



Indicators of Environmental Policy Integration in Nordic Transport policies (Pre-project report)

Henrik Gudmundsson

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(Pre-project report)**

ANP 2006:731

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ISBN 92-893-1322-6

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Nordic Council of Ministers

Store Strandstræde 18
DK-1255 Copenhagen K
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Nordic Council

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Nordic co-operation in the transport sector

The overall, general objective of co-operation is to foster a Nordic transport sector characterised by efficiency, competitiveness, safety, sustainability, and equality. In order to attain these objectives with the resources available, co-operation will be focussed on four areas:

Sustainable Mobility, The Baltic Sea, Intelligent Transport Systems and Transport Safety.

Nordic co-operation

Nordic co-operation, one of the oldest and most wide-ranging regional partnerships in the world, involves Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland and Åland. Co-operation reinforces the sense of Nordic community while respecting national differences and similarities, makes it possible to uphold Nordic interests in the world at large and promotes positive relations between neighbouring peoples.

Co-operation was formalised in 1952 when *the Nordic Council* was set up as a forum for parliamentarians and governments. The Helsinki Treaty of 1962 has formed the framework for Nordic partnership ever since. The *Nordic Council of Ministers* was set up in 1971 as the formal forum for co-operation between the governments of the Nordic countries and the political leadership of the autonomous areas, i.e. the Faroe Islands, Greenland and Åland.

Preface

This pre-project report is the result of work requested by the former working group “Hållbar mobilitet” (Sustainable Mobility) of the ‘Nordisk Embetsmanns-komit  for Transportpolitikk’ (NET), which previously existed under the Nordic Council of Ministers.

The assignment was to establish whether indicators for the integration of environmental concerns in transport policies in the Nordic Countries could be established. The pre-project was to outline a description of a main project, in case the answer was positive.

The pre-project found that it would indeed be relevant and possible to develop such indicators. However, since the Working Group was discontinued, the proposed main project did not go forward.

This report contains the findings of the pre-project- including an outline of possible main project, which will therefore not materialise in the proposed form.

I would like to thank Senior Scientists Trine Susanne Jensen and Niels Christensen, National Environmental Research Institute, who reviewed a draft of the report. The working group on “H llbar mobilitet” did not submit formal comments to the report. The contact person of the group Peder Knudsen has provided informal comments and has approved the report.

Henrik Gudmundsson

National Environmental Research Institute, Roskilde
April 2006

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1 Overview

This pre-project report will analyse the possibilities for defining a set of operational indicators to monitor Environmental Policy Integration (EPI) efforts and accomplishment in transport policies of the Nordic countries.

The assignment was given to the National Environmental Research Institute (NERI) in December 2004 by the working group “Hållbar mobilitet” (Sustainable Mobility) of the ‘Nordisk Embetsmanns-komit  for Transportpolitikk’ (NET) under the Nordic Council of Ministers.

In Chapter 3 the report describes the overall background and need for indicators of sector integration and EPI in transport policies. The analysis then proceeds through conceptual and operational clarification of EPI followed by considerations of various measurement options for EPI.

An in-depth review is made of experience with practical EPI assessment obtained within a recent project for the European Environment Agency (EEA) led by the Institute for European Environmental Policy (IEEP), and involving NERI. This project will be referred to as the ‘EEA-EPI-project’ even if the results have not yet been endorsed or published by the EEA.

The present report will then briefly address some contextual aspects of the Nordic countries transport policies that are relevant for defining a common approach for monitor EPI.

Finally the report will conclude on the feasibility of defining operational indicators for monitoring Nordic transport EPI.

The recommended way forward is laid out as a brief draft proposal for a main project included as an Appendix to this report.

Suggestions for actual indicators is outside the scope of this pre-project.

The following general introductory remark about the approach used in this report may be noted: NERIs interpretation of the task assigned by NET is to focus on the possibilities of developing indicators of Environmental *Policy* Integration (EPI) and not integration in all areas of the transport sector. Furthermore its focus is on indicators *of* EPI (meaning indicators that aim to measure EPI efforts and outputs of relevant policy authorities), rather than indicators *for* EPI (meaning ‘physical’ outcome indicators of transport and environmental systems that could be used in transport policy making). These distinctions are important to keep in mind and will be addressed further in the report.

2 Background

2.1 EPI–what and why?

Environmental Policy Integration (EPI) is an important principle in policy making. It means that environmental protection is included and secured in all political decisions and implementations of policy, not only in 'environmental' policy.

The EPI principle has old roots but was put forward prominently in the Brundtland Report (WCED 1987). It has been re-affirmed in both Rio and Johannesburg Summit documents, and it is generally considered as a necessary requirement for achieving a balanced, sustainable development see, Lafferty for OECD (2002).

EPI aims both to ensure the necessary protection of the environment and the *co-ordination* of policies. This means reducing conflicts between e.g. measures for economic growth and measures to reduce environmental pressures, which should again increase the effectiveness and legitimacy of political decisions. Ideally EPI can also help to promote *synergies* between environmental and other policies.

EPI can be seen as a subset of a wider concept of integrating environmental and economic practice and thinking in the development of society. '*Environmental integration*' concerns the whole society, *EPI* focus on the policy aspects, and '*sector*' *integration* focus on individual sectors. EPI can then be seen as an important prerequisite for the wider integration concept as well as for sector integration.

EPI in Europe

In *Europe* the EPI principle has been made constitutional by its inclusion in the Article 6 of the EC Treaty and in the pending Constitutional Treaty. The so-called Cardiff process was set in motion by European heads of State and Governments in 1998 to ensure that this principle is implemented in practice. The EPI principle is also a key element in the EU's Sustainable Development Strategy from 2001 and hence a part of the high profile Lisbon Process for employment, economic reform and social cohesion.

EPI in the Nordic countries

The *Nordic* countries have also widely adopted the EPI principle nationally, in some cases as a general legal principle; in other cases as a part of political programs or strategies. It is emphasised in the individual Na-

tional Strategies for Sustainable Development (NSDS) of all the Nordic countries and also in the joint Nordic strategy 'Sustainable Development New Bearings for the Nordic Countries' (NCM 2005).

Measuring and monitoring of EPI must therefore generally be considered important not only for specific environmental performance and policy reviews but also for assessment of progress towards sustainable development and towards effective, coherent, transparent and accountable public governance (OECD 2002).

2.2 Why EPI in transport?

Transport is a source of several pressures on the environment, including air pollution, noise, impact on wildlife and landscapes, water pollution, resource consumption, waste and climate change. Some of these pressures are being reduced, as a result of policies, while others such as CO₂ emissions remains major challenge. Past and future projected growth in transport demand and expansion of transport systems means that environmental protection needs to be kept in focus in the transport sector.

Environmental protection concerns are relevant in several dimensions and phases of transport policy making, including:

- Formulation of overall policy principles, objectives and action plans
- Planning, building and maintaining infrastructure
- Regulating/liberalising transport services and operators
- Regulating transport technologies and systems
- Providing frameworks for local, private and stakeholder involvement
- Monitoring and evaluation of trends and policies

Demand for transport and mobility is generally derived from activities outside the transport sector. Hence environmental integration may also be important in areas closely related to transport such as land use planning, taxation, or business and labour market policies.

EU transport EPI

At *EU level* transport was one of the first three sectors asked to enter the Cardiff process. The first 'Cardiff' strategy for transport was adopted by the Council (Transport) in 1999. A set of indicators to monitor and support the transport integration strategy – the 'TERM' system - was set up by the European Environment Agency around 2000 (EEA 1999; 2000; 2001; 2002; 2004). In its 2001 report the EEA stated ... "that transport is becoming less and not more environmentally sustainable, and *integration efforts have to be redoubled*." (EEA 2001, p 3, my emphasis, HG). These conclusions have not been reversed since, and there is a widely shared

concern that efforts to integrate environmental protection in transport may not have been very effective so far.

Nordic transport EPI

Also in the *Nordic* countries transport has been an early target sector for EPI. Transport sector responsibilities for environmental objectives have been defined and transport sectoral action plans for environment and sustainability have been used in most Nordic countries for more than a decade. Several specific initiatives have been taken to integrate the environment, including the use of tools like EIA and SEA to assess effects of transport initiatives on the environment. It can be safely said that environmental issues are no longer alien to transport policy makers and transport administrations in the Nordic countries. In fact there are many examples of practical EPI efforts which has made Nordic countries feature prominently when such examples are discussed internationally (e.g. at the European Commissions Conference 'Integration of environment into transport policy from strategies to good practice' (EC 2003)).

However, some of the previous efforts (e.g. sector plans and sector targets) have in fact been abandoned again, and the level of policy implementation does not seem to have been sufficient to achieve major changes towards sustainability, not even in the Nordic countries: Transport trends have not generally been decoupled from economic growth, modal split is not changing in a favourable direction, long-term environmental objectives have obviously not been reached yet, and conflicts between transport expansion and local/environmental interests are still not avoided.

Hence there are good reasons to take a closer look at EPI efforts in the transport sector.

2.3 Measuring and monitoring Transport EPI

There have been various attempts to describe and evaluate EPI efforts in the transport sector. International examples include reports reviewing the European Unions' Cardiff' process (see e.g. Bina & Vingoe 2000); studies and reports on specific EPI instruments such as SEA; OECD indicators on transport integration (OECD 1999 is the most recent), and a few EU research projects (see e.g. Hey et al 1996).

At the national level, some countries have made their own policy reviews or set up monitoring schemes that include aspects of transport EPI (most extensively in Finland, see Hjelt et al 2005). However, none of the mentioned efforts provide internationally comparable and updated information on transport EPI activities.

The TERM approach

One of the most advanced attempt in this area is clearly the so-called 'TERM' (Transport and Environment Reporting Mechanism) of the European Environment Agency. TERM is an extensive system of (annually reported) transport and environment indicators for European countries, established with an aim to support European transport EPI (EEA 2000; 2001; 2002; 2004).

The TERM indicators are grouped under seven so-called 'policy questions' (table 1). The most specific 'EPI indicators' are included under TERM's Question 7 "Management integration". These indicators are shown in table 2.

Table 1. The seven 'Policy Questions' of the TERM system (EEA 2001)

1. Is the environmental performance of the transport sector improving?
2. Are we getting better at managing transport demand and at improving the modal split?
3. Are spatial and transport planning becoming better coordinated so as to match transport demand to the need for access?
4. Are we optimising the use of existing transport infrastructure capacity and moving towards a better-balanced intermodal transport system?
5. Are we moving towards a fairer and more efficient pricing system, which ensures that external costs are internalised?
6. How rapidly are cleaner technologies being implemented and how efficiently are vehicles being used?
7. How effectively are environmental management and monitoring tools being used to support policy- and decision-making? (Management integration)

Table 2. Indicators for Question 7 'Management integration' (present indicator set according to www.eea.eu.int)

TERM 35 Number of Member States that implement an integrated transport strategy
 TERM 36 Institutional co-operation in transport and environment
 TERM 37 Number of Member States with national transport and environment monitoring system
 TERM 38 Uptake of strategic environmental assessment in the transport sector
 TERM 40 Public awareness and behaviour

However, several weaknesses have been noted by the EEA itself and others, concerning TERM as a mechanism for monitoring EPI (as discussed e.g. at EEAs 'TERM' workshops for member country experts in 2003 and 2004)¹.

¹ The author took part in these workshops. The notes from the workshops have not been published.

Some of the recognised weaknesses are:

- TERM is not moulded over a clear concept of EPI
- The ‘management’ indicators (Question 7) address only a fraction of the management issues involved in EPI
- The management indicators are given low overall quality rating by the EEA itself
- Update of the present management indicators is cumbersome and has not frequently been undertaken

These critiques do not imply that TERM provides no information that is useful to monitor EPI, on the contrary: TERM should a key source of both concepts and data. However, further development seems needed to establish useful transport EPI TERM indicators.

All in all there is a clear, internationally recognised need for improved indicators to monitor transport EPI. It is natural for the Nordic countries to take a lead in this, since these countries have been strong promoters of the EPI principle and have been pioneers in applying it in the transport sector.

3 Defining and measuring EPI

3.1 Introduction

To *measure and monitor* EPI on a regular basis in a comparative way will involve certain necessary steps:

- First of all a clear definition of EPI must be agreed
- Secondly the dimensions of the definition must be made operational for monitoring with appropriate indicators
- Thirdly, the necessary information to 'fill' the indicators must be provided and procedures for updating them regularly ensured

To *assess* EPI strategies and their effectiveness would furthermore require that:

- Performance of EPI indicators can be judged by some standard(s) or benchmarks
- EPI policy efforts can be conceptually, empirically (and practically) linked to the EPI indicators AND VICE VERSA.

3.2 Defining EPI

So, first of all, what is EPI, and what is to be measured?

The European Commissions Joint Expert Group on Transport and the Environment (JEGTE) defines *environmental integration* in this way:

"... integration means that environmental issues are taken into account on *an equal basis* to other concerns such as economic and social aspects. All stakeholders would include the relevant environmental aspects in the framework of their responsibilities and these would be reflected in their actions." (JEGTE 1999, my emphasis HG)

This definition can be considered at a general or sector level.

The 'EEA-EPI' project (Coffey et al. 2005) that will be presented thoroughly later, has a more narrow focus on environmental *policy* integration or EPI, which is defined as follows:

"Environmental policy integration or 'EPI' means environmental objectives are reflected in all *policy areas*, including those aimed primarily at economic sectors, in order to contribute to sustainable development. Although EPI is frequently as-

sociated with governmental or EU policies, it is also relevant to local authorities and private sector actors” (Coffey et al 2005, my emphasis, HG)

But what does it mean that environmental objectives are ‘reflected’ in other policy areas? Policy scientists Lafferty & Hovden (2002) have developed a more detailed understanding of EPI defining it as:

“ - the incorporation of environmental objectives into *all stages of policymaking* in non-environmental policy sectors, with a specific recognition of this goal as a guiding principle for the planning and execution of policy (...) accompanied by an attempt to aggregate presumed environmental consequences into an overall evaluation of policy, and a commitment to minimise contradictions between environmental and sectoral policies by giving principled priority to the former over the latter.”(Lafferty & Hovden 2002. p 15, my emphasis HG)

To clarify further what this definition implies, Lafferty (2005) emphasises EPI as a *process*, with certain *products*:

“.. ‘Environmental Policy Integration’ is semantically indicative of a *process* that signifies the integration (conjoining, completing, making whole) of environmental/ecological concerns (values, goals, policy tasks) into other public policies.

The designated activity is:

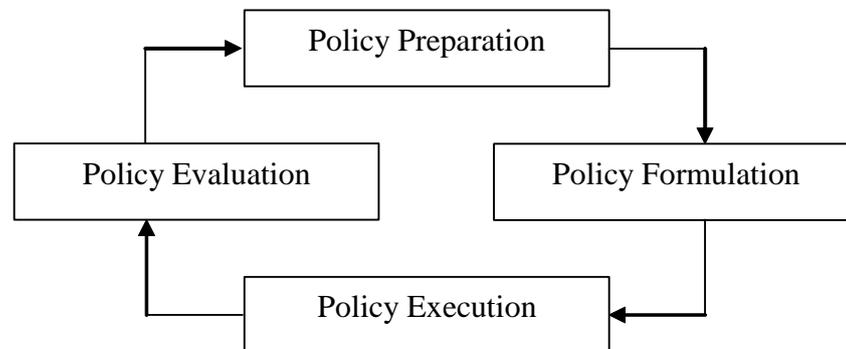
- a governing (steering) process;
- designed to produce amended (“integrated”) sectoral policies;
- the consequences of which are environmentally benign.” (Lafferty 2005, my emphasis, HG)

The key elements of the Lafferty approach can be explained further:

EPI as a process

The process or ‘policy cycle’ Lafferty refers to involves the various steps in a typical (or ideal) decision making process. A simple model of the policy cycle is in figure 1 (Bosch 2002), while more elaborate models also could be used. The point is that EPI should involve environmental considerations taking place in every step.

Figure 1. Policy Cycle from Bosch (2002).



The 'process' dimension must also be viewed from an institutional point of view (Lafferty 2004; Hertin and Berkhout 2001). EPI is more 'secured' if environmental issues are embedded in the institutional structure that *supports* the decision making phases. This involves building in EPI requirements into formal rules, organisational structures, standard operation procedures, assessment models etc. Even informal rules and mental frameworks in the relevant organisations may have to be considered (Sørensen 2001).

EPI as products and outcomes

In addition to the process aspects Lafferty and Hovden in the above refers also to a *product* or *output* aspect in the form of new 'integrated' policies'. This could include for example revised (greener) policy documents for a sector where environmental objectives are included, and the 'greening' of specific regulations or projects that are implemented by a government agency.

Finally an *outcome* element is mentioned. This refers to the final 'environmentally benign' effects of EPI efforts on transport systems, environmental quality etc. Assessment of these outcomes would require that additional measures of changes in these systems be defined.

The normative question

An important issue for the assessment of EPI is the normative question: When environmental objectives are '*reflected*' in other policies, as cited from Coffey et al (2005) above, does this mean that they are given '*equal consideration*' as other concerns as proposed by e.g. JEGTE, or must the environmental dimension even be given a *higher* priority before we can talk about EPI, as claimed by Lafferty et al ?

The EEA-EPI project (Coffey et al. 2005) discusses this important issue further in the following way, proposing a balancing understanding:

”EPI involves a continual process to ensure environmental issues are taken into account in all policy-making, generally demanding changes in political, organisational and procedural activities, so that environmental issues are taken on board as early as possible and continuing during implementation. The product of EPI should be an overall improvement in policy and its implementation. *The environment will not necessarily come out on top in every policy* that is adopted and implemented, but the overall trend should certainly be in the *direction of sustainable development*. In reality, however, even if environmental issues are considered throughout the policy-making process, they may not be sufficiently reflected in decisions. An evaluation framework for EPI would therefore need to consider both the policy-making process, and the policies and their outcomes.” (Coffey et al 2005, my emphasis, HG)

This understanding of EPI does not prescribe a dominance for environmental objectives over other objectives, but it does reflect the need to ensure that environmental concerns are taken seriously into account throughout policy making.

All in all the cited notions of EPI are fairly similar, while they also illustrate that EPI has many dimensions and elements. Most emphasis is put on what goes on in the institutions and processes of decision making while there is also mention of important dimensions outside these processes: are implemented policies in fact becoming (sufficiently) green, do they effect the actors in the sector and do they produce more 'benign' or sustainable results in the end?

The normative question is not fully settled, but there is in any case an interest to somehow assess the *strength* or '*depth*' of integration beyond a mere formal adoption of the principle on paper. This concern should be taken into account in the further discussion of how to monitor EPI (in following sections).

Proposed definition

We will propose the following working definition of EPI at the sector level, which draws from - and is consistent with - all the above notions:

Environmental (sector) Policy Integration means that:

- concern for environmental protection is built into all relevant policy institutions within non-environmental policy sectors, and
- taken into account in all relevant stages of policy making processes within those sectors,
- resulting in policy outputs that take explicit account of relevant environmental objectives and problems, and
- having policy outcomes that can be verified in terms of their contribution to sustainable development.

This proposed definition does not necessarily prescribe a substantial superiority for environmental concerns, but it emphasises the need for special arrangements to ensure that they are fully dealt with. The definition is not to be seen as final or exclusive; its purpose is mainly to highlight key dimensions to consider further in making EPI operational for monitoring.

3.3 Making EPI operational – various approaches

It is evident from the definitions in the previous section that it is not straightforward to 'measure' EPI, while some aspects may be easier to handle than others. EPI is a 'soft' issue with eventually 'hard' consequences. In 1998 the EEA noted:

“Measuring progress with environmental policy integration is more difficult than monitoring deterioration or improvement in the environment itself. (...) This would require agreed criteria for judging the effectiveness of 'integration' (...) The information and research activity needed to apply these criteria to key sectors is not yet available....” (EEA 1998, p 284)

Since then, however, progress has been made and various attempts to operationalise and measure aspects of EPI (by EEA itself and others) have been reported in the literature.

These attempts can be divided into various groups depending on the *scope or purpose* of the exercise on the one hand, and depending on the *methods* used in the assessment on the other.

Different approaches

Three different approaches in terms of *scope* can be identified:

1. The first approach is closely linked to the EU's Cardiff process. The intention is to assess whether EU institutions or EU member states have adhered to what was required in the Cardiff Summit conclusions or subsequent strategies and guidelines. This approach may be called *EPI strategy review*. Examples include the European Commission's Stocktaking reports (EC 2004) as well as reviews made for various EU Presidencies (e.g. Kraemer 2000; Bina et al 2000; Wilkinson et al 2002).
2. The second approach is more generic. Various criteria for EPI is defined from the conceptual literature and these criteria are used to analyse the advancement EPI in different sectors and/or countries. This approach may be called *EPI assessment*. Examples include Lafferty (2002); and Jacob & Volkery (2005).

3. The third approach is specific, by addressing the use of particular types of instruments of EPI, e.g. environmental assessments or the use of certain policy measures like green taxation. This approach may be called *EPI instrument analysis*. Examples include e.g. Zito et al 2005 and Hamblin (1999).

In this context we have chosen to interpret the task as to follow the second approach *EPI assessment (2)* based on generic EPI criteria applied to transport policy.

We would not aim for a specific evaluation of the Cardiff strategies (1), since there are other mechanisms in place for that (e.g. EC 2004). Neither would we start from analysis of one or two particular policy instruments (3), even if such analysis may be useful as input to the overall approach.

Different methods

The *methods* used to assess EPI and similar policy strategies can broadly be divided into two groups, *detailed qualitative evaluation (a)* and *indicator based assessment (b)*.

- a) *Detailed qualitative evaluation* typically involves an in-depth analysis of a particular case utilising a range of methods including e.g. policy documents, verbal reporting, interviews and questionnaires. A relevant example is the recent extensive evaluation of the environmental management systems of Finnish Ministry of Transport and Communications undertaken by Hjelt et al (2005)
- b) *Indicator based assessment* relies on measurement of specific variables (indicators) that can be defined as common for a number of cases and/or points in time. Indicators can build on qualitative or quantitative information but often involves the use of simplified, numerical representations. The TERM system mentioned earlier is a prominent example of relevance here (EEA 2001; 2004)

The task for this project is to explore the indicator based assessment approach (b), rather than detailed qualitative evaluation (a). However, we will not suggest to duplicate the TERM system in its broad use of quantitative indicators to measure the performance of transport systems in terms of modal split, decoupling, emissions, fragmentation or other outcomes. Rather we should focus on indicators that can be related as directly as possible to EPI efforts. We will call this approach *Indicator-based EPI assessment*.

The chosen approach may in practice *incorporate* elements from the other approaches and methods mentioned, and the results could therefore

eventually also contribute to improve both ‘Cardiff’ process reviews and TERM, but these remain secondary objectives here.

3.4 Indicators of EPI

Regular assessment and monitoring EPI according to the above approach will require the definition of appropriate indicators of some kind. This section will review various types of indicators that may be useful to monitor EPI.

General indicator definition

Indicators generally refer to critical properties of systems or policies. Indicators ideally serve to reduce complexity by condensing large or disparate sets of information into a limited number of measurable, significant variables. Indicators can be used to highlight key issues, monitor progress over time, compare with targets, or benchmark across cases. Normally the intention is to use indicators recurrently, which means that they must be standardised and reproducible.

Indicators can be used when a purely qualitative, rich verbal description is not considered sufficient (for instance to compare regularly over time, space or cases). However indicators must always be considered in relation to broader frameworks of interpretation. Indicators do not provide complete information but are ‘proxy’ descriptors of key concerns or problems. There is always selection and choice involved in defining (and using) indicators.

Hence we will define indicators as *variables that have been constructed and selected to signal something important about a particular concern in a significant way, and in a repetitive mode.* (Gudmundsson 2003).

Nominal, ordinal and cardinal indicators

There are many types and categories of indicators. Since EPI is a ‘soft’ concept, which is typically not directly measurable with conventional ‘physical’ performance indicators, we need to identify types of indicators that may be useful in such a rich, qualitative context.

Here we will focus on the distinction between *nominal, ordinal and cardinal* indicators (Spangenberg et al 2000).

Nominal indicators can refer to a logical distinction or dichotomy, e.g. if a certain policy has been adopted or not; if a specific procedure has been implemented or not; if customers report satisfaction or not. Nominal indicators may be easy to report, while they provide limited information about the system or policy in question, unless there are many of them.

Ordinal indicators refers to a hierarchy of qualitative states, e.g. the degree of public participation in a policy process (e.g. none, little, some, much, etc), or the degree of satisfaction with a certain situation (1,2,3,4,5 etc). The order and direction on an ordinal scale is clear while the increments do not have a uniform and comparable value. This kind of indicator is frequently used in social research and monitoring.

Cardinal indicators are quantitative measures on a continuous (or quasi continuous) scale. Simple examples could be e.g. total transport emissions, number of traffic injuries compared to a target, or percent of projects undergoing Environmental Impact Assessment. Cardinal indicators can be treated mathematically and various derivatives may be derived - ratios, time series, distance-to-target; aggregate indices or quantitative measures of policy impact. Cardinal indicators are widely used in transport and environmental monitoring.

Cardinal type indicators are often considered as the most rich, flexible, comparable and powerful. However indicators are of course only useful *if they are indicative of the issue that needs to be indicated*. If the issue cannot be quantified in a meaningful way, cardinal indicators are not applicable or could be misleading. In the present connection it is for instance unlikely that all of the institutional and procedural aspects of EPI could be fully quantified. In that case nominal and ordinal indicator types will serve better.

Cardinal indicators could nevertheless be relevant if they could trace the *outcome* aspects of EPI: How much do environmental pressure or impact actually change due to EPI efforts? However the use indicators in this way will require that a clear causal link between the efforts and the outcomes can be established – via a theory and/or a model. Here we may find gaps in knowledge that would prohibit the detection of EPI efforts on physical outcomes. It would be a clear monitoring failure to base EPI assessment on cardinal outcome indicators without robust conceptual linkages in place. We will address this problem further.

Quality and relevance of indicators

Several prescriptions for good and useful indicators have been established. Among the most influential criteria of indicator quality are the ones defined by the OECD (1993).

OECD distinguishes between three types of criteria for selecting environmental indicators: *Policy relevance*, *Analytical soundness* and *Measurability*. The more specific criteria are shown in Table 3.

Table 3. OECD list of criteria for ideal indicators (OECD 1993)

<p>Policy relevant and useful indicators should:</p> <ul style="list-style-type: none"> • provide a representative picture • be simple, easy to interpret and able to show trends over time; • be responsive to changes; • provide a basis for international comparisons; • have a threshold or reference value against which to compare it <p>Analytically sound indicators should:</p> <ul style="list-style-type: none"> • be theoretically well founded in technical and scientific terms; • be based on international standards and international consensus about its validity; • lend itself to being linked to economic models, forecasting and information systems. <p>Available data required to support indicators should:</p> <ul style="list-style-type: none"> • be readily available or made available at a reasonable cost/benefit ratio; • be adequately documented and of known quality; • be updated at regular intervals in accordance with reliable procedures.
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Some of the OECD criteria have already been addressed. We will highlight a few more of the issues that are particularly important in the present context, namely *international comparisons*, reference to *international standards*, *regular updates* and the question of *thresholds or norms*.

International comparisons

The point of the present exercise is to look for indicators that are comparable at least across the Nordic countries. This means that themes or indicators that are very specific for a particular country and themes that are quite irrelevant for one or more Nordic countries should be avoided. Common frameworks, definitions, and procedures that are generally applicable should be preferred.

International standards

At this stage there is no international scientific or technical 'standard' by which to measure EPI. If there was this pre-project could proceed directly to measurement. However as we have seen there are considerable agreement about the meaning and general dimensions of the concept itself. In the following section we will look into one of the most advanced attempts so far to set up a general framework, the EEA-EPI project.

Regular updates

The proposed indicators should be possible to measure and update regularly. One of the main problems with existing EPI indicators like in section 7 of TERM (see table 2) is exactly lack of updates to reflect changes. It should be an aim of the project to clarify an update procedure that is realistic and not too demanding in terms of costs or manpower. Whether an *annual* update is the right interval should be considered.

Thresholds or norms

Useful indicators should always refer to a norm (in terms of a desired quality, standard or direction). Norms for nominal indicators can for example simply be a requirement that a certain measure is in place (the norm is 'yes'). Norms for ordinal indicators can be e.g. that higher score on the scale is better, or a certain score is necessary to pass an approval mark. Norms for cardinal indicators can relate to all kinds of measures, percentages, rates, targets etc.

Recalling the EPI definition in the previous section it is clear that it needs to be made operational in these terms: What are the norms that define if EPI has taken place or not? Can we decide if EPI is more or less 'strong' or effective? The specific *dimensions* to monitor must be laid out more explicitly and the desired *norms or directions* need to be defined to allow assessment.

The following section will exemplify how these points were addressed in the EEA-EPI project.

4 The EEA-EPI project

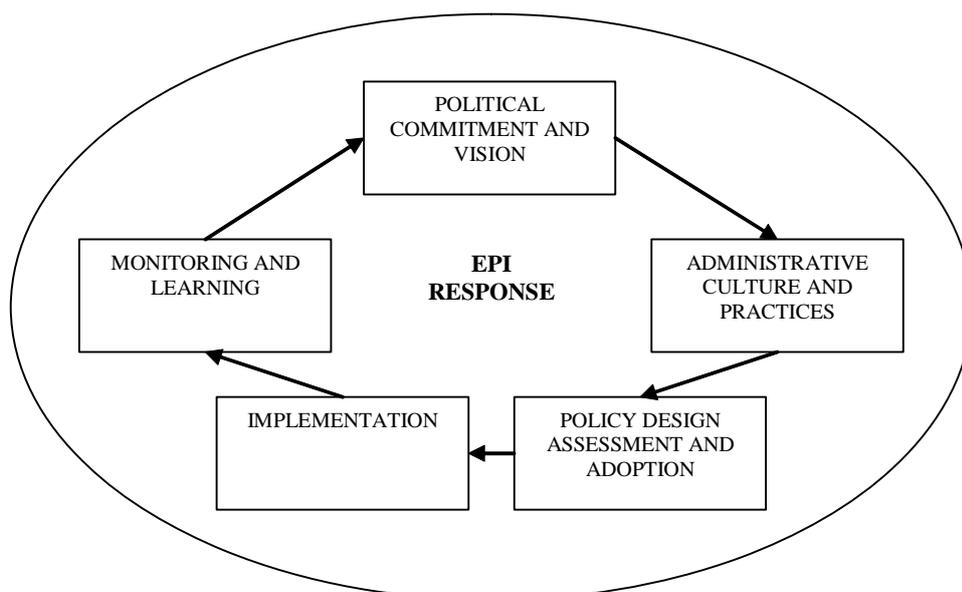
4.1 Overall description

In 2004-2005 the European Environment Agency undertook an EPI project. The aim was to develop a methodology to review EPI in Europe for EEAs (then) upcoming State of the Environment Report (EEA 2005). A consortium of consultants headed by the IEEP was commissioned for the project. An advisory panel of experts was also established. The framework was developed in an iterative process involving state-of-the-art literature review, expert consultations and practical testing. The present author was member of the consultants team as well as of the advisory panel.

The project produced several results including a generic concept to be used for the assessment of EPI (EEA 2005b), and a testing out of the framework in the sectors of Agriculture, Fisheries and Transport. *Please note* that the references below mostly are to working documents from the project only (including Coffey et al 2005), which may not have been published in that exact form or at all.

The key *dimensions* (or criteria) proposed in the EPI assessment framework is shown in figure 2 below.

Figure 2. EPI analysis framework (adapted from EEA 2005b).



The oval in figure 2 holds the key dimensions of policy making in which EPI is supposed to take place, while the general framework also include

some outside factors like driving forces in the sector and possible environmental outcomes of the EPI efforts (not shown).

The framework refers to five generic dimensions (called *categories* of EPI), 'Political commitments', 'Administrative culture and practices', 'Policy design' 'Implementation' and 'Monitoring'. These categories are meant to form a comprehensive set of dimensions in which EPI can be considered and measured.

For each of the five categories a set of specific *criteria* to assess EPI have been defined, 17 criteria in total. Each criterion refers to the presence or absence of some EPI measure or strategic instrument within the particular field of policy making addressed in one of the categories.

The EPI measures/instruments referred to include for examples:

- Legal frameworks
- Sectoral strategies or action plans
- Mission statements of government bodies
- Management procedures
- Assessment tools
- Use of economic instruments and funding mechanisms
- Monitoring and evaluation schemes

Table 4 below provides a full list of the 17 criteria under the five overall categories. Please observe that the formulations are not necessarily identical to the final framework in EEA 2005b.

Table 4. Draft criteria for assessment of EPI (Coffey et al 2005)

1 Political commitment & strategic vision
1a Is there a high level (i.e. constitutional / legal) requirement for EPI in the sector?
1b Is the sector included in an overarching strategy for EPI and/or for sustainable development?
1c Does the sector have its own EPI or sustainable development strategy?
1d Is there political leadership for EPI in the sector?
2 Administrative culture & practices
2a Does the sector administration's mission statement reflect environmental values?
2b Are environmental responsibilities reflected in the sector administration's internal management regime?
2c Are there cooperation mechanisms between the sector and environmental authorities?
2d Are there mechanisms for cooperation with higher or lower levels of governance?
3 Assessments & consultation to underpin policy design and decisions
3a Does the sector have a process for ex-ante environmental assessment of its proposed policies or programmes?
3b Are environmental authorities and stakeholders engaged in mechanisms for consultation and participation in the sector's policy-making process?
4 Use of policy instruments to deliver EPI
4a Do the sector's financial assistance programmes provide incentives for environmental improvements?
4b Are other economic instruments used for EPI?
4c Are there technical or other standards to promote environmental objectives in the sector?
4d Are other instruments used to promote EPI?

5 Monitoring & learning from experience

- 5a Is the sector's progress towards its EPI objectives and targets regularly monitored?
 5b Is there a systematic evaluation of the effectiveness of the policies that have been put in place?
 5c Are there mechanisms for exchanging good practice?
-

To assist in the practical analysis a further set of 2-6 *subcriteria* were defined underneath each of the 17 criteria, in total around 55 subcriteria. These subcriteria will be exemplified in the review of the testing of the method in the next section.

In addition to the five generic categories, there was also devised a set of criteria and subcriteria to assess the actual *outcomes*, referred to as a category on 'Measurable effects' (left hand of the figure). These criteria will also be exemplified.

4.2 Testing the EEA-EPI approach

In the test phase one of the tasks was to apply the framework experimentally to assess EPI in three sectors Agriculture, Fisheries, and Transport. The focus in this test phase was solely on EPI for *EU level* institutions and policies, and not individual Member States.

For each sector a team of three experts was formed. The present author was part of the team for the transport sector. Each sector assessment team would:

- Provide a general description of key characteristics and developments in the sector
- Identify sources and documentation that could be used to describe and assess EPI according to the list of criteria
- Refine the list of subcriteria to reflect as closely as possible specific characteristics of the sector
- Provide a description for each EPI criterion and subcriterion and then evaluate the present state of play (e.g. if a 'mission statement' exists, if Impact assessment is undertaken etc.)
- Provide an ordinal scoring (on a six point scale) of the state of EPI for each criterion
- Summarise findings under the five main categories using radar or 'spiderweb' diagrams to highlight patterns in EPI

Some of these elements will now be discussed.

Subcriteria

The 55 subcriteria form the basic unit of the assessment. The subcriteria signify important features of EPI within each criterion. All of the subcriteria are *nominal*, with a present/absent type of answer. e.g. if EPI is re-

flected in a transport policy organisations organisation diagram (organigramme) or not.

Table 5 below exemplifies the subcriteria defined for the four criteria under the category 'Administrative culture and practice' for the transport analysis. As can be seen there are three subcriteria for criterion 2a, four for criterion 2b and two each for 2c and 2b.

The extent to which all (2-6) subcriteria are met (all measures are present) will feed into the evaluation of the 'strength' of EPI for the particular criterion to which these specific subcriteria belong.

Table 5 Extract from Assessment framework – detailed (exemplification)

EPI Categories	Criteria – sector specific	Sub-criteria
1....
2 Administrative culture and practices	2a Does the sector administration's mission statement reflect environmental values?	<ul style="list-style-type: none"> • The sector administration has a mission statement • This includes environmental values & objectives • It reflects a shift from a sector focused towards an issues oriented approach
	2b Are environmental responsibilities reflected in the sector administration's internal management regime?	<ul style="list-style-type: none"> • EPI is reflected in the administration's structure (organigramme) • Environmental responsibilities are assigned at various hierarchical levels • Financial & human resources for EPI are provided • An internal or external environmental auditing system is in place
	2c Are there communication / coordination mechanisms between the sector and environmental authorities (e.g. inter-departmental committees/Task Forces)?	<ul style="list-style-type: none"> • Mechanisms between sector and environment department • Mechanisms between sector and other sectors/ departments on EPI issues
	2d Are there formal / informal mechanisms for communicating and coordinating with other levels of governance?	<ul style="list-style-type: none"> • Mechanisms to communicate and coordinate upwards • Mechanisms to communicate and coordinate downwards
3...
4...
5...

Criteria for 'Measurable effects and outcomes'

Additional information about the world 'outside' the policy processes themselves was also taken into the assessment. This included a set of criteria on so-called 'Measurable effects and outcomes' (called Category

6). Ideally the ‘Measurable effects’ should reflect actual physical outcomes of the EPI efforts.

The following four criteria were defined for Category 6:

- 6a Are there sector specific changes in the behaviour of actors?
- 6b Is the sector becoming more eco-efficient, i.e. decoupling its economic activities and outputs from environmental pressures and impacts?
- 6c Is the sector reaching its sectoral environmental targets and objectives?
- 6d Is the sector contributing appropriately to overarching targets and objectives?

Under these four criteria additional subcriteria were defined. For example Criterion 6a (on reaching environmental targets) was broken down into sub-criteria on four target areas (biodiversity, emissions, resource use and Greenhouse gasses).

However no *analytic links* were devised between the five main EPI categories and the ‘Measurable effects’ criteria (Category 6). This meant that the criteria could not be used as indicators of *EPI efforts*.

Assessment

When available information was identified for all 17 criteria and most of the 55 subcriteria the assessment could proceed. For each sub criterion a verbal description and assessment was made which enabled an answer to the ‘present/not present’ question. This fed into a summary assessment at criterion level, also in a verbal form.

This verbal assessment was then supplemented by a scoring on an ordinal scale (from 0-5) of the degree to which each of the 17 criteria was fulfilled. These six increments were defined for the scale:

- 5 = Excellent EPI, nothing more could be desired for this criterion
- 4 = Very good, a high level of EPI
- 3 = Good, an above average level of EPI
- 2 = Fair, some EPI, but insufficient
- 1 = Poor, only very basic EPI
- 0 = No sign of any EPI

For a criterion to score ‘5’ all subcriteria would have to be positive and the verbal description should conclude that all feasible efforts had been made. It can be noted that there were in fact no ‘5’ scores in the actual assessment in the transport sector at EU level but several ‘4’s. The evaluation was undertaken for all 17 criteria in the five categories, and also for the four additional criteria on ‘measurable effects’ (Category 6).

The description and verbal assessment was done together by the three members of the sector team, while the scoring was made independently by each and then numerically averaged to reach a joint assessment. The independent review was done to test out the sensitivity of the scoring mechanism to subjective judgement. The individual scorings were in fact found to be quite consistent across the three experts involved, with no major deviations (max unit deviation 1,5) and an average deviation of 0,6.

Illustrations of results

To exemplify the results the verbal summary assessment for one of the categories is cited below. It must be stressed again that the formulation do not represent official EEA assessment and is used here for illustration only. Please also recall that the review refers to assessment of EU level institutions only, and that involves only the period under the previous (Prodi) Commission up to 2004.

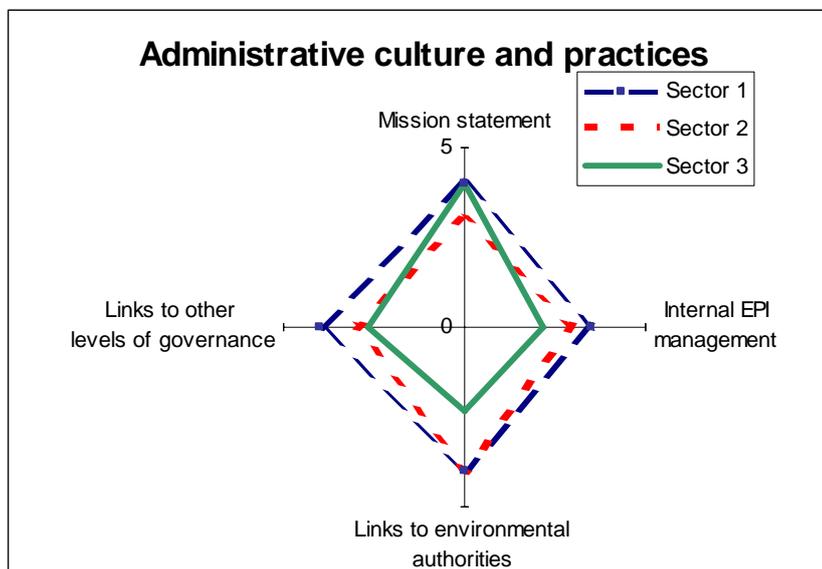
Assessment for category 2 ('Administrative culture and practices'):

"The transport sector administration has a powerful mission statement which reflects clear objectives, including environmental ones. Internally, however, the management system for EPI does not appear to be strong or very effective, and links to environmental authorities are inconsistent and quite weak, although good examples do exist. In contrast, the sector offers positive examples of mechanisms to link the Community level to other levels of governance." (Ferguson et al, not published)

As mentioned the subcriteria analysis was used to provide a categorical scoring 0-5 for each of the criteria - four in the case of Category 2. The results of the ranking was illustrated with radar or 'spiderweb' diagrams. The diagrams show the relative strengths and weaknesses of EPI in each of the three sectors with regard to each criterion within the particular category. They also highlight where two or more sectors differ from one another. Differences in sectors for the same criterion may point to sector specific reasons for successful or unsuccessful EPI. If sector rankings 'follow' each other across the various criteria, this may point to general conditions for successful EPI varying across each aspect of policy making.

The illustration in figure 3 (drawing from background material) indicates that 'Sector 3' performs less well than the two other sectors for the overall category 'Administrative culture and practices', except for the criterion 2b 'Mission statement' where 'Sectors 1 and 3' are both scoring high. In the background material the speculative 'sector' examples are real sectors, which has been omitted here in order to allow focus on illustrating the general methodology only.

Figure 3. Speculative assessment of EOI in three sectors, drawing form unpublished background material to the EEA EPI project.



Review of the approach

Below the present author provides his personal views of what can be learned from the EPI project in terms of developing indicators for EPI analysis:

- The testing has demonstrated that it is possible to devise indicators to measure several important dimensions of EPI with generic analytical criteria based on nominal (dichotomous) variables (with reference to e.g. administrative measures in place or not in place) and ordinal constructs (0-5) derived from scoring.
- The categories, criteria and subcriteria that were defined appeared to reflect relevant aspects of EPI, while they may not all be equally important. The five categories seem robust while some of the criteria and especially subcriteria could be reconsidered. The project did not (so far) involve any ex ante self-assessment to review the relative relevance or importance among the criteria/sub-criteria.
- Quantitative 'outcome' information with data on a cardinal scale (e.g. eco-efficiency graphs) was also used in the qualitative assessment. However the project did not involve the construction of analytical links or models relating the EPI measures directly to outcomes, which means that there is scope to consider if and how quantitative 'outcome' indicators may be incorporated.
- Some issues that may be *underplayed* in the present framework include: the administrative *structure* of transport policy making (division of tasks etc); *informal* procedures and practices (probably very difficult to assess), the use of *models* and other analytic tools in

policy appraisal; and the *benefits and synergies* achieved through EPI efforts.

- The ordinal *scoring* was very helpful to condense and highlight the large amount of nominal and qualitative information. The scoring was feasible, but it did involve considerable subjective judgement. Further work seems needed to develop the method especially if it was to be used for regular self-reporting.
- The approach was based on desktop research, Internet access and expert knowledge. Hence it was possible to undertake most of the assessments without the need for direct involvement of staff at the EU institutions. However, *clearly not all relevant information could be provided in this way*, and in several cases interaction like interviews with key personnel would have been a most useful supplement.
- The general categories and criteria of the approach are generic and not specific to the EU context. Hence the approach should generally be feasible also for national level assessment. However, an important question to consider is the division of responsibilities between various institutions and organisations (e.g. between ministries, agencies, public companies etc. in the transport sector). To deal with may require a sector specific approach.
- The framework has only been used for a one-off assessment and its feasibility for regular updates has not been addressed. A regular use based on indicators will probably require a much more limited and streamlined set of criteria and indicators than used in the in this test. On the other hand a fair assessment of EPI will require a range of indicators, since no overall or ‘master’ criteria have been identified.

It can be added that the overall framework was considered and generally approved by the EEAs independent Advisory panel on Environmental Policy Integration during meetings in 2004, and has been included in the final report (EEA 2005b). The exploratory assessment of the three sectors was also welcomed by the panel as a useful contribution to review current EPI status, but there were some reservations about the methodology, especially concerning the transparency of how the ranking was achieved, as already addressed.

Based on the experience from the EEA-EPI project the following major issues to consider for an indicator based EPI assessment approach can be highlighted:

- A need to *adjust and streamline* the set of criteria and subcriteria, without losing important dimensions.
- The possible development and use of *outcome* indicators including indicators of *EPI successes, benefits and synergies*.
- The use or not of the *ordinal scoring approach* to provide assessment that are more rich but also more sensitive to individual judgement.

4.3 Other approaches to assess EPI

A number of other relevant approaches to review EPI and similar environmental activities have been reported. During the pre-project the following sources were identified in particular as potentially valuable contributions, that could be taken into account in the main project.

Lafferty and colleagues (2005, 2004, 2002) have proposed some key dimensions to define 'benchmarks' for monitoring EPI at the sector level. The benchmarks include the following elements (Lafferty 2002):

”- a *scoping report* providing an initial mapping and specification of sectoral activity, which identifies major environmental/ecological impacts associated with key actors and processes – including the government unit itself;

- a *forum* for structured dialogue and consultation with designated principal stakeholders and citizens;

- a *sectoral strategy* for change, putting forth the basic principles and goals for the sector;

- an *action plan* to implement the strategy, with stipulated priorities, targets, timetables, policy instruments and designated responsible actors;

- a *green budget* for the integration and funding of the action plan;

- a *monitoring programme* for overseeing the implementation process, its impacts and target results, including specified cycles for monitoring reports and revisions of the sectoral strategy and action plan.

As can be seen the criteria or benchmark are of qualitative kind, mainly referring to if the government (or sector administration) has made certain administrative provisions or not. Lafferty et al (2002) consider such criteria as 'minimalist standards' for assessing EPI in a sector. They stipulate that more detailed indicators could be defined for these dimensions, while measures beyond the mere presence or absence of these mechanisms were not formulated. The benchmarks have been used in practice to assess present status of EPI in Norway (Lafferty et al 2004).

A similar approach is taken by Jacob and Volkery (2005) in their recent assessment of EPI in 25 OECD countries. The assessment involved both general and sector level EPI. Criteria dimensions used for assessing EPI at sector level were:

- The amalgamation of departments (Sector/Environment ministries)
- Green budgeting

- Green cabinet (Members of government with green assignments)
- Interdepartmental working groups
- Reporting obligation (to Ministry of Environment or independent bodies)
- Strategic environmental assessments
- Appraisal of policy initiatives (including the environment)

Again the way to assess EPI performance is to identify to what extent each type of instrument has been adopted or not in a country. The practical evaluation based on the criteria shows that the instruments are in fact not very widely applied in practice, apart from 'SEA procedures' and 'Interdepartmental working groups'. More frequent are overall (non-sectoral or 'horizontal') and presumably weaker initiatives like national Sustainable Development Strategies or general legal mandates of EPI.

As can be seen both of these two examples represent overall, high level approaches which are similar to the EEA-EPI project, but less detailed in their application of indicators to assess EPI.

In addition none of the examples mentioned so far provide insights of any specific conditions or opportunities for EPI in the transport sector. Some transport specific sources and approaches which may be useful (and should be reviewed in the main project) include:

- TERM indicators (EEA 2000; 2001; 2002; 2004).
- Hjelt et al (2005) detailed, comprehensive evaluation of Environmental management in the Finnish MoTC (2005).
- Transport Canada Sustainable Development Strategy 2004-06, third generation of the Canadian MoT's SD strategy, with a detailed administrative monitoring program.

5 The context - Nordic transport policies

If common indicators are to be defined for EPI in the Nordic transport policies, they need to refer to institutions, processes, policies and types of outputs that are broadly similar or comparable. If such commonly applicable indicators cannot be defined, a more qualitative, individual evaluation approach will be needed.

On the other hand it cannot be assumed that the policy structures have to be completely identical. In that case there would be limited value in comparing the way EPI is adapted.

The Nordic countries, transport systems and policies do have many similarities, partly for historic and cultural reasons and partly because of European harmonisation and convergence. However they also display major differences in these respects due to variations in e.g. geography, political systems and culture.

These similarities and differences cannot be reviewed within the limits of this pre-project but they should be included as an important element in the main project. A few aspects will be highlighted here in order to review their significance for the question of whether an indicator based EPI assessment is feasible or not. The brief review draws mainly on Johansson (2004); Lauridsen (2000) and Hjelt et al (2005) and the following government websites:

www.trm.dk

www.regeringen.se/sb/d/1470

<http://odin.dep.no/sd/norsk/bn.html>

<http://www.mintc.fi/www/sivut/english/default.html>

<http://eng.samgonguraduneyti.is/>

The review broadly follows the categories of the EEA-EPI project.

1. Political commitment & strategic vision

This category is important because it provides foundations for and impetus to more specific EPI initiatives. It is relatively easy to assess since it refers directly to written documents.

All of the Nordic countries have recent sustainable development strategies, action plans or similar documents that emphasise EPI as a general principle for the sector policies, including transport. Some (e.g. Norway) may also have EPI principles embedded 'deeper' in national legislation.

Several countries, but not all, have national transport policy documents that also emphasise environmental integration.

'Strategic visions' are emphasised e.g. in comprehensive strategic transport plans of Sweden and Norway, while a similar instrument does not apply in Denmark. Other document types for identifying 'strategic visions' of transport policy may need to be considered.

All in all there seems to be scope for assessment and comparison in this dimension, but the differences in frameworks need to be taken into account.

2 Administrative culture & practices

This category refers to some of the 'core' issues of sectoral EPI: Does the administrative structure that frames transport decision making provide for systematic consideration of environmental concerns?

First of all the overall administrative structure of transport policy is somewhat different across the Nordic countries. For instance Sweden does not have a separate Ministry of Transport (it is part of Ministry of industry), while Denmark has just merged the Ministries of Transport and Energy. In Finland and Iceland the MoTs include Communications. There is a need to delimit the scope of 'transport policy organisations' in order to review EPI in this dimension.

Secondly, all Nordic 'MoTs' have a number of transport related government agencies, publicly owned companies, institutes etc. under their umbrellas. The mechanisms that link 'core' and 'outlying' transport policy bodies may be considered as important vehicles for EPI (e.g. direct legislation, budget, performance contracts etc). The differences among the countries in terms of the various responsibilities, divisions etc. would be important to review. In Sweden, for instance the agencies generally have much latitude and autonomy meaning in regard to central government policies. Hence a full EPI assessment may have to involve some of these agency activities. Sweden also has an important special body for coordinating transport policy planning (SIKA), which may have to be considered.

In all countries the institutional structure have undergone considerable reorganisations in terms of division, privatisation etc. and further changes may well occur. Indicators ideally need to be robust in terms of such changes. Differences in 'Administrative culture' (meaning informal work practices; belief systems etc) could probably not be measured easily other than through extensive qualitative investigations.

All in all there is a need to identify common features in this dimension.

3 Assessments & consultation to underpin policy design and decisions

This category is considered by some as the most directly visible aspect of EPI: are environmental concerns factored into the ex ante assessments of plans and projects, and do the assessment results influence the decisions e.g. through the involvement of outside stakeholders in the process? If yes, it means that EPI is actually taking place (at least to some extent) if no, then EPI is more symbolic.

All Nordic countries undertake various kind of assessment of new initiatives, programs, projects, etc but the scope, scale, procedures etc vary a great deal. The conditions for *Strategic Environmental Assessment (SEA)* are different since two countries out of five are not members of the EU (but may follow the SEA directive guidelines anyway), while e.g. Denmark (an EU member) does not have the formal transport planning procedures that would be needed for SEA rules to formally apply. All *legislative* proposals in Denmark are assessed for environmental impacts anyway, but the methods may not correspond fully to what is done in Finland or Norway.

Consultation procedures generally seems to vary quite a lot but may be hard to describe in more specific, measurable terms. Probably EIA procedures for new infrastructure projects, and the use of appraisal tools in transport planning would be among the more similar and comparable elements in terms of EPI. Specific indicators would need to be developed.

4. Use of policy instruments to deliver EPI

Policy instruments may embody environmental concerns in various ways, e.g. by attaching ‘green criteria’ to the allocation of funding, by inserting environmental criteria in technical standards, or by internalising external cost via taxation. This category is important in order to assess the actual policy outputs, while it may be conceptually tricky to define exactly which instruments belong to EPI – a high vehicle tax may for instance benefit the environment without this being its actual purpose.

The transport policy design and instrument mix of course varies considerably across the Nordic countries, even if EU harmonisation does provide some common yardsticks. The extent to which transport taxation policies include environmental incentives and/or external costs may be one possible measure. The possibilities to use *government funding and budgeting* as a mechanism to promote EPI differ widely, depending i.e. on the way infrastructure provision is organised in each country. Planning requirements and procedures are somewhat different, as is the division of responsibilities between local and central government is also an important issue.

This suggests that the category of policy instruments may allow some comparable indicators to be defined (e.g. in the areas of taxation policies and emission and fuel standards) while a full assessment in this category is not immediately feasible.

5. Monitoring and learning from experience

This category also refers to a key aspect of EPI, namely if there are mechanisms to ensure that environmental impacts and policy results are taken into account in the ongoing review and development. In some cases there are specific environmental monitoring systems, while in other cases environmental indicators are included in general systems.

The procedures for transport policy monitoring differ much among the Nordic Countries. Finland's Ministry of Transport and Communications probably has the most elaborate system of environmental management and monitoring in the world (Hjelt et al 2005). This system is right now too detailed and specifically adapted to the Finnish context to serve immediately as a common framework for all the Nordic countries, but it could definitely provide considerable input and yardsticks to develop a more general EPI assessment framework including indicators. Sweden and Norway also have ambitious management-by-objective regimes and the like with monitoring programs in place at the sector level, while this is not so much the case in Denmark, even if plans to define a monitoring systems have been underway for some time.

All in all assessment of differences in EPI in terms of monitoring etc. seems to be both relevant for mutual learning as well as quite feasible. The Finnish system could serve as an important source of inspiration to develop an indicator framework for this category.

6. Measurable results and outcomes

The actual improvements in the environmental performance of transport systems are the ultimate test of EPI success. However it is often difficult to draw direct lines between EPI efforts and actual physical outcomes. Environmental improvements should not be ascribed to such policies if the impact cannot be analytically verified as being caused by the policy

Nordic countries all have extensive experience with monitoring and assessment various transport and environment effects, both at a national level and together via Nordic Council membership or EU/EEA activities. Also direct policy appraisals measuring physical outcomes of proposed or implemented actions have been made. The limits of the present study do not allow a review of this experience but such a review could be partly included the main project. The aim would not be to analyse actual results

but to look for methodologies and the like, which may be used to define outcome indicators related to EPI: How can results of policy evaluations be used to inform indicators to monitor EPI?

Summing up

This short review suggests that all the dimensions of the EEA-EPI approach are relevant for and may be addressed in the Nordic context. Many steps towards EPI have been taken, and various reviews and experiences to draw from and focus on exist. However there are also major differences among the countries that would need to be taken into account.

First of all a clear commonly agreed definition of what is to be included in 'transport policy' would be needed to delimit clearly the specific scope and target organisations etc. of the EPI assessment.

Secondly there seems to be a need for a simplified and adjusted set of indicators compared to the list of criteria and subcriteria of the EEA-EPI project. To handle the full range will require a large amount of work. The adjusted set should be robust in terms of the differences of the institutions and policies as well as sensitive to the various ways environmental issues are incorporated into them in each country.

The selection of actual indicators should furthermore depend on the issues that have the most interest in each of the countries. This refers directly to the level of commitment and involvement each country would be prepared to deliver during an actual project where the indicators are applied experimentally (see the Appendix), and especially in the subsequent running of an eventual monitoring system. With no Ministerial buy-in EPI monitoring indicators would be rather useless.

In this regard there is also a strong need to consider which (national) institutions may be the 'hosts' of EPI monitoring efforts, which institutions will have to deliver input and updates, and which institutions will be the potential users. Another option to consider is the involvement of international or regional institutions (like the EEA) as potential 'anchor' of the subsequent monitoring efforts.

In any case national involvement will always be necessary and should be given a high priority in the design of the main project.

6 Feasibility and proposed ways ahead

Based on the above analysis of the possibilities for defining a set of operational indicators to monitor Environmental Policy Integration (EPI) in the Nordic transport policies, the following can be concluded:

- A fairly clear, common overall idea of EPI exists, and the key dimensions it involves have been laid out in the literature. According to most understandings EPI is a broad concept with several dimensions that concern institutions, procedures and outputs of policy making.
- Several examples of criteria and measures that can be, and have been used to assess EPI in practice exist, also in the transport sector. Several sources can therefore be drawn on to provide suggestions for indicators and procedures.
- No 'one or two' aggregate indicators to capture all of EPI have been identified. A range of indicators across the various dimensions of EPI (as in the EEA-EPI project) will therefore be needed. Alternatively there must be a clear ('political') consensus if there is a wish to adopt a more narrow focus.
- Most existing EPI indicators are based on nominal criteria (yes/no to a certain procedure or policy being adopted). These nominal indicators can provide fairly certain, but typically somewhat limited information, unless there are many of them.
- Scoring systems to generate ordinal indicators, in order to review the 'strength' or 'seriousness' of EPI efforts have also been devised. Using such ordinal scores is clearly feasible but will require a consensus on how to adapt, deploy and interpret the scores in the particular context (e.g. who is to do the scores?)
- Quantitative/cardinal indicators of 'physical outcomes' have also been used, but their exact role in the assessment of EPI needs to be reviewed carefully, and some analytical efforts may be needed before the physical performance measures (improved air quality or changes in modal split) can be adapted to serve as genuine indicators of EPI efforts/accomplishments.
- Some important but difficult areas of EPI do not appear to have been made operational with measures and indicators so far, including topics such as informal mechanisms, and benefits and synergies achieved through EPI.

- Identification of indicators should take into account existing national policy structures and procedures while also ensuring some robustness towards likely changes.
- Selection of indicators should also take into account policy priorities in each country in order to select useful indicators, for which adequate *support frameworks* can be defined and maintained

All in all it is considered feasible to develop indicators to assess important aspects of EPI in the transport policies of the Nordic countries, *if* the countries can agree on the general approach *and* are willing to participate actively to identify and provide data to fill in the selected indicators.

The particular approach proposed in this pre-project for the main project has been called *Indicator based EPI assessment*. This approach has its main focus on the policymaking architecture, processes and outputs, rather than on the physical conditions and impacts)

This approach stands out from (but is not in conflict with) other possible approaches such as:

- ‘EPI strategy review’, focussing on formal procedures like the EUs Cardiff process;
- ‘EPI instrument analysis’ focussing only on a particular policy instrument, such as green taxation,
- ‘Detailed qualitative evaluation’ (e.g. as in the recent review of the Finnish MoTCs environmental management efforts) and
- ‘General transport and environment indicators’, as in the main body of EEAs TERM work.

In taking this approach a balance must be sought between a) the need to address the aims of EPI in an appropriate and comprehensive way, b) the needs, priorities, and practical capacity of each country, and c) the benefits of devising a common, comparable framework as a learning device, compared with undertaking more qualitative in-depth reviews.

These considerations are built into the recommendations for the main project to address these tasks, as laid out in the Appendix.

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Appendix: Draft of main project description

Indicators of Environmental Policy Integration in Nordic Transport policies

1 Background (to be expanded)

- Environmental policy Integration (EPI) is an important policy objective in the Nordic countries, as well as internationally
- The transport sector is a key target sector for EPI
- There is a lack of systematic measures to monitor EPI in transport
- Methods of EPI assessment have been established, which can be used to suggest measures and indicators for transport EPI
- The Nordic transport policies provide fertile ground for the establishment of an EPI monitoring effort

2 Overall approach and methodology

The proposed approach is based on the following (tentative) understanding and definition of EPI that has been formulated in the pre-project:

Environmental (sector) Policy Integration means that:

- concern for environmental protection is built into all relevant policy institutions within non-environmental policy sectors, and
- taken into account in all relevant stages of policy making processes within those sectors,
- resulting in policy outputs that take explicit account of relevant environmental objectives and problems, and
- having policy outcomes that can be verified in terms of their contribution to sustainable development.

The proposed framework has its point of departure in a *simplified, revised and reinforced* version of the 'EEA-EPI' approach to EPI assessment.

The proposed approach to monitor EPI has been termed 'Indicator-based EPI assessment'

The following general features of this approach can be highlighted:

- The approach considers EPI within a set of generic policy categories drawing from the EEA-EPI project and other sources (e.g. categories such as Commitments, Administrative structures and practices, Assessment procedures and methods, etc).
- For describing EPI within these categories a set of *nominal* criteria and subcriteria will be used as a main input, referring to the presence or absence of environmentally relevant characteristics within specific policy procedures, institutions and outputs (also derived from EEA-EPI and other sources).
- As a key element in assessing the 'strength' or 'seriousness' of EPI efforts an *ordinal* scale will be tried out (e.g. from 0-5 as in the EEA-EPI project and in the Finnish MoTC evaluation).

The *simplification* compared with first round in the EEA-EPI project will involve a reduction in the number of subcriteria and criteria to the most important areas in terms of relevance both for EPI and for Nordic transport policies.

The *revision* will include an adjustment of the formulation of some criteria and subcriteria considering present context of Nordic countries, plus a further development of the scoring method and procedure.

The *reinforcement* will involve the consideration of further possible criteria and indicators from the literature, including the recent evaluation of the Finnish MoTCs Environmental management system. The reinforcement will also consider issues related to repetitive measurability and updating, which was not covered in the EEA-EPI project.

A *special feature* of the approach will be the high degree of active involvement of member country representatives/experts, in order not to make the project only a desk top study but to highlight its relation to user needs and to available information.

3. Performance measures/indicators

The *key task* of the project is to identify the indicators to be used for regular monitoring of transport EPI. A broad range of potential indicators will be drawn from the literature, including the EEA-EPI project and the other sources reviewed in the pre-project. This range will then be narrowed

down according to various quality, relevance and feasibility criteria to be defined.

The procedure will be gradual/iterative, starting from identifying key areas of interest (within the six EPI categories) moving on through a long 'gross' listing of potential indicators. A selection of a smaller set of indicators to be studied will gradually emerge, e.g. via consulting country experts and administrators. This selection will be defined and tested, and finally a proposed set will be established as the final outcome. The proposed final set will be divided into immediately feasible indicators, and indicators that will need further development.

The chosen indicators should be:

- Representative of key EPI dimensions and concerns,
- Relevant and useful for the Nordic transport administrations that are supposed to use them

4. Country application

The aim of the country application is to clarify main differences and similarities of the Nordic countries in terms of two aspects:

- The outline of transport policy decision making structures, procedures and outputs, that is the 'objects' to be monitored by the EPI indicators
- The availability and organisation of transport policy review information, that is the capacity to support an EPI monitoring process, during the project and afterwards

The first aspect is the principal one to be considered. This analysis will enable the identification of areas with high/low similarity and comparability across the countries. A key aim is to locate in which parts of its structure each country 'matches' the general categories used in the assessment.

The second aspect will provide additional information to define viable monitoring procedures.

The country application analysis could for instance be structured for each country according to the key dimensions of the proposed definition of EPI:

- Overview of key policy institutions (organisations etc).
- Overview of stages of key policy making processes (e.g. infrastructure investments; transport legislation, transport service tenders).
- Identification of regular/irregular policy outputs (investment programmes, transport policy documents; budget decisions).

- Identification of key policy outcomes (e.g. houses effected by noise, reduction in emissions and CO₂, mobility, transport jobs/economy, etc.).

5. Work Packages and deliverables (tentative)

1. Inception and scoping phase

The main task in this phase is to provide a platform for the (final) selection of key EPI dimensions to be included in the framework and thereby a ‘filter’ for the identification of a broad range of potentially relevant and viable indicators that will be undertaken in the following phases.

The consultant will establish this platform, and the NET group or other member country representatives will be asked to review and decide on the scope of the further work.

The consultant will:

- Review and update the analysis and review of EPI dimensions presented in this pre-project report (including e.g. the latest developments in the EEA).
- Identify the range of dimensions (categories) that could be included in the framework, illustrating each dimension with 2-3 potential (hypothetical) indicators.
- Laying out the choices that needs to be made by the member country representatives, in terms of choosing a comprehensive /selective approach; the use of the scoring method (if and how), attempting to include quantitative outcome indicators or not; the organisational delimitation of transport policy.

The key deliverable will be an inception report on these issues and a workshop where the member country representatives/experts will be asked to state and discuss their preferences on the issues. Based on this workshop the approach for the rest of the work will be drawn up.

2. Identification phase

The main task of this phase is to come up with a long list of potential criteria and indicators for each of the categories that have been chosen in the previous phase. The long list is then to be discussed and cut down in order to match the needs as well as the ‘indicator feasibility’ from the point of view of each member country.

The consultant will:

- Identify ranges of potential criteria and indicators from the literature and other input. The indicators may include nominal criteria (the type 'present/not present'), as well as cardinal/quantitative criteria, if the country representatives have identified these aspects as important in the previous phase.
- Provide a checklist for country representatives/experts to support their review of their own systems – in terms of which types of information could realistically be provided and by whom for the running of a monitoring system.

The key deliverables will be a report with the list of potential indicators and the checklist. This list will be discussed at a second workshop with country representatives/-experts. The aim will be to narrow down the list to the most important and feasible indicators, that will be applied in the following phases.

3. Research and test phase

In the research and test phase the consultant will focus on the selected indicators and collect country information that will enable the description and assessment of each country in terms of each indicator.

Depending on the chosen scoping approach (to be defined under phase 1 above), either the consultant, a group of international experts, or the member country representatives will undertake a scoring exercise.

The consultant will summarise and illustrate the scoring in relevant diagrammatic form.

The main deliverable will be a report with the results of the research and test.

4. Review and report phase

In this phase the experience from the research and test will be reviewed, and the feasibility of a continuous monitoring effort for the tested indicators will be described. Potential indicators that can be applied immediately as well as indicators that need further development will be identified. Potential applicability outside the Nordic countries could be discussed.

The key deliverable is a final report

OBS: The scope and range of issues and indicators that can be handled in phases 2-4 by the consultant will of course have limitations. The more items requested by the steering group/member country representatives,

and the more countries taking part, the more resources are needed or the less complexity of indicators may be managed.

6. Organisation, management and quality control

The project leader and main consultant is proposed to be Senior Researcher Henrik Gudmundsson (HGU), NERI. Other staff of NERI or collaborating institutions may become involved if necessary. The role and tasks of the consultant will be to:

- Conduct research
- Produce and write documentation
- Organise meetings
- Report to the steering group

The Steering Group will consist of the members of NETs Sustainable Mobility group or whom they may assign for the task. The steering group will define terms of reference for the project, and oversee the progress and timely delivery of the project.

To follow and take part as member country representatives in the project a User Group consisting of one person from each country's MoT or similar key institution will be defined. This could in practice also be the representatives of NETs Sustainable Mobility group, if they choose so.

The roles of the user group would be to:

- Help identify and define the national interests in terms of dimensions/categories and indicators of EPI to consider.
- Help identify and provide access to national information sources for the construction and assessment of potential EPI indicators.
- Help identify feasible maintenance and updating procedures that would be applicable in the national context.
- Possibly be involved in the scoring in the research and test phase.

To guide the project an *international expert group* could be set up. The group would consist of three/four recognised experts in EPI/ transport policy analysis with knowledge about the Nordic transport/environment context.

The main role of the group would be:

- To review the proposed draft indicators in terms of conceptual soundness and technical feasibility.
- To give advice in terms of measurement and monitoring procedures.
- Possibly to be involved in scoring in the research and test phase.

To enhance consistency and synergy with the TERM system the group could include a transport and environment monitoring expert from the European Environment Agency.