by existing statistics become more obvious, justifiable, and expressible, with the help of the indicators. Again, this influence is only one element in a wider set of process.

Our studies of indicator influence on Swedish transport policy do not enable us to point with certainty to specific political decisions which had been different had it not been for the indicators put forward in the SIKA follow up reports. One Member of Parliament reported having used SIKA’s report directly, to (successfully) argue for a change in government spending priorities on road versus rail programs based on poor results for the climate change indicators. Hence influence at least occurred at the individual level, but we cannot be sure if this policy change would be explained differently from the side of the opponents. In general the influence seems (even) more limited in the Swedish case than in the EU one. The inclusion of the SIKA indicators in the chapter in the Transport Budget Section seems to be more of a convention or habit than something actually used as a starting point for the subsequent prioritizations in the budget process. Interviewees explain
that for the Members of Parliament influence of the SIKA indicators possibly occur at a conceptual level, as something read and noticed, with importance in the background, but it was difficult to concretely expose such influences. The regularity of the (annual) reporting process was cited as a source of influence, in the sense that the continuous risk of being held accountable for results was reported to have a disciplining effect. This could suggest a ‘process’ role of the indicators although it was not clear that this had influenced actual performance.

In summary we interpret indicators as playing a very limited instrumental role in some of those areas of transport policy we have looked at, in addition to some signs of symbolic, conceptual, and process roles. We are able to detect limited influence on policy agendas, and goals in the case of the EU Mid Term Review. Indicators inform and rationalize a change in the European Commission’s position towards some key objectives, even if no direct influence on decisions regarding policy measures could be pointed to. We see this role as mixed between instrumental symbolic and conceptual elements, as the policy change observed is mostly on a semantic (but not necessarily insignificant) level. The indicator-carried information possibly also contribute to planning and agenda setting in the Swedish government, but direct influence was not uncovered, although a vague process shaping role was confirmed. That influence appears to be more pronounced in the EU case than in the Swedish one can in part be due to a much narrower focus in our study of that case. The effect in the former case may also stand out more clearly because the EU case addresses a specific break in policy whereas the Swedish case does not focus on such a break, even if some indicators send clear signals to change. Nevertheless we believe there is also genuine difference in influence due to the circumstances of the focussed process in the EU versus the more ‘routine’ reporting in Sweden, as will be discussed in the next subsection.

**Explanations of use and influence**

We have found that factors that characterise the indicators, the users, the policies, the institutional setting and the economic and political background all may contribute to the understanding of various aspects of and limitations to indicator influence in the two cases. For example indicator factors contributing to influence in the EU case were the relatively accepted credibility of the indicators (under the circumstances), their timeliness reinforced by forecasting, and their actionability provided for through links to policy scenarios. In the Swedish case the supply of available indicators provides better matches for some objectives (safety; partly environment) than for others (regional development; transport needs, accessibility, competitiveness, gender balance), which could be a reason why the former ones were more often mentioned in interviews than the latter ones. Limited operationality and lack of link to actionable conclusions may be indicator factors contributing to reduced influence of SIKA indicators. We observe a significance of user factors in the Swedish case where politicians seem not much prone to use and refer to indicator reports even if they are a prime target group while some civil servants manage them routinely as part of their assignments; in the EU case we see a similar familiarity with indicators among civil servants and experts involved; but moreover technical skills of producers and users and their sharing a similar economic worldview, both contribute to build a process where indicators become trusted and allowed to influence discussions of policy direction. On the policy side, the limited EU case does not allow to trace the (probably) low effective influence of indicators in the complex system of wider European transport policy making, while it does appear that the more specific intuitiveal framework gave the DG TREN service of the European Commission opportunity to apply and interpret indicators in a way that is consistent with their key priorities. The function of the
Impact Assessment procedure is not quite clear in this regard; it may open the process to more critique and ‘disturbance’ in the interpretation of indicators from outside the DG, but it may also contribute to diffuse the influence of indicators more widely (in this case DG ENV was for example reportedly favourable towards the ASSESS study and its indicators even if not fully in favour of the IA process). In Sweden the what we call more ‘philosophical’ than ‘managerial’ character of the Management-by-Objectives system (see p 27 or Christensen & Lægreid 2002) contributes to limit the instrumental role and influence of the indicators compared to what one might expect in a full-blown MBO system, as we will discuss further under the specific questions below. On the institutional side SIKA’s role as a relatively autonomous organisation within the Swedish ‘dualism’ system was not reflected much in the analysis although it was mentioned that scrutiny by an independent authority was essential for maintaining a focus on performance (= the process role). As also noted background factors like a change in the economic climate, political priorities, or leadership may obviously influence how certain indicators are weighted, both with regard to their relevance as variables and with regard to how serious the resulting values are taken (e.g. less concern over limited ‘decoupling’ in the EU case due to economic slowdown). However, since such background factors may yet again be interpreted through selected indicators (such as GDP) it is not always clear where the indicator influence begins or ends, or what explains what in terms of this influence.

The above are only some examples of factors we interpret as ones that - in those particular cases - were conducive or limiting for indicator influence. It is very likely that many more factors, which we have not observed or uncovered, have been at play, and also importantly that there is interplay between such factors along the pathways of indicator use and influence which is hugely complex and likely to vary from case to case and time to time. Hence it is not useful to attempt to recall all factors that were identified, nor to seek to estimate their relative power to explain the outcomes. We can only conclude that a broad variety of factors are likely to enable and constrain the influence of indicators, and that it would be ill advised at this point to adopt a simple model of explanation at the general level of such pathways.

We will now finally revisit the specific research questions raised in section 1 of the study.

*Does the existence of a Management-By-Objectives regime as in Sweden promote the use and influence of indicators?*

We conclude that the *use* of SIKA’s indicator reports in the Budget, Strategy Plan and in administrative and political processes are enhanced by the connection of the indicators to objectives and the general system of MBO. However, this does not appear to necessarily produce equivalent significant policy *influence* of the indicators. The explanation is not necessarily that MBO systems generally or in Sweden are ineffective but that the particular system in the case mostly work at a philosophical rather than a managerial level and is somewhat detached from actual policy making and subsequent influence (see also Sørensen and Gudmundsson 2010). This means that the SIKA report partly lacks elements such as clear, operational objectives, using indicators for performance measurement and not least systematic follow-up mechanisms for performance results. The detachment seems most significant with regard to limiting the indicators in playing an instrumental role, whereas it seems that the process of recurring reporting may still contribute to maintain a conceptual level of influence on some indicators or even the set of objectives as a whole, also at the political level. The reporting seems in fact partly there for symbolic reasons; to reconfirm a shared commitment to the MBO philosophy as such – everyone seems to subscribe to this idea even if it is
not vigorously pursued; and for process reason, maintaining a culture where one could be held accountable for results. It is possible that further extension and consolidation of the system, as currently underway will contribute to increase indicator influence in the future, but this is of course just a speculation.

Does a regime based on quantified targets on the other hand lead to a potential bias towards influence of indicators associated with such objectives compared to others without them?

It seems justified to say that indicators connected to clear (quantitative) targets in both cases attract much attention which could in some situations occur at the expense of topics that do not have quantitative targets and indicators. The (few) examples in the Swedish case where politicians recalled use and influence of indicators were in areas with clear quantitative targets and indicators (climate and safety). This concern was also arguably part of the rational for a recent revision of Sweden’s target structure; to allow better assessment of to functional objectives of transport policy like contributions to economic growth and regional development that so far had been less verifiable than for example negative impacts like emissions or accidents. In the EU case the attention of the Commission’s DG TREN was interested in results concerning decoupling and modal split, both topics where quantitative targets had been set; while other participants emphasized other (also quantitative) indicators like again climate, air quality and accessibility. The whole indicator exercise was conducted with quantifiable (model-able) indicators in mind. If there had been no quantitative results illustrating the (limited) magnitude to which planned policies would contribute to deliver sustainability through for example decoupling and modal shift, then the indicators would have been much less prone to assist in and influence the process. Still, by comparing the performance of scenarios relative to one another, the need for absolute targets to compare with was diminished. In this way it is possible to undertake quantitative normative analysis without a specific target. Much of the interest and debate, both in the EU case and in Sweden was nevertheless centered on areas with targets. Still the ASSESS study also included reviews of policy implementation as well as policy evaluations in areas like innovation where no quantitative data were available. In Sweden the SIKA reports made contributions to the debate over the objective of gender mainstreaming, even if no good indicators were available (or perhaps especially: because only poor indicators were available). We conclude that the potential for bias towards influence of indicators associated with quantified objectives is definitely present, but whether this has lead to any distortions or imbalances in the specific cases we cannot confirm for sure. There may be ways around the problem both in terms of elaborating qualitative targets so they become possible to assess with quantitative indicators and to supplement quantitative analysis with qualitative. Again whether this will suffice to counter the bias is not to tell from the study.

Will a close participation of users and stakeholders in indicator design and development affect and enhance the use and influence of the indicators?

Direct involvement of policy users and stakeholders in indicator design did not seem to have taken place in the case analysed for Sweden (although we are aware of several other participatory elements in Swedish transport policy) so it will not be considered. In the EU case a crucial factor in the use and influence of the indicators was exactly the involvement of one particular key user/stakeholder, namely the European Commission’s DG TREN service who managed the ASSESS study and used it in the Mid Term Review process and key outputs. The ‘design and development’ of indicators is in fact a somewhat extended and diffuse process.
Indicators in our terminology are composed of variables, populated with data values, leading to evaluations, embedded in frameworks. Each element may be designed and developed in different steps and/or by different actors. In the ASSESS study the framework was widely determined by the objectives of the Common transport policy. The specific variables were selected by the consortium from a range of sources, including previous research projects like INDIC and SUMMA. The values were (apart from base and past years) solely output from the models that were run by the consortium independent from outside control, although repeated runs were sometimes made at the request of the Commission to confirm the robustness of certain output values. The consortium also produced evaluations with regard to fulfilment of the various objectives. The Commission then undertook its own process of preparing the IA. In this process several variables, values and evaluations were taken from ASSESS, but also other ones (including the ‘widening’ option) was defined by the Commission itself. We see this as an example of a process in which indicator users and producers are working closely together in the design, selection and interpretation of the indicator processes, within a quite confined, but internally open and explorative process that build confidence, empower the users, and increase the potential for indicator influence more than would have been possible in a process where there had been a strict separation. We thus believe that we can answer the question in a confirmative way, although of course not necessarily with validity for any other cases. This is broadly in line with previous research on evaluation use reviewed by Jonhson et. al. (2009) and especially on indicator use by Innes (1990), who found that a successful outcome of an indicator program will usually involve an emerging common construction process within a group of policy actors, involved in processes of conceptualisation and definition of indicators along with shaping the policy field. The same results cannot be achieved by for example letting external experts produce and deliver neutral ‘high quality’ information. It is the ‘shared understanding’ (Innes 1998, p 56) obtained through critical elaboration and gradual acceptance that makes the information accepted. This, however, does not imply that the ASSESS indicators are now carved in stone after the MTR. As we noted from interviews there is keen awareness of the limitations to the existing material which had to be used for the assignment, and a need to further develop indicators is recognised around the board.

Does the context of ‘sustainable transport’ policy provide special conditions for the use of indicators and for their influence on policy; more specifically will the ‘structuredness’ of the policy area determine the kind of influence indicators can have on it?

It seems correct that the influence of indicators in the sustainable transport context is affected by the complexity of the field. We interpret the field in both the case of Sweden and the European Union as ‘moderately structured’ characterized by a certain degree of consensus on the overall policy goals (more operationally so in Sweden than in Europe), but less so on how to reach the goals with strategies and measures. There is thus in both cases a broad consensus that environmental, social, and economic impacts of transport must be considered in connection with strategic policy assessment. However, the goals for each impact are not equally operational. For some goals indicators were available in both cases to allow uncontested critical assessment of performance (e.g. Greenhouse Gas Emissions, or accidents); for others there were no less clear indicators. In Sweden this was the case e.g. for economic development, accessibility, and gender balance in transport. This tends to feed the ‘polarization’ of interests in pro-mobility and pro-environment positions. Pro-environment positions are strengthened by reference to the existing indicators, which makes the other side call for the development of a more ‘balanced’ set of operational goals and objectives. One can thus see the indicators as part of the dynamics that feed policy debates in a field that is

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more conflicting with regard to measures than (at least overall) goals. In the EU case operational indicators were more successfully constructed for all of the relevant goals of the common transport policy in the studied process, and the (more confined) discussion could focus on the different strategies (but also on the revision of intermediate goals). The limited pre-existing consensus over appropriate and effective policy instruments to fulfil the specified objectives is reflected in the case as the construction of different scenarios, some of them with measures not even foreseen from the outset such as the ‘extended’ scenario. Within the confined process the indicators can be used to test various assumptions and combinations where indicators are used as ‘arguments’ (in line with Turnhout et. al.’s scheme) leading towards a degree of consensus about the limitations to certain ‘simplistic’ strategies such as modal shift. However the very limited scope of the study does not allow considering what the role of indicators would be in this regard in the full context of European transport policy in all its complexity.

Based on the cases it is not possible to identify one specific role that indicators play in the context of sustainable transport policy. Even if the direct influence of the indicators may be limited and hard to detect we believe the study also demonstrate that indicators have useful and interesting functions, such as: helping to focus efforts, monitor developments, report on positive results, remind of critical lack of accomplishments; feed alternative perspectives on policy priorities, clarify or challenge policy goals and agendas conceptually as well as with regard to numbers; help diagnose problems and suggest cures by decomposing factors behind observed developments, fuel debates and controversies; and not least, as in the EU case, to support a learning process where past assumptions about causes and effects, effectiveness of strategies and relevance of goals and strategies are challenged and new ones are formulated. Indicators do not necessarily do any of the above in an instrumental or even effective way, and they do not do it by themselves but only together with other information tools such as models and target frameworks.
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