

**Effective Environmental Assessment Tools
- critical reflections on concepts and practice**

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Table of contents

TOOLS FOR ENVIRONMENTAL ASSESSMENT IN STRATEGIC DECISION MAKING.....	4
Lars Emmelin	
ENVIRONMENTAL ASSESSMENT – EFFECTIVENESS, QUALITY AND SUCCESS	24
Tuija Hilding-Rydevik	
PUBLIC DELIBERATION IN STRATEGIC ENVIRONMENTAL ASSESSMENT: AN EXPERIMENT WITH CITIZENS’ JURIES IN ENERGY PLANNING.....	44
Hans Wiklund and Per Viklund	
STRATEGIC ENVIRONMENTAL ASSESSMENT IN ENERGY PLANNING – EXPLORING NEW TOOLS IN A SWEDISH MUNICIPALITY	60
Anders Mårtensson, Anna Björklund, Jessica Johansson and Jenny Stenlund	
SEA, EXPECTATIONS, IMPLEMENTATION, AND EFFECTIVENESS: SNAPSHOTS FROM SWEDEN, ICELAND, AND ENGLAND.....	72
Hólmfríður Bjarnadóttir	
LACK OF INCITEMENT IN THE SWEDISH EIA/SEA PROCESS TO INCLUDE CUMULATIVE EFFECTS.....	92
Antoienette Oscarsson	
OUTPUTS FROM IMPLEMENTING IMPACT ASSESSMENT IN SWEDISH COMPREHENSIVE PLANS 1996-2002	116
Ann Åkerskog	
DECISION SUPPORT TOOLS AND TWO TYPES OF UNCERTAINTY REDUCTION	134
Bertil Rolf	
EFFICIENCY AND EFFECTIVENESS IN THE MANAGEMENT OF LAND-USE PLANNING CONFLICTS.....	158
Anders Törnqvist	
TOWARDS A FRAMEWORK FOR EX POST SEA: THEORETICAL ISSUES AND LESSONS FROM POLICY EVALUATION	178
Åsa Persson and Måns Nilsson	
STRATEGIC ENVIRONMENTAL ASSESSMENT AND MANAGEMENT IN LOCAL AUTHORITIES IN SWEDEN.....	198
Aleh Cherp, Sara Emilsson and Olof Hjelm	
3G OF SWEDEN – TECHNOLOGICAL GROWTH AND SUSTAINABILITY ISSUES.....	220
Stefan Larsson	
INTEGRATION OF ENVIRONMENT INTO REGIONAL GROWTH POLICY - THE LACK OF ENVIRONMENTAL CONSIDERATION IN IMPLEMENTATION	228
Lars Emmelin and Jan-Evert Nilsson	

TOOLS FOR ENVIRONMENTAL ASSESSMENT IN STRATEGIC DECISION MAKING - reflections on the conceptual basis for a research programme.

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Abstract: This article discusses the conceptual basis of the research in the MiSt-programme looking especially at the concept of tools and a simple model for the interaction of tools with their context of application and implicit background factors.

Key words: SEA, EIA, tools, strategic decision making, interdisciplinarity

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The programme Tools For Environmental Assessment In Strategic Decision Making , MiSt for short¹, is a national research programme funded by the Swedish Environment Protection Agency. It consists of a consortium of leading researchers and institutes in the field in Sweden. The programme plan that in 2003 won the SEPA contract in stiff competition² is a collective effort of the members of the consortium.

This article describes the basic ideas of the MiSt-programme. The anthology is intended to highlight work in progress rather than to communicate final results or recommendations. As such it is an early step in the long process reporting from the MiSt-programme. The list of abbreviated project names with project leaders and lead institutions is shown in the table at the end of this article. In line with the subtitle of the anthology this article presents reflections on concepts but also on practice.³

The MiSt approach

At an early stage agreement was reached in the group behind the MiSt-programme that our primary concern was with empirical research on the actual function of tools. Our concern is not with adding yet another set of tools to the field. We want to avoid what we see as a set of major problems in the environmental assessment and management research field.

“First, there is an overflow of tools and guidelines for practitioners and decision-makers. They are developed on normative grounds and often based on piecemeal assembly of “good examples” with little or no systematic evaluation.

Second, tools are often designed and developed from an expert-driven perspective with insufficient attention to the context in which tools should function and to user needs and capacities. Thus, a second ambition is to synthesise and harmonise existing tools into functional systems of methods based on empirical studies of function and effectiveness under representative conditions as well as favourable.

Third, the paradigmatic and methodological biases in tools are often hidden or unclear to users with the assumption of goal neutral tools of rational decision making. Thus, a third ambition is to clarify the paradigmatic and theoretical basis of tools as a necessary basis for understanding their function and effectiveness.

Fourth, development of similar methods and tools in different fields, the fact that tools are often developed with insufficient regard to previous international experience or scientific literature, and the lack of evaluation, leads to lack of cumulative learning and repetition of similar experiences.”

¹ The acronym comes from the Swedish programme name ”MiljöStrategiska verktyg”. The object of the programme is of course to see through the mist that gathers over SEA: www.sea-mist.se

² We have been told that the first round had 17 entrants.

³ The article is largely based on the main text of the programme proposal. However reflections have been added for which I bear the sole responsibility.

The concept of tools

The concept of tools as used in this programme is “*decision aiding tools*” (Dale & English eds 1999) i.e. tools to handle knowledge on environmental issues in the processes of decision-making with special reference to strategic decision-making rather than decision-making tools. The term “tool” however is used in many different fields of science and practice. As a result, the concept of “tools” is ambiguous and it may be used in a wide variety of connotations. At one extreme are technical and scientific equipment and methods for gathering, processing, storing or displaying information. At the other extreme tools may be used more or less interchangeably with “instruments” to describe means to implement policies, programmes and plans; economic incentives, legislation and information are at times termed policy tools. In some systems, process tools e.g. in spatial planning or EIA are regulated with respect to process and content to a degree which makes them close to scientific methods. In other cases they could better be termed “approaches”. Central agencies in environment and planning have developed “tool-boxes” for planning and management with illustrate the breadth of the term. The concept of ‘tools’ might also be used to denote “process packages” that might contain a variety of processes, analyses and methods. Several tools such as EIA, SEA, TIA etc are not well defined and a number of technical tools and expert methodologies can be used within their framework (Finnveden et al 2003). One might usefully distinguish three different sets of tools: one related to planning and management in the public sector which often has a major component of participatory ideology, another from environmental systems analysis which tend to be “expert tools” – LCA, SFA, MFA – and a third set of environmental management system tools from the corporate sector which may be used also in the public sector providing links to informal or market regulation mechanisms. The scientific theories, the legal structures, the claims for function, the scope of application behind these are highly variable (Dale & English eds 1999). Generally one can expect a difference in degree of formalisation depending on the background in natural science or social science or practice. On prima facie grounds it can be assumed that problems in present practice stem partly from the attempt at ad hoc use of tools from widely different backgrounds; policy analysis, corporate planning, technical systems management, and public planning; and in more or less appropriate contexts.⁴ This can be investigated both in initial surveys of international experience and in examining cases. The efficient integration of different tools in such frameworks is a major field of study in the MiSt-programme.

Understanding tool use

Tools can be evaluated and their effectiveness and function understood only in relation both to the context of their application and the embedded theories, assumptions etc of their construction. An important aspect of the interaction and embedded conditions for tool use is the degree to which tool use can be regulated with legal instruments or otherwise standardised; this is a central issue e.g. in the debate over EIA systems (Fischer 2002). The function of tools and instruments is highly context-dependent and the relation of tools to the context of their application must be considered in the research and development of tools (English 1999). Many times, this has not been taken into account. Environmental systems analysis tools for instance, like LCA or SFA are extensively used in the researcher community and there are plenty of publications praising their applicability for corporate and authority use. However, they are seldom used outside the research community. Experts that develop such tools often have a background in natural sciences and technology or work within

⁴ The context dependence is for example part of the explanation for the problems in direct application of project-EIA to strategic decision making. (Hildén 2000)

scientific or administrative frame-works where assumptions of highly rationalist decision-making models are not confronted with research on planning, decision-making or implementation.

The oft repeated call for more empirical and systematic evaluation in the entire environmental assessment field is valid for tools as well. Studying successful examples of tool use meets with the problem noted by Merkhofer (1999) "...tools are complex, and their proper application requires skill and experience. As a consequence, significant differences often exist between the qualities of the best and the typical application practices...". It is the application practices that need to be understood in order to design tools and to regulate their application.

The context of tool use

A leading idea in the MiSt-programme is depicted in figure 1. As noted above tools have a what we term a background of "implicit factors" as well as a context of use. These may not be in harmony; tools having been developed within a certain theoretical context may be used in practice for other purposes, in other contexts etc. The adaptation of tools to the appropriate context and to combinations of tools in a given context is an important but oft neglected problem.

A special case of the problem of the implicit factors and the context of development is of course when tool use is regulated by international directives and agreements but are supposed to be implemented in very different systems. The "SEA-directive" is a case in point for MiSt. The minimalist implementation in Sweden presents several problems precisely in the interface between the factors underlying the concept of SEA and the various contexts within which it is to be applied (Emmelin & Lerman 200xx)

The notion of a professional culture applying tools is important, especially so when there are competing paradigms in professions involved in planning and environmental management.

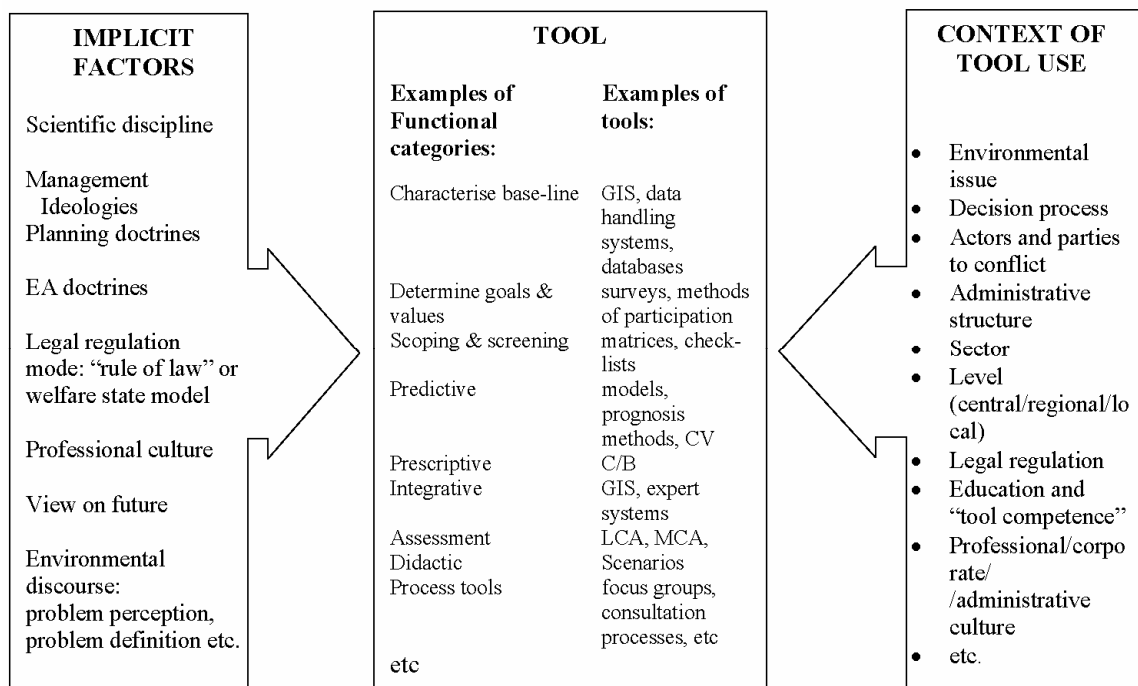


Figure 1. Tools relate to both a large number of implicit factors underlying their construction and the context of their application.

The concept of environment within the framework of sustainable development

The call for a programme defines the object of tool use as decisions on "environment within the framework of sustainable development". Sustainable development is a process rather than a goal or fixed state (Harrison 2000). The approach here is to use official definitions of the concepts of environment and sustainability in the different legislations governing strategic decision-making. Concerning sustainable development the point of departure for the programme is the context of a Swedish SD-strategy and the 16 environmental goals adopted by Parliament. This approach does not imply an uncritical acceptance of concepts. The point is rather that the function of the official definitions need to be studied. The programme will address how these definitions are interpreted, operationalised and used and implemented at various stages of decision-making and whether they affect assessment. The critical examination implies studying whether certain goals or conceptions of "environment" receive greater or less attention due to tool use and processes, whether goals, concepts etc contain internal conflicts affecting decision-making, whether other groups' perceptions of environment or sustainable development are handled in a conscious way and examined against perceptions of what is officially decided. Thus an aspect of providing insight, judging effectiveness and attempting practical recommendation needs to be an examination of the influence of concepts, definitions, regulated objectives and operationalisation of goals in the form of indicators on tool use and decision-making, management and planning processes. How for example is "environment" in fact interpreted and operationalised in different types of decision-making and planning. What shifts in emphasis occur when moving from central policy levels to local decisions and conflicts?

Strategic decision-making

The assumptions of strategic decision-making in practice poses a number of important problems and issues to address. The importance of context has already been noted above. Complex scientific and societal knowledge has to be handled within a wide context of strategic decision-making: A policy, programme or plan must be assumed to interact with other developments in society: it will operate in a societal context. Generalisation about complex decision making processes presupposes that there are structural and logical reasons that govern the outcome of a decision process. However, decision-making also involves informal and individual dimensions. The differences in decision-making between expert systems and political systems discussed by e.g. Brunson (2002). Credibility of strategic tools will depend on whether one can find a way of handling the problems of operating on a political arena. This has obviously been a problem in SEA development.

Impact analysis rests explicitly or implicitly on rationalist planning and management philosophy. The basis of rationalist planning is the notion that full information on goals and objectives leads to the generation of alternative ways of achieving these. Analysis and comparison of the impacts of the alternatives supposedly leads to decision on the optimal alternative. That the rationalist model has come in for decades of massive criticism in the planning literature is well known. Nevertheless both the legislation and to a large degree the organisation and professional culture of environmental administration is rationalist (Emmelin & Kleven 1999). Our object here is not to attempt a fundamental critique of rationalist planning and decision making but merely to point at the need for observing the limitations and to problematise the assumptions embedded in tools and procedures and to point at the planning theory as an important component in the understanding of tools. Below we point at some of the specific problems in environmental assessment. The role of assessment and

assessment tools in strategic decision making can be said to relate to the classic problem of strategic decision making dilemma of balancing decisions between “weighting and daring”⁵ i.e. between political, intuitive policy making and rationalist decision models. A major issue relating to the relationship can also be expressed in simplified form: is the task of assessment to aid in “deciding on what is right” or is it to aid in “getting things right, preferably from the outset”? This issue relates not only to the role of EA – whether it is a tool for the ultimate strategic decision or for mitigation of decisions taken on other grounds but also to theory and doctrine of strategic decision making. Our preliminary leaning here is towards the doctrine of “mixed scanning” (Etzioni 1967).

Already in an attempt to grasp a decision-making process in a simplified flow scheme, it is obvious that the impact of many expert tools generating hard facts is limited and that they play a smaller role than is perhaps necessary in a complex, multidimensional decision making process. To make them operative, the development of tools that are independent of context is often the solution for the consultant or researcher, which may account for much of the problems. The planning literature and practice often takes the opposite stand: processes are so context dependent as to make them more into approaches that are guided by practical experience and loose norms (Fischer & Forester 1993). It is thus an issue to consider to what extent it is at all possible to develop context independent tools that might be useful for decision making.

The very concept of “strategic” comes in for a considerable amount of criticism in recent literature. The projects SEAMLESS and the study of the integration of environmental concern in regional development programme implementation – both reported in this volume – mirrors much of this recent development.

Tiering – ideal and reality

A common conception of strategic decision making within a framework of rational decision making is one of an hierarchical system with an increasing level of detail as one moves down to implementation and daily operation. In the SEA literature this aspect is termed “tiering” (Lee & Walsh 1992). The concept of sustainability and in particular the 15 national environmental goals have added a visionary element decided at high levels but to be implemented throughout the planning and management systems. Implementation of the environmental goals rests on an ideology of management by goals and objectives where interpretation and operationalisation is left to sectoral agencies. The tiered system is assumed to be internally consistent and based on a scientific, calculating rationality (Sager 1994; Emmelin & Kleven 1999). Systems are tempered with deliberative elements e.g. the participatory elements in environmental and planning legislation and in such voluntary processes as LA21. Regional and local development and such concepts as “regional innovation systems” have increased the use of “visionary planning” where relation to implementation is often unclear. All of this makes the tiering aspect especially interesting to EA in Sweden.

The notion of tiered systems of decision-making has been criticised from theoretical and empirical standpoints. One such discussion is the policy analysis discussion on whether policy is a top-down system or in fact a formation from below. In the Swedish environmental debate this scientific discourse has also appeared.⁶ However within the framework of strategic

⁵ This is the classic characterisation of the dilemma of strategy by 19th Century military theorists: “zwischen Wegen und Wagen” – see e.g. Liddell Hart, B.H. (1968)

⁶ Cf an article by Hjern (1993) who is one of proponents of a bottom up understanding of policy.

decision-making there are aspects of tiering of great importance. Of direct practical and empirical importance is the problem of shifting priorities in a chain from policy to implementation. In energy policy this shift can be observed from the policy level focus on climate change and the climate environmental goal to local issues in the siting of for example a district heating plant. In waste management similarly shifts from recycling and climate goals to focus on noise, traffic hazards, toxic emissions which may at times be marginal take place along the chain from policy to local implementation. In the strategic perspective it is important to elucidate methods for maintaining focus on higher level objectives and consistency within a hierarchy or into future decisions. From the local, democratic and "bottom-up" perspectives it is important to recognise the legitimacy of local concerns and the need for methods of handling such conflicts of interest that arise. Projects in the programme will address this from several angles.

Professional culture - why is it important ?

Professional and organisational culture can be regarded as a filter or a lens which will influence important aspects of the functioning of any administration. However the environmental administrations, dealing as they do with complex scientific matters and highly contentious issues and regulated by what is sometimes termed "frame-work legislation" with considerable latitude for interpretation, are particularly open to influences of organisational and professional cultures (Emmelin & Kleven 1999). It will influence such important factors as: what problems are identified, what types of knowledge are seen as important, what solutions are seen as legitimate, how alternative solutions are sought and what policy instruments are preferred. Implementation of the new "SEA-directive" is an obvious current example.

Culture facilitates or resists change, new approaches etc. and is central to "second order integration". The rationalist approach of the Nordic welfare state is likely to be strongly enhanced in an organisational culture dominated by natural scientists and engineers, which the Nordic environmental administrations are to a high, if somewhat variable, degree. To note the importance of culture is in fact mainstream implementation theory. However, in evaluation of the working of EIA and SEA little attention has been focused on this. In fact Sager (1995) claims that much of the evaluation of EIA/SEA deals with systems rather than actual function. Emmelin (1998 a & b) has discussed how systems and implementation can be combined but also illustrated how evaluation of EIA can become trivial or unproductive when filtered by professional culture.

An environmentalist paradigm

While there is no emerging unified "environmental profession" it can be argued that there is an "environmentalist paradigm" serving some of the functions of a culture in a more established profession (Emmelin 1993, 2000). The administrations are dominated by officials with their training from the natural sciences and technology. In spite of this the stated need for further knowledge is dominated by natural science. The academic level is notably high; the administrations are significantly being renewed from below with well educated women and there may be a shift over several decades away from civil engineering and biology to a wider spectrum of back-grounds.

Environment protection is seen as an overriding political goal by a compact majority of the "environmental core administration", taking precedence over for example employment. Also

in among environmental administrators in the sector administrations that we have studies - road, agriculture, forest – a very solid majority holds this view. As could be expected the emphasis on a rationalist approach to planning and management is strong: the role of politicians is to set goals, administrative strategy is geared towards control. The emphasis on the expert role as opposed to stronger involvement by political decision making is very marked.

The purpose of EIA according to legislation in Sweden is to provide a broad background material to decision making. Public participation, although to a somewhat variable degree, is decidedly considered important; especially so if one looks at the wider context of the planning legislation and the guidelines issued on EIA. In a study of professional culture made by Emmelin & Kleven (1999) questions concerning the object of EIA were asked.⁷ An index, combining several of the survey questions, of a minimum of agreement with the letter and intent of the legislation was constructed. The index captures all those answers that see EIA as a process of providing a broad background material or throwing light on alternatives combined with a minimal amount of public participation, at least to the degree of informing the public. The degree of agreement with this index of a minimum of accord with "the spirit of EIA" was not particularly good in any of the countries although Sweden comes out considerably higher on non-agreement. This is partly a function of the very low degree of agreement that public participation is important but also low agreement that the role of EIA is to examine alternatives or provide broad background. A technocratic and realist view of EIA emerged as an important component of the environmentalist paradigm.

Sector integration and sector responsibility

Sector integration and sector responsibility is central to Swedish environmental and sustainable development policy.⁸ The arguments for this relate to efficiency, relevance etc but also to the long term professional and institutional learning that is assumed to take place. To manage by setting goals, delegating implementation to local agencies and monitoring results at a central level are management strategies typical of the so called New Public Management (NPM) doctrine which holds that effective implementation of public policy should include management instruments like "Management-by-objectives" (MBO), delegation of responsibility to lower levels of organisation, supported by continuous monitoring and evaluation of results (Emmelin & Kleven 1999:75). In situations with split responsibilities as in the case of sustainable development – see e.g. project text on regional development – integration may in fact be hampered by organisational conflict and professional and organisational cultures at cross purposes as well as by other factors. The lack of functioning monitoring at municipal level (Johannesson & Johansson 2000) is a problem to this management model.

Sectors tend to have traditions and preferences for certain instruments. Modern institutional theories suggest that institutional factors such as values, preferences, procedures and organisational arrangements shape and constrain sector integration and strategic decision-making. The study of developing and adapting tools to different institutional and decision-making contexts in order to make them more effective is under-developed. Cross sector integration necessitates both other types of tools and instruments and decision-making contexts. In many cases however decisions on policies and programme are made at one level

⁷ The study was made of environmental, planning and sector administrations at central and regional level in the four countries: Denmark, Finland, Norway and Sweden.

⁸ This topic is researched under a four-year research grant from FORMAS to SEI called 'Policy Integration for Sustainability' which will be interacting closely with the MiSt programme (see SEI institutional description).

or in one sector and the environmental and sustainability issues are left to other levels or sectors. A prime example of this is the development of the Swedish third generation mobile telephone system (3G).

Regional development – sustainability in programming and planning

The situation at regional level is complex. Sweden is unique in the EU in not having a distinctive regional planning in the spatial planning system⁹. However the sector co-ordination and knowledge inputs into local planning are important elements of the regional responsibility. With modes of regional administrations changing this function must be ensured and supplied with adequate tools. Consistency e.g. between goals and objectives of regional development programmes and planning and allocation of resources at regional and municipal level is another central issue. The problem of three competing paradigms of regional development: sustainable development, regional innovation and social cohesion is further discussed in the proposal for a pilot study of regional development. (project 10)

In studying the regional development planning and programming now going on it is of paramount importance to study not only the programmes and plans and the way in which they are formed, but also their implementation. The present generation of "regional growth agreements" have in many regions been characterised by a considerable difference between programme documents and implementation in granting economic support to projects. Implementation needs to be studied empirically and quantitatively. Implementation of regional development programmes would seem to be a classic example of policy drift and "street-level bureaucracy" problems (Pressman & Wildavsky 1973). To claim that there is a regional "sustainability discourse" is to oversimplify a complex political, administrative, cultural etc context. Into this complex situation new administrative actors are entering with responsibilities cutting across traditional old territories or formal divisions e.g. with the implementation of the EU Water directive. Regional political assemblies are also added to the regional scene.

Environmental assessment

The peculiar situation with regards to implementation of environmental assessment in Sweden (Emmelin & Lerman 2004) necessitates a brief look at the concepts of EIA and SEA. Environmental assessment, EA,¹⁰ has a diverse background both internationally and nationally. In the international literature the origin of formalised EA in the form of EIA is usually traced to the introduction of NEPA (Caldwell 1998). EIA was originally conceived in the USA to serve as an action forcing mechanism to reform federal agency policy and large projects. This process was to occur through the requirement, imposed on agencies, to prepare an environmental impact statement (EIS) for 'legislation and other major federal actions.....'. Nevertheless, as reviewed by Partidario (1999) and many others, the principal focus of EIA activity since 1970 has been at the level of individual projects. The rigorous project-by-project evaluation has been seized upon in many countries and administrative systems as a solution to many environmental problems (Wood 1995). The extension of EIA practice to

⁹ The exception is the case of the three main urban regions with Stockholm and the regional planning done there as the most significant case.

¹⁰ We use "environmental assessment", EA, as a generic term encompassing many forms of analysis and description of the environmental consequences of human activity regardless of whether it is applied to actions, products, projects, plans, programmes or policies. Thus EA includes the many variants of impact assessment procedures, such as EIA, SEA, SIA, and TIA.

include the assessment of policies, programmes and plans and thereby to return to the roots of EIA, has been called for in the prescriptive literature since at least the early 1990s. The application of EIA to these higher level proposals has become known as strategic environmental assessment (SEA) (Wood & Djeddour 1992).

Claims for the effect on environment protection and ultimately on sustainable development are divergent in the extreme. On the one hand recent professional literature makes extensive claims for success¹¹. On the other evaluation or effectiveness studies of systems or comparative studies have repeatedly shown major deficiencies in the function of systems (cf e.g. Sadler 1996) or of central components. For example the handling of alternatives is on the one hand claimed to be "at the heart of" assessment (CEQ 1978) and on the other it is repeatedly shown not to function. Part of this may stem from fundamental differences in conception of what various tools and processes are in fact supposed to be. The lack of clarity of what in individual cases is in fact being evaluated is thus a problem. One example is the strife over whether EIA needs be a rigorously regulated system performing to certain universal criteria.¹² Many official documents but also professional and scientific literature take the opposite stance. In the case of implementation of the present EU directive on SEA (42/2001/EC) there is a fundamental uncertainty over what the directive in fact applies to in different countries and the process of exegesis is now under way in Sweden. The lack of operative but also theoretically well founded criteria for "effectiveness" is another methodological problem of evaluation. One set of criteria has been proposed and applied internationally in several studies since (Sadler 1996; Sadler & Verheem 1996). However, the criteria may be used in a less than consistent way, and weighting of different criteria vary. At times rather piecemeal, pragmatic indicators are used such as efficiency of processes evaluated simply as the time taken from application to decision regardless of content of decisions. The confusion over what is in fact being evaluated – the systems of assessment as theoretical structures or their actual function or the representativity problems of qualitative case study based evaluation is another problem (Emmelin 1998a; Therivel 2002). As noted in the leading international handbook on EIA a central problem is the lack of evaluation per se: "...there remains an apparent antipathy to evaluation of practice, not least its actual effects. In other words we still do not understand fully whether EIA is fulfilling potential or wasting opportunity" (Petts 1999a, p 5). Lack of impact on decision-making is variously explained by systems, processes or the implementation by professionals as being too scientific and rigorous or not sufficiently scientific. It is explained by the profession variously as lack of time and resources, inadequate technical tools and sufficiently sophisticated quantitative models or the lack of commitment on the part of decision-makers (Sadler 1996; Emmelin 1998b). A problem pertaining to all claims for effectiveness of EIA and SEA may be the development of a separate "EIA-profession" more or less scientifically isolated from relevant fields such as decision theory, policy science but also from planning and planning theory.

Since the 1960ies when EIA was introduced in the US, decision-making science has demonstrated that the rational model is of limited explanatory value when it comes to strategic decision-making and it has been extensively criticised in the literature (Kleindorfer *et al* 1993; Zey 1998). However, at the same time it is widely asserted that in order to truly influence these decision-making processes throughout, the assessment framework should go beyond the environmental analysis and impact prediction and address the larger scope of the decision-making process so that the environmental issues are considered already when, for

¹¹ Such is the case both for handbooks such as Petts ed (1999) and for administrative literature from responsible agencies; see for example "Boken om MKB för detaljplan", Boverket which claims that EIA makes planning more efficient.

¹² This position is strongly advocated in Sweden by Carlman & Westerlund (1994) and Carlman (1995).

instance, the agenda is set, and problems and objectives are articulated. This is claimed to increase the opportunities for finding and proposing more environmentally benign solutions at early stages, which is one of the main rationales for SEA. A major theoretical and practical problem is thus the unclear relationship between SEA and spatial planning. This relates both to fundamental theoretical differences in rationality between a “calculating rationality” of EA and a “communicative rationality” (Sager 1990) and to practice e.g. manifested in different legislation, professional culture etc.

So far in Sweden the legislative support is for implementation of EIA and SEA through for example the Environmental Code (Miljöbalken) and the Planning and Building legislation (PBL). The SEA approach will also be strengthened through the national implementation of the recent European Directive on environmental assessments of certain plans and programmes as it is being implemented in national legislation all over the European Union in the coming years. When it concerns for example implementation of SEA in comprehensive municipal planning in Sweden there is at present no systematic overview of what types of assessment is in fact made concerning for example what issues, definitions of the concept of “environment” in fact are prevalent. The project dealing with municipal planning will survey this. Of paramount importance is the attention to how issues may be redefined as discussions at the more rhetorical level are operationalised at lower levels and in the form of indicators. This lack of systematic assessment applies to all kinds of impact assessments in Sweden.

Thus planning and assessment systems seem not to be learning systems in that monitoring and comparison between predictions and actual results is not carried out systematically (Hilding-Rydevik 2003). The lack of effective monitoring and administrative follow up, especially at the local level (Rudén et al 1998; Johannesson & Johansson 2000), can also be pointed to as an explanation for lack of development and learning. Evaluation is thus an important empirical component of several of the projects and receives special attention in the “ex post”-project (project 9). Furthermore this will be complemented by other projects of the consortium described in the appendix presenting the institutions.

Strategic Environmental Assessment (SEA)

An early and widely quoted definition of SEA is: the formalised, systematic and comprehensive process of evaluating the environmental impacts of a policy, plan, or programme and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision making (Thérivel et al 1992, pp. 19-20). SEA was thought of as the extension of project EIA to the so-called higher levels of decision-making, with the principles, procedures and methods of EIA largely intact (Lee & Walsh 1992). In writing about the assessment of policy, Boothroyd (1995) described this approach as formalized and positivistic. This was contrasted with what Boothroyd called policy vetting—an informal and heuristic approach to the introduction of environmental concerns into the normal processes of policy analysis and evaluation. The underlying assumptions in much of the early SEA literature of hierarchical, consistent systems and the confusion between integration into ongoing planning processes and formalised permit systems has been discussed in the Scandinavian literature (Emmelin 1996; Hilden 2000)

The recent European Directive on environmental assessments of certain plans and programmes provides a legislative framework for SEA that is, as noted above, ambiguous. Since the Directive is essentially an extension of EIA-thinking it may be particularly difficult to apply to programmes but also at the regional and comprehensive local level. SEA is a decision-making support tool that aims at integrating the environmental aspects of decisions in a structured manner. The first connotation is that the object of assessment is policies,

programmes and plans that have long-ranging implications on broader aspects of society. The second connotation is the up-stream focus, attempting to not just carry out an environmental analysis of decisions already made. A problem in SEA is that policies or national and regional programmes are rarely subjected to the formalised scrutiny of the adversary character and setting that is the framework for EIA. There is no obvious point in the process that corresponds to the analysis and approval procedure of a fixed and well-defined project. Consistent with this, recommendations for SEA say that it should be done as part of the planning and policy formulation process. This however would seem to reduce SEA to an internal planning procedure without most of the characteristics of the impact assessment procedure as an ideal type: the open and well-documented scrutiny of alternatives.

The extent to which there are or can be general methods for SEA seems uncertain and contentious. The international scientific literature seems to indicate a trend for different fields of SEA to develop related not only to the distinction between “plan-SEA” and “policy-SEA” discussed above/below but also to assessment in various sectors such as infrastructure, energy, waste etc.¹³ This may in fact be partly due to specialisations in tool use within the framework of SEA rather than to any very major substantial differences in procedure and SEA-methodology. Sector legislation may support the development of special approaches. Different definitions or priorities concerning the content of the concept of “environment” in sectors, professions, legislation etc are worth noting.

Alternatives in environmental assessment: ideals and reality

To evaluate alternative ways of reaching the objectives of a project, plan or policy is central to environmental assessment and SEA: “alternatives are at the core of EIA” (CEQ 1978). Both professional and academic literature stresses that the handling of alternatives in EIA and SEA often does not work anywhere near the ideals (cf e g Glasson et al 1994). A resistance from practicing planners to working with alternatives, especially in the form of scenarios, has been studied by Sager (1995). In organisational theory, management theory, organisational psychology etc theoretical approaches to this resistance can be found which are currently not observed by planning theory and practice or in development of SEA (Emmelin 1988a&b). The professional and administrative evaluations carried out arrive at explanations for the dysfunction of EIA/SEA in this respect which are often neither based on theory nor particularly helpful for further development of systems. At times the explanations border on the trivial: decision-makers are not interested in the environment and need to be educated or more time and resources are needed (Saddler & Verheem 1996) and so forth. Much of the evaluation carried out is noticeably lacking in theoretical foundation (Emmelin 1998 a). “Alternatives” in EIA/SEA can mean several things: alternative locations, alternative modes of production, alternative technologies. A special role is accorded to the “no action”-alternative or “zero alternative” in that a prediction of the development without the project or plan is normally mandatory. This alternative is supposed to serve both as a baseline for evaluation the impacts of other alternatives and to elucidate the need for the project of plan (Wathern, 1988). The “no action alternative” seems both difficult to make concrete and to motivate administrations to make. What precisely is to be meant by “alternatives” in SEA seems at best to be unclear (Markus & Emmelin 2004; Hildén 2000; Emmelin 1998a&b)

¹³ See for example Handbook of Environmental Impact Assessment vol 2 (Petts ed 1999) with separate “sector experience” chapters on “policy”, land-use planning, waste management, road and rail infrastructure, energy, mining, water.

Resistance and delays: the problems of not getting it right from the beginning

A much used argument for EIA/SEA is that if well done it facilitates efficient planning and decision-making. The evidence for this seems largely indirect, based on the delays and problems caused by inadequate planning and EIA/SEA and the delays caused by public resistance. However there are several problems related to proving the counterfactual standpoint that better SEA would have speeded up the process of EA at lower levels in any particular case. Major energy, waste and infrastructure projects would seem to afford a suitable model for a better understanding of the handling of alternatives especially in SEA. The decisions are often of a policy setting nature: the "contextuating decisions" of Etzioni (1967). In recent years several such projects in Sweden have been subjected to major decision-making processes where impact analysis has been an important element. The role of resistance and "counter expertise" is interesting in these cases – see project 8.

A common claim in recent literature is that in order to be fully effective in influencing the decision-making process, SEA should be set up as an integrated or at least closely tied process (Therivel et al 1992; Kjørnø and Thissen 2000). This means that the SEA must be tuned to the characteristics of the decision-making process that is being assessed. However, the basis for the SEA approach is rationality of EIA and this influence is visible as the proposed and existing SEA processes basically entail the same steps and stages as the standard rational decision-making model (Lawrence 2000; Nilsson & Dalkmann 2001).

Effective versus efficient

The concepts of effectiveness and efficiency are central to the MiSt-programme. To technology or economics these concepts are in principle both clear, straightforward and fundamental. The distinction is important. Effective means "having an effect" whereas the implication in efficient is doing so with a the minimum of effort needed to achieve the effect. However even a superficial dip into literature in social science or law uncovers a much more complex and confusing reality. The concepts seem to be used interchangeably. Partly this may simply be a lax use.¹⁴ However the discussions in the programme uncover deeper problems with the terms. To mention only one such problem: the term efficient seems to be used to indicate that outcomes are not only effective in relation to the tools used but also that they are proportional to the expectations or norms of a system such as a legal system. Some of the articles in this volume mirror this deeper conceptual problem, not least the article by Tuija Hilding-Rydevik. I shall not here try to add to or attempt solve a problem which merits further discussion. I merely note this complexity in what to some may seem a simple issue, that could be resolved by recourse to simplistic technological terminology. The discussion of effectiveness and efficiency of tools and tool use will be an important and interesting challenge in the final reporting of the MiSt-programme. One can note that the remedy to low effectiveness advocated by the EA-profession often is increases in resources such as more data, better models etc but also education of decision makers, stronger positions of EA in decision making (Emmelin 1998a). This raises interesting and important issues concerning the relationship between effectiveness, efficiency and the intuitive notion of "success" discussed by Hilding-Rydevik here and with the problems of an outside or an inside perspective of tool use and on relevance (Emmelin 1998b).

¹⁴ Possibly compounded in Swedish by the lack of a simple pair of terms corresponding to "effective" and "efficient" which means that efficient ("effektiv") is used as a synonym of effective ("verkningsfull")

A note on multi-disciplinarity and theory

It is inherent in the approach taken that a unified theory or simple hypotheses to test can not form the basis of an applied programme as a whole. The different tools as well as areas such as planning, legal regulation, participation etc have their own theoretical foundations. Some such as planning, implementation or participation do however have alternative bodies of theory making either paradigmatic choice or theoretical eclecticism necessary. The practical fields of planning, decision-making etc. tend to have implicit or embedded components from more than one doctrine or theoretical structure; environmental legislation has components of both calculating and communicative rationality, the relationship between top-down and bottom up doctrine is less than clear in EA regulation etc. Our standpoint is critical examination taking the implicit or embedded theories as starting points. As in the field of evaluation a form of “method triangulation” (Almås 1990) is necessary. The question that has to be raised here is whether there is a theoretical framework within which environmental policy and environmental management on a more general plane can be understood as the context of tools and tool use.

Although the approach in most tools and assessment processes stemming from natural science, technology or rationalist planning doctrines is “realist” (Wynne 1996) the approach to research on tools must avoid both simplistic social constructionist approaches as much as the simplistic realist approaches that are set against social constructionism. The interaction of science and society in environmental planning and management is not a research object in the present programme. However recent research in the field (see e.g. Joas & Hermansson 1998) is an important component of the understanding of the context of tool use. It will be a part of the programme activities to review this and to instil major findings into individual projects. Research on professional and organisational culture and the importance for determining both problem definition, methods and approaches and solutions sought has been carried out by consortium members (Emmelin & Kleven 1999; Emmelin 2000; Asplund & Hilding-Rydevik 2001)

It has been suggested that the concept of “ecological modernity” offers a theoretical perspective for understanding environmental policy. Sector integration is central to ecological modernity i.e. the notion that growth can be combined with environment protection and that existing institutions can cope with the challenges of sustainable development (Hajer 1996). It is a cornerstone both of present Swedish environmental policy and of the EU sustainability strategy adopted at the Göteborg EU-summit. The role of professional cultures in promoting or impeding integration, the role of discourse coalitions etc has been outlined by Emmelin (2000) but can be given concrete empirical examination in this case. Lundqvist (1997) has shown the importance of the administrative and professional setting for an environmental issue. "Ecological modernity" seems to ignore or evade two problems. One is the distinction between two ideal types of environmental issues. One type is the set of issues concerned with the environmental impact as side effects. The second type of environmental issues are those where the impacts are directly related to the primary goals of the project. For many theoretical reasons - decision theory, organisation theory etc - environmental issues might be expected to come out rather differently in the two types of conflict. The other problem of ecological modernity is that discourse coalitions at the rhetorical or policy level need not be stable in the sense that they exist also at the levels of implementation (Emmelin & Kleven 1999; Emmelin 2000). While “ecological modernity” may be illuminating at the level of abstract policy it seems insufficient as a framework for more detailed study of the operation of tools and processes.

The MiST-programme must, in striving to develop from multidisciplinary towards interdisciplinarity, examine theoretical perspectives but retain the open eclecticism advocated for planning research (Hall 1981)

A final comment

In collecting the members of the consortium I had some simple basic ideas and concerns. I wanted a team of senior researchers curious about how environmental assessment and decision making actually works rather than concerned with the esoteric theorising largely divorced from practice that plagues the field of social science environmental research. Also, I was looking for a commitment to use knowledge to make an impact on the practice of assessment, on means of public participation and on better methods for decision making in what is ultimately a political or value based system of decisions not a technocratic one. And finally I wanted to co-operate with research groups with promising young doctoral candidates.

That I succeeded in this will be evident from this anthology. It mirrors both the quality of the cooperating researchers and groups and the lively exchanges that we have in seminars and work-shops and the commitment to the programme shown by project members. The fact that so many members have found time to contribute to this volume bears witness to this; not least in keeping to the deadlines to make it possible to produce the volume in time for the IAIA06 conference in Stavanger. Special thanks are due to the programme deputy director Dr Tuija Hilding-Rydvik who first suggested that we produce a volume as a step in the long process of digesting and assembling our reflections and results for the final reporting in 2008. Sincere thanks also to Lena Petersson Forsberg, my assistant, who has done the job of assembling the material and producing both a printed version and a CD-version, working against the clock and disciplining us all. Without her dedication and organisational talent this volume would never have been finished on time – if at all!

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MiSt-projects:

Exploring SEA and public participation tools

Institution: IKP/Environmental Technology and Management, Univ. of Linköping
Project leader: Dr. Anders Mårtensson

3G infrastructure as sustainability issue

Institution: Spatial Planning, Blekinge Institute of Technology
Project leader: Professor Lars Emmelin

Strategic environmental assessment as an intervention

Institution: Nordregio
Project leader: Associate professor Tuija Hilding-Rydevik

Cumulative impact assessment for municipal and regional planning

Institution: Department of Landscape Planning Ultuna, SLU.
Project leader: Associate professor Hans-Georg Wallentinus

Scenario methods in SEA

Institution: Swedish Defence Research Agency, FOI
Project leader: Dr Karl-Henrik Dreborg

Better environmental decisions in the waste and energy sectors

Institution: IKP/Environmental Technology and Management, Univ. of Linköping
Project leader: Associate professor Mats Eklund

Ex-post tools: follow-up and evaluation in SEA

Institution: Stockholm Environment Institute, SEI
Project leader: Research fellow Måns Nilsson,

Sustainability in regional development

Institution: Centre for Regional Development Plan, BTH
Project leader: Professor Jan-Evert Nilsson,

Linkages between SEA and corporate environmental management

Institution: Blekinge Institute of Technology and Central European University
Project leader: Dr. Aleg Cherp

SEAMLESS, SEA and Management in Local authorities in Sweden

Institution: IKP/Environmental Technology and Management, Univ. of Linköping
Project leader: Dr. Olof Hjelm

Tools for reasonable deliberation

Institution: Blekinge Institute of Technology, BTH
Project leader: Professor Bertil Rolf

ENVIRONMENTAL ASSESSMENT – EFFECTIVENESS, QUALITY AND SUCCESS

Tuija Hilding-Rydevik

Tuija Hilding-Rydevik (PhD, Associate Professor) currently has a position as a Senior Research Fellow at Nordregio, Stockholm. Her main research focus is on the experiences of the efforts to integrate environmental and/or sustainable development perspectives in different planning contexts, for example regional development or land use planning. The role of different “tools” to promote these efforts are explored, for example impact assessment. THR is also the deputy director of the MiSt-programme.



Abstract: There are numerous questions to pose in trying to explore the content of the terms effectiveness, quality and success in relation to national EIA systems, EIA processes and the different parts of the EIA process (screening, scoping, predictions, review, public participation, monitoring etc). This contribution explores the terms effectiveness, quality and success in relation to the experiences gained of implementing EIA as part of the planning process of five major Nordic development projects. From these experiences and from other international evaluations studies it is argued that the EIA community has not well enough elaborated upon the desired results in terms of the benefits to society and to the different actors that use and implement EIA. In order to sharpen and develop the implementation of the tool of EIA it is time to more systematically elaborate and develop the expected societal benefits of implementing EIA. This need to be done with a much more firm empirical as theoretically explicit basis.

Key words: Environmental Impact Assessment, EIA, effectiveness, quality, success, major development projects, Nordic

Project: The contribution here is not directly linked to a specific MiSt -project but very much so in relation to the main goals of MiSt – namely to explore empirically as theoretically the effectiveness of different tools to promote the inclusion of environmental perspectives in decision-making of strategic importance for the development of the environment.

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ENVIRONMENTAL ASSESSMENT – EFFECTIVENESS, QUALITY AND SUCCESS

Tuija Hilding-Rydevik

Introduction

‘However, in practice, it is still possible for decision-makers effectively to ignore the EIA,..’

(Wood 1999)

Is an Environmental Impact Assessment (EIA) or Strategic Environmental Assessment (SEA) process effective¹⁵ if it is possible for decision makers to ignore the results of the process? Is a national EIA system effective if it does not function well for large and highly politicised development projects? Is an EIA process effective if it delivers high quality EIA documents but does not have any impact on the actual design of development projects or on the final project decisions? How can we define what constitutes ‘good quality’ in relation to EIA, and when can the implementation of EIA be considered a success? There are numerous questions to pose in trying to explore the content of the terms *effectiveness*, *quality* and *success* in relation to national EIA systems, EIA processes and the different parts of the EIA process (screening, scoping, predictions, review, public participation, monitoring etc). The question of how effective something is, which quality it possesses and when it can be considered a success is naturally totally dependent on the question of effectiveness, quality and success in relation to some goal within the EIA system, the processes and its parts. It can also be viewed from the various and differing perspectives of the many actor groups that are a part of the EIA system and its processes - legislators, proponents, competent authorities, NGO’s etc.

This contribution explores the terms effectiveness, quality and success in relation to the experiences gained of implementing EIA as part of the planning process of five major Nordic development projects. The initial question of interest here relates to the issue of the overall benefit to society of EIA implementation. Moreover, this is an issue that has to some extent however been “forgotten” in the ongoing process of EIA gaining world wide acceptance, and this is particularly so in respect of the desire to refine ‘best EIA practice’, and outline the principles of EIA, as well as its effectiveness criteria. Without clear, realistic and context specific aims and goals we will encounter significant difficulties in creating prerequisites to evaluate and make EIA systems and processes effective. This paper is open- ended, but also contains some proposals for issues in need of further discussion.¹⁶

The issues raised here may be of general interest for those following the wider EIA discourse, though the specific issue here concerns the Nordic context, and in particular, the results of a Nordic comparative study of the role of EIA in the planning and decision process of large development projects in the five Nordic countries (reported in Hilding-Rydevik 2001).

¹⁵ *Effective* is here used in the Concise Oxford Dictionary (1995) sense: “having a definite or desired effect”.

¹⁶ This contribution, with the same title as above, has previously been published in: Uhlin, Å and Mariussen, Å (2006). *Trans-national Practices - Systems Thinking in Policy Making*. Nordregio, Stockholm.

EIA in the planning and decision process of five large development projects in the Nordic countries

The aim of the Nordic study “*The role of EIA in the planning and decision process of large development projects in the Nordic countries*” was to undertake a closer examination of some major Nordic development cases in order to reflect upon how effective and successful implementation of the EIA legislation had been in the Nordic countries, particularly in relation to major development projects. One large development case from each country was chosen and analysed, with mutual terms of reference providing the basis for each (in brackets are included the authors of the case descriptions in the final report):

- Horsens-Skanderborg High Speed Rail Link, Denmark; EIA process conducted 1997-1998 (Ulf Kjellerup)
- Hallandsås Railway Tunnel, Sweden; 5 EIA documents have been produced between 1990-2000 (Hans-Georg Wallentinus and Josefin Päiviö)
- Final Disposal of Nuclear Waste, Finland, EIA process 1997- 1999 (Pekka Hokkanen,)
- Gardermoen National Airport and Railway Connections, Norway, EIA process 1991-1992 (Morten Stenstadvold)
- Aluminium smelter, Iceland, EIA process 1999-2000 (Ausdis Hlökk and Hólmfrídur Sigurdadóttir)

In addition, for the published report of the project (Hilding-Rydevik 2001) Tore Sager provided a theoretical chapter analysing the five cases from a planning theory perspective.

Two of the Nordic development projects included in the study have actually been implemented – those at Gardermoen and Hallandsåsen. The Norwegian national airport Gardemoen has been finalized, though, from an airport performance perspective, the issue of localization has not been satisfactory. There also occurred during the construction of the infrastructure for the airport, major environmental impacts that were not foreseen. The Hallandsås railway tunnel construction project was initiated but remains incomplete at the current time of writing, because of what has been described as ‘technical difficulties’ in addition to the major environmental impacts occurring (for example cows and fish dying after coming into contact with seepage water from the tunnel). As such then the process remains ongoing in respect of how to continue the construction of the tunnel while avoiding further environmental damage. The project relating to the final disposal of nuclear waste in Finland has now been decided upon and will be implemented. Two projects were stopped - the Horsens-Skanderborg project in Denmark and the Aluminium smelter in Iceland. The Aluminium smelter project did however, during 2001, see a renewed application being made and this included the conducting of a new EIA process. The project will now be implemented in this amended form.

In three of the cases, namely, the Gardermoen, Hallandsåsen and final disposal of nuclear waste cases, the EIA process seems to have had a minor influence on the planning and

decision-making process. – In two of the cases however, Horsens-Skanderborg and the Aluminium smelter, the EIA process played a significant role in respect of the formal project authorisation process. The reasons for the different roles of EIA in these processes are described in more detail in the final report (Hilding-Rydevik 2001). Both the Gardermoen and Hallandsås projects did result in major environmental impacts in spite of the EIAs being conducted. In the Gardermoen case this happened in spite of the fact that the EIA actually undertaken represented one of largest ever conducted in Norway up till then.

The poor EIAs and/or the poor impact of the EIA on the overall planning and decision making processes in three of the cases highlighted above effectively illustrate the urgent need to discuss the issues of effectiveness and quality. If national EIA legislation and its implementation does not, in practice, actually work for major development projects or for projects where the potential environmental impacts become major, then one can indeed begin to question the whole rationale for implementing EIA at all. On the other hand, one can also question whether the expectations invested in the outcome of EIA are too high or perhaps whether they are sufficiently elaborated.

How are effectiveness and efficiency assessed?

It thus appears that in three of the five Nordic cases, the EIA process has had a minor influence on the overall planning and decision-making process of the development project. This result seems to be in line with results from evaluations of EIA processes and systems worldwide. The link between EIA and decision-making seems to be one of the main deficiencies in EIA performance in most national EIA systems (see statements in, for example, Lee, Walsh and Reeder 1994, Sager 1995, Wood 1999, Barker and Wood 1999, Commission of the European Communities 2003). Good examples of course do also in this respect as for example provided by Sadler 1996.

EIA processes

Several attempts have been made to develop indicators for the performance of individual EIA processes and for the performance of national EIA systems. In 1988 the Canadian Environmental Assessment Research Council advanced the set of criteria outlined below, as being suitable in the main for individual EIA processes and for the evaluation of their effectiveness, efficiency and fairness (Wood 1999):

An EIA may be considered effective if, for example:

- Information generated in the EIA contributed to decision-making;
- Predictions of the effectiveness of impact management measures were accurate; and
- The proposed mitigating and compensatory measures achieved approved management objectives.

Efficiency criteria are satisfied if, for example:

- EIA decisions are timely relative to economic and other factors that determine project decisions; and
- The costs of conducting EIA and managing inputs during project implementation can be determined and are reasonable.

Fairness criteria are satisfied if, for example:

- All interested parties (stakeholders) have equal opportunity to influence the decision before it is made; and
- People directly affected by projects have equal access to compensation.

One of the issues in respect of the performance of EIA processes and systems that has received significant attention is the quality of EIA documents. Numerous indicators and methods have been developed for the evaluation of the quality of EIA documents (for example: EU Commission 1994, 2001, Lee and Colley 1990). The question remains however, how important is the quality of the EIA document is for the influence of the EIA process on the overall project planning and decision process? In the analysis of the Hallandsåsen case it was clearly pointed out that a thoroughly researched and expertly presented EIA document would not have made any difference to the outcome, as the EIA results were neglected in any case. A similar observation has, moreover, been made by Lee, Walsh and Reeder (1994), where they conclude from their evaluation study: *the influence of the Environmental Assessment process, both on the final decision and on project modifications, seems to be no greater in the case of satisfactory, than of unsatisfactory, Environmental Statements*. In Sadler 1996 (pp 61-65) a checklist for the review of EIA process effectiveness is provided, covering a comprehensive and complex set of questions. Here the quality of the report is recognized as just one of the many factors influencing the effectiveness¹⁷ of the EIA process. In most of the so -called “best practice” guides one will also find that the quality of the document is just one of several factors receiving attention. Thus the EIA research and practice community recognizes that a number of factors influence the overall performance of the EIA process. The question is however what the fine-tuning of the different parts of the EIA-system and processes (screening, scoping, assessment, public participation, mitigation measures etc) is expected to lead to – what is the performance that this fine-tuning is aiming at, and will the fine-tuning contribute to this? This link between the prescribed modes of EIA operation and the outcome of this in relation to the planning and decision-process, or the state of the environment, is in fact in most cases unclear.

EIA systems

All of the five Nordic development cases had EIA processes conducted in accordance with their respective national EIA legislations. In the Nordic countries there is a tradition of comprehensive laws giving room for interpretations and good or bad practice to develop. It is therefore interesting to ask whether the level of performance in these cases was representative

¹⁷ Effectiveness is defined in Sadler 1996 as “whether something works as intended and meets the purpose(s) for which it was designed”.

of the overall functioning of the national EIA systems. The authors of the case studies have touched upon this. The Gardermoen EIA process was considered to be below average. The Horsens-Skanderborg EIA process was considered to be representative as a process but not the outcome i.e. that the project was abandoned. In the Hallandsås case the EIA document was considered to be of an ordinary level compared to other EIA documents at that time. In the Aluminium smelter case there is no comment on this issue, besides that there were previous experiences of EIA concerning aluminium smelters. And finally, the final disposal of nuclear waste was a rather special case because of the nature of the development issue and may therefore not be seen as being very representative. The issue of representativeness was not *per se* however commented upon by the author.

The task of developing performance criteria also includes the development of criteria for the performance of entire national EIA systems. The conclusions of a comparative study on eight different EIA systems concluded that the main weaknesses were to be found in respect of (Wood 1999):

- Coverage;
- EIA report quality;
- Integrating the EIA into decision-making;
- Impact monitoring and enforcement;
- Mitigation;
- Public participation;
- System monitoring;
- SEA

The above conclusions were based on a comparison of legal provisions, undertaken according to 14 different criteria. The EIA systems included in these evaluations included those of California, the USA, the UK, Canada, Australia and New Zealand, the Netherlands and Western Australia. The evaluation criteria were as follows:

1. Is the EIA system based on clear and specific legal provisions?
2. Must the relevant environmental impacts of all significant actions be assessed?
3. Must evidence of the consideration, by the proponent, of the environmental impacts of reasonable alternative actions be demonstrated in the EIA process?
4. Must screening of actions for environmental significance take place?
5. Must scoping of the environmental impacts of actions take place and specific guidelines be produced?
6. Must EIA reports meet prescribed content requirements and do checks to prevent the release of inadequate EIA reports exist?
7. Must EIA reports be publicly reviewed and must the proponent respond to the points raised?

8. Must the findings of the EIA report, and the review, be a central determinant of the decision on the action?
9. Must monitoring of action impacts be undertaken, and is such action linked to the earlier stages of the EIA process?
10. Must the mitigation of action impacts be considered at the various stages of the EIA process?
11. Must consultation and participation take place prior to, and following, EIA report publication?
12. Must the EIA system be monitored and, if necessary, be amended to incorporate feedback from experience?
13. Are the financial costs and time requirements of the EIA systems acceptable to those involved and are they believed to be outweighed by discernable environmental benefits?
14. Does the EIA system apply to significant programmes, plans and policies, as well as to projects?

EIA and the influence on overall project planning and decision-making – effectiveness

“A concern with effectiveness is a fundamental theme of EA¹⁸ theory and practice.” (Sadler 1996). Systematic and scientifically based assessments of the actual impacts of EIA on the overall planning and decision-making process are however not that abundant. Moreover, the assessments undertaken thus far provide a mixed picture in respect of the influence of implementing EIA. The initial quote in this paper is one of the conclusions from a comparative evaluation of the EIA systems in California, the USA, the UK, Canada, Australia and New Zealand (Wood 1999). The Netherlands and Western Australia were also included in the study but for these areas the conclusion was that the EIA systems are indeed designed to ensure that the results of the EIA are taken into consideration in decision-making. Evaluations from the Netherlands do however also provide us with indications of the possibility of improvements - in an evaluation study 58% of the practitioners included in the study judged that the EIA had a negligible or at best small influence in relation to the time and money spent on EIA (Evaluation Committee 1990 in Sadler 1996)¹⁹. The existing weak link between EIA and the overall planning and decision-making of projects, and the link with decision -making has been clearly pointed out by for example Lee, Walsh and Reeder 1994, Sager 1995 and Barker and Wood 1999. The EU Commission evaluation of how the EIA directive 85/337/EEC, as amended by Directive 97/11/EC, has been implemented in all the EU member states concludes that they cannot draw any conclusions on the role that EIA plays in decision-making (Commission of the European Communities 2003, p 96).

Studies of the contribution of EIA to overall project planning have been concerned with for example the amount and importance of project modifications as a result of the EIA process. The conclusion from an evaluation in the eight EU countries - Denmark, Germany, Portugal, Spain, the UK, Belgium; Ireland and Greece - is that: *There is no doubt that the EIA process is bringing about modifications to the projects assessed, although many of the mitigation measures proposed are of minor significance* (Barker and Wood 1999). Lee, Walsh and Reeder (1994) moreover conclude from their evaluation study of environmental assessment

¹⁸ Environmental Assessment

¹⁹ On the other hand, the same study showed that in 52% of the decision-making processes reviewed, EIA modified the plan or project itself, while in 68% of all reviewed processes the EIA influenced parties involved in the decision-making (Evaluation Committee 1990 in Sadler 1996)

and project modification in UK that in about half of the cases investigated there were project modifications leading to environmental improvements of varying levels of significance. Christensen et al (2005) conclude from an evaluation of the Danish EIA experiences, that modifications due to EIA implementation could be detected in 90% of the cases. The modifications must however be considered to be minor.

Clearly then EIA processes do seem to have an impact on project modification in a fair proportion of cases, even if there is a variation in the environmental significance of the modifications, taking into consideration the results presented above. From the Nordic cases the influence of EIA on project modification can obviously be said to have been of minor importance for the Gardermoen and Hallandsås cases. In the Finnish case of the final disposal of nuclear waste this was not really touched upon in the case description, while the high - speed rail link between Horsens-Skanderborg was rejected. As such then no conclusions can be made for these cases in respect of the project modification issue. When it comes to the Aluminium smelter, the impact on project design was clear. At the time of the evaluation of this EIA process the initial outcome was the rejection of the project. But the Aluminium smelter project has undergone a renewed EIA process and was, in September 2001, approved after major project modifications.

Evaluations of the actual influence of EIA on decision-making seem thus far not to have been undertaken in any great detail. Clearly then there seems to be a need to develop performance criteria for this issue (Lee, Walsh and Reeder 1994). There seems also to be a clear need to both empirically and theoretically explore this issue in more detail. This is particularly so in respect of statements referred to earlier highlighting the link between EIA and decision-making as one of the main weaknesses in EIA implementation and practice. This must be considered not merely as one of many weaknesses of EIA, but rather as being of major importance in the further development of EIA and in further research on EIA performance.

One important comment in connection with developing criteria for the performance of the EIA process and the link to overall planning and decision-making is to take into consideration both the *formal* decisions (such as project authorisation) and the many *informal* decisions that are made during the project planning process. The informal decisions may be of significance particularly in major development cases where project planning takes place over a number of years and includes many actors and high political stakes. In the Nordic cases there are at least two clear examples, namely those of Horsens-Skanderborg and the Aluminium smelter where the EIA process played a significant role in the formal project authorisation process. The outcome of these processes was a rejection of the proposed projects.

At the time in which the Nordic study was conducted the various national EIA legislative bases (which in several cases were subsequently modified) all contained provisions concerning the relationship between EIA and decision-making. From the description in Bjarndóttir (2001) it seems that Denmark, Finland, Iceland and Norway had provisions demanding that the grounds and reasons for the decision and how the EIA results had been taken into account must be stated *in writing* and also in most cases made public. In Sweden it was not necessary to make clear the grounds and reasons for the decision or to make a written statement concerning this issue. The Swedish Environmental Code simply mandated that the competent authority should take into consideration the results of the EIS. The other Nordic

countries legislative bases also contained this proviso. It seems therefore that Swedish legislation was quite weak on this point of the regulation of the link between EIA and decision-making.²⁰

When is the implementation of EIA a success, and for whom?

One of the issues dealt with in the Nordic project in relation to the cases included was the question of whether the EIA process had been a success or not. In relation to the Gardermoen project and to the final disposal of nuclear waste case the answer is, yes and no. The answer depends upon whose perspective one adopts in the analysis. In both cases, the EIA process was considered to be a success for the proponent. The EIA process did provide a comprehensive arena for planning and/or did not cause delays in the overall project planning process. Proponents in both cases received acceptance for their project. The arena provided by the EIA process did provide a democratic forum and did produce a wealth of material, which was considered, in this sense, to be a success for the decision makers in the final disposal of nuclear waste case. From an EIA 'best practice' point of view though, the Gardermoen case must be considered a failure. Stenstadvold (2001) concludes that even if the EIA process was, at the time, considered to be in compliance with the Norwegian national EIA provisions and principles (this fact was however later questioned) the process did not however contribute to the substantive purpose of EIA or decision making as proposed by Sadler (1996) that is say, it did not protect the environment or minimize and mitigate environmental impacts.²¹

Kjellerup (2001) considered the EIA process of the high -speed rail link project between Horsens-Skanderborg to be a success because of its provision of alternatives by which the proposed project could be assessed. The EIA process of the Aluminium smelter was considered a success since it led to a comprehensive understanding of the environmental impacts and was one of the main bases for scoping the whole project (Hlokk and Sigurdadóttir 2001). The EIA for the Hallandsåsen tunnel must be considered a complete failure for all parties since it did not contribute to protecting the environment, or to the mitigation of impacts. Moreover, as major environmental impacts occurred at the onset of the project the project was stopped (SOU 1998). Today, 10 yrs after the first boring attempts of the tunnel started, the tunnel is still under construction. To secure that the construction work is environmentally friendly and of good quality the Swedish government has appointed a special committee to oversee the work (www.hallandsaskommitten.se).

Was the EIA implementation a success for the legislators?

We can conclude thus far that an extensive effort has been made to outline 'best' and 'good' practice criteria and that in recent years there has also been some effort to put in place criteria

²⁰ Both the project EIA as the SEA-legislation has since this study was conducted, been revised through a revision of the Environmental Code (SFS 1998:808)

²¹ In 1996 Barry Sadler introduced three criteria for judging the performance of EIA:

- Achievement of substantive purposes (e.g. did the EIA result in environmental protection, were impacts minimised and mitigated as predicted?)
- Contribution to decision making (e.g. did the EIA assist in project redesign, provide information relevant to approval and condition setting, lead to new policy values?)
- Application of provisions and principles (e.g. did the EIA follow or conform to procedural, methodological and administrative guidelines?)

for assessing the effectiveness and success of EIA processes. Assessments of EIA processes and systems are moreover currently being undertaken. There does however seem, in spite of these efforts, be a lack of profound input - empirically and theoretically - to the discussion concerning when we, in different contexts, consider EIA to be a success, and to how we 'measure' this success. Most of the goals relating to EIA implementation are quite general, giving little guidance over how to focus effort on the implementation of, for example, a national piece of EIA legislation, while of course innumerable descriptions exist worldwide of the aims of EIA in general.

First we will look at the different aims put forward in the Nordic EIA legislations at the time that the Nordic project was conducted. A closer look at the aims of implementing EIA in the Nordic legislation give the following picture (Bjarnadóttir 2001):

- Denmark: There are no specific aims for implementing EIA. The EIA legislation is part of the Danish Planning Act. The goals expressed for the whole act include for example continuing to maintain the open coasts as an important natural and landscape resource and preventing air, water and soil pollution, noise 'pollution' and involving the public as much as possible.
- Finland: The aim of the EIA Act is to further the assessment of environmental impacts and consistent consideration of this impact in planning and decision-making, and at the same time to increase the information available to citizens as well as their opportunities to participate.
- Iceland: The objectives are threefold. Firstly to ensure that, before consent is granted for a project, which may, due to its location, the activities which it will involve, and its nature or extent, have significant effects on the environment, an assessment of the environmental impact of the project is carried out. The second is to encourage co-operation between the parties with interests at stake and concerned parties with regard to a project that affects the environment. The third objective is the involvement of the public.
- Norway: The purpose of environmental impact assessment is to elucidate the effects of projects that may have a significant impact on the environment, natural resources or the community. Environmental impact assessment shall ensure that such effects are taken into account during the planning of projects and when a decision is taken as to whether, and if so, subject to what conditions, a project may be carried out.
- Sweden: The requirements on EIA are incorporated into the Environmental Code, which provides an overall framework for EIA implementation. Overall goals for example include the protection of human health and the environment from damage and the promotion of sustainable development. In chapter 6, relating to the sub-objectives or purpose of the environmental impact assessments it is stated that: "The purpose of an environmental impact assessment is to establish and describe the direct and indirect impact of a planned activity or measure on people, animals, plants, land, water, air, the climate, the landscape and the cultural environment, on the management of land, water and the physical environment in general, and on other management of materials, raw materials and energy. A further purpose is to enable an overall assessment to be made of this impact on human health and the environment".

The above outlines a bouquet of overarching, though very general and comprehensive, societal aims concerning the implementation of EIA in the Nordic countries. Reading the legislative texts concerning the aims of EIA gives the following picture of the aims in the Nordic countries summarized in table 1.

Table 1. Main contents of the EIA objectives in national legislations in the Nordic countries (Bjarnadóttir 2002)

	Den- mark	Fin- land	Ice- land	Nor- way	Swe- den
Elucidate environmental impacts of projects		✓	✓	✓	✓
Ensure that environmental considerations are incorporated in decision-making		✓		✓	
Enhance public participation	✓	✓	✓		
Promote cooperation between main actors			✓		
Protect the environment	✓				✓

Looking at the cases analyzed in the Nordic study we can conclude from the above that the Danish case met the over-arching aims of the planning act into which the EIA regulations are included. In the Finnish case it also seems that the aims of the legislation were met and this seems also to be the case in Iceland. In the cases of Norway and Sweden however the aim in relation to the first bullet point was met though the assessments failed to identify the impacts that actually occurred. The aim in the second bullet point was not met in Norway and the aim in the third bullet point was not met in Sweden. This is a ‘quick-and-dirty’ statement based only on these cases. Thus far however in none of the Nordic countries looked at does an evaluation and assessment study exist that specifically focuses on the question of whether EIA implementation actually meets the goals set in the legislation, though a number of national evaluations of the functioning of the national EIA-systems and processes do of course exist (Bjarnadóttir 2002). The question then is what these national evaluation studies, both nationally and internationally led, do in practice assess – effectiveness, quality, success in relation to what?

The Canadian criteria described earlier are however explicit when it comes to making the goals explicit and, judging from these criteria developed for the Canadian planning and EIA context, the two Nordic development cases that did move to implementation i.e. Gardermoen and Hallandsåsen, did not have EIA processes that can be considered either effective, efficient or fair. In both the concerned countries, Norway and Sweden, the EIA legislation was however subsequently amended, which may or may not have delivered an altogether different result in relation to EIA procedures were they to be implemented on similar projects today. It

may not however be relevant to apply the Canadian criteria to the context of the Nordic national legislations.

Understanding the benefits for society of implementing EIA

If EIA is implemented according to “the book” what will the outcome be? If all of the criteria of an efficient, effective and fair EIA process are implemented, if EIA ‘best practice’ is observed, if the basic principles of EIA are adhered to, and for example if all the 14 evaluation criteria, described earlier, can be checked off, then what would the outcome be? Would the environment be protected, would the impact assessment information provided to those in charge of the planning process be perfect, would the decision-makers self-evidently take the EIA results into consideration, what would the outcome be? This is not clear from any of the ‘best practice’ exhortations guidance papers, evaluations and assessments made, indeed, Wood (1999) states that “*there has been, as yet, no reliable quantification of the effectiveness of EIA*”. This is exemplified by a quote from the US Council of Environmental Quality (CEQ)(1990, p 15) and the evaluation of the US EIA legislation the National Environmental and Policy Act (NEPA):

Because NEPA was not designed to control specific kinds or sources of pollution, its benefit to society is difficult to quantify. The act was designed primarily to institutionalise in the federal government an anticipatory concern for the quality of the human environment, that is, an attitude, a heightened state of environmental awareness that, unlike pollution abatement, is measurable only subjectively and qualitatively.”

This is very interesting. The overarching aim of NEPA, the benefit to society, is stated as the promotion of environmental awareness in the federal government. This can be interpreted both as a short-term aim for each project undergoing EIA as a long term overall societal aim. In the CEQ evaluation study (1997, p iii) of NEPA’s effectiveness after 25 years of implementation they conclude that NEPA “*is a success – it has made agencies take a hard look at the potential environmental consequences of their actions, and it has brought the public into the agency decision-making process like no other statute.*” The problematic issue emerging from the citation above is the difficulty of quantitatively measuring the benefit to society, not that the aim of the legislation is too general.²² CEQ also highlights the needed improvements: “*agencies sometimes confuse the purpose of NEPA. Some act as if the detailed statement called for in the statute is an end in itself, rather than a tool to enhance and improve decision-making.*” This last statement is indeed right ‘on the money’. We, as EIA professionals, tend to focus on the principles of EIA, the best practice of EIA and thus we focus on how to improve the quality of screening, scoping, predictions, EIA documents etc which we consider to be essential parts of EIA implementation. We develop evaluation

²² In USA the number of Environmental Impact Statements (EIS) filed with the Environmental Protection Agency according to NEPA has declined from about 2000 in 1973 to 500 in 2000 (EPA homepage 2001). These numbers could be interpreted as a quantification of at least one part of the success of NEPA. The reason for this decrease is apparently that the proponents today have included, from the start of the project design process, the environmental measures in order to avoid the time and money consuming EIA processes. I have not however as yet found any reference to confirm this statement. This positive outcome was also proposed by the EU Commission in its evaluation of the EIA implementation in the member countries but they concluded that the member states are not in a position to confirm that this is the case (Commission of the European Communities 2003, p 96)

criteria for systems and processes as well as for their different constituents in order to promote a vaguely defined or implicit idea of what constitutes ‘effectiveness’ in order to attain the ambrosia of ‘good quality’ in relation to EIA implementation. We seem however in this quest to have become a little lost in terms of the evaluation and design of details that might not be crucial to achieving the overall aims of EIA.

The aims of EIA need to be differentiated according to the legislative, administrative and cultural context each EIA system is designed to be incorporated in. We may formulate EIA aims (for example the aims defined by the International Association of Impact Assessment²³) and develop context-independent best practice guidance. But we must also transform and adapt these to the various national contexts. The different aims of the various national EIA legislative approaches described in the context of the Nordic countries are probably to some extent at least deliberate adaptations of the general aims of EIA to the national context. The Icelandic EIA legislation is, for instance, the only Nordic body of EIA legislation explicitly aiming at the promotion of co-operation between the concerned parties concerned in a development project. This can be assumed to be due to the fact that the Icelandic planning legislation remains weak and undeveloped. Therefore the EIA process needs to serve as a co-operation arena, a function that is not placed on EIA in the other four Nordic countries as this function is already fulfilled by the well-developed planning legislations and traditions pertaining in these countries.

With the above in mind it can be stated that the comparisons of EIA systems and comparative evaluations of their performance between countries does of course say something about the EIA systems and their performance in relation to some general view of what constitutes ‘best practice’, effectiveness, quality and success. But it will not reveal the specific role of EIA in relation to other measures taken in a national context to protect the environment, enhance awareness or promote public participation in the planning and decision-processes of development projects. The EIA system may in some countries have a more, and in other countries a less, crucial role in the overall national environmental management context. In defining the aims of EIA however, the role of EIA in relation to other measures must be remembered, and it is particularly important here not to exaggerate the level of expectations and/or overburden the design of EIA systems. It therefore seems apposite to outline a basic assumption used here. The general and vague aims that seem to be inherent in many national EIA legislations, EIA guidance papers and EIA evaluations are expressions of the fact that the empirical and theoretical understanding of the context specific needs to enhance planning and decision-making in relation to environmental issues is underdeveloped or even missing. Therefore the internationally posed general aims and effectiveness criteria etc do have a significant impact on national formulations.

²³ Objectives of EIA (IAIA home page 2001):

- To ensure that environmental considerations are explicitly addressed and incorporated into the development decision making process;
- To anticipate and avoid, minimize or offset the adverse significant bio-physical, social and other relevant effects of development proposals;
- To protect the productivity and capacity of natural systems and the ecological processes which maintain their functions; and
- To promote development that is sustainable and optimises resource use and management opportunities.

The discussion of the benefits to society must also include the perspective of aims for implementing EIA at the project level, as well as the wider aims in the context of an overall societal and long-term perspective. It must also include the perspective of the different aims of all of the actors involved. This point is crucial. Evaluations worldwide of EIA performance seem to relay a clear picture of a large number of the proponents seeing EIA as an 'extra burden' and thus, for example, postponing the start of the EIA process to the later stages of the overall planning process where the option to alter project location, design, etc become increasingly remote. It seems also that in many EIA systems, the results of the EIA process can easily be neglected by both proponents and decision makers, as indeed was noted previously in this paper. Large development projects with high political and economic stakes pose extra challenges in this sense for EIA implementation. The Nordic examples illustrate this in three of the cases and this has also been shown for example in terms of the implementation of EIA in respect of dams worldwide (Sadler, Verocai and Vanclay 2000). A more thorough understanding of the different "user" perspectives in respect of EIA may thus be an important ground for enhancing its performance and its overall benefit to society.

A further issue of importance in relation to sharpening up EIA evaluations is the notion that not all evaluation criteria have the same value as regards their contribution to the overarching societal aims of EIA. The 14 criteria used by Wood (1999), and describes previously, were mainly put together to enable a comparison of the legal provisions not to evaluate the performance of the systems. Considering the performance of EIA processes and EIA systems, the link to decision making must be considered not just one of many criteria but one of the most important as was also pointed out by Sadler (1996).

Challenges and obstacles in relation to large development projects

Albæk (1996) explores the societal function of evaluation activities from three theoretical perspectives – organizations as rational, political and cultural systems. This approach could be used to assess the societal role of EIA, which can be viewed as one form of evaluation. What should be highlighted from Albæk's paper is his conclusion on the role that evaluations play for organizations as cultural systems. "*The cultural perspective does not focus on making (rational) choices but on the production of norms and meaning.*" According to the cultural perspective organizations are judged not only – and not even primarily – by what they do, but by their appearance. Therefore his conclusion about evaluations is that their cultural function is to "*create the image of a serious, responsible, and sensibly managed organization.*" Moreover, Albæk also states that "*..., an evaluation possesses the essential qualities to function as a rational ritual*" and that evaluations "*enable us to rationalize our actions after the fact.*"

Practical experience and evaluations of EIA performance in general, but particularly in connection with large development projects with high political and economic stakes attached, render the above perspectives highly relevant from an EIA perspective. It is often said, somewhat skeptically, that EIA plays the role of legitimating decisions that would nevertheless have been taken in any case, and specifically on grounds other than environmental ones. Therefore EIA in many instances, for example in connection with large development projects, is something that is used (consciously and unconsciously)(by the proponents and others wishing that the project be implemented) in order to give the image of a "*serious, responsible and sensibly managed*" planning process in order to make the project

come true. Among the Nordic cases studied here, the Gardermoen and final disposal of nuclear waste cases could be pointed to in this respect.

The general challenges associated with implementing EIA seem still to be rather large, while a number of obstacles (many of which are alluded to in this paper) remain. These challenges and the obstacles they create bring matters to a head when EIA is implemented in projects with high economic and political stakes because cultural and political values usually override other values. In the Norwegian case study (Stenstadvold 2001) the conclusion was that the Norwegian EIA system, at that time, was not designed to cope with this kind of large project and that a special set of EIA rules were needed.

Effectiveness, quality, success and the benefits to society

Effectiveness is essentially, ‘to bring about a desired result’. Success is ‘to gain what you are aiming for’ or ‘to accomplish an aim’. Quality can only be defined with some kind of yardstick defining good, bad or average levels, but it is also used in the sense of something having an ‘excellent quality’ or possessing a ‘distinctive attribute’.²⁴ *EIA needs to be effective in order to be successful and this will be achieved by having an operation with high quality.* This empty phrase can only be given content and meaning by putting it into context (national, regional, local etc) and in relation to a desired goal for the EIA implementation. All in all then, effectiveness, quality and success in relation to EIA are about knowing more accurately what the EIA implementation is aiming at. The point here is that the EIA community has not well enough elaborated upon the desired results *in terms of the benefits to society* and to the different actors that use and implement EIA. This lack of a clear perception of the societal benefits, the aims of EIA and what, for example, constitutes a successful EIA process, will make it hard to find indicators for effectiveness and to define good or bad quality operations. The citation from CEQ and its comments about NEPA highlights this. The different aims put forward in the Nordic EIA legislations also do likewise.

The bottom line then is that so- called ‘best EIA practice’ and ‘EIA principles’ seem to be rather more difficult, in practice to implement than to regurgitate. This is particularly so for large development projects. Why is it so? Is it because the desired results of EIA implementation on project planning, project design and decision making cannot be fulfilled in the short term, but only after quite a long period of implementation, for example like the 25 year implementation of NEPA in USA? Perhaps this is the case, but even evaluations of “older” EIA systems seem to deliver up the same results. Or do we evaluate the wrong factors, or perhaps it is because we evaluate too many details at the same time because the desired *core* outcome, aim, societal benefit is not well enough understood and defined?

In order to sharpen and develop the implementation of the tool of EIA it is time to more systematically elaborate and develop the expected societal benefits of implementing EIA. This is valid both from the short term and project-specific implementation as from a long - term and national EIA systems point of view. It is however crucial to do this in relation to the specific implementation contexts – national legislative, planning culture, etc. Though the

²⁴Using the definitions for effectiveness, success and quality as defined in the Concise Oxford Dictionary (1995).

results of 25 years of implementing NEPA may be convincing, many other evaluations of EIA systems and processes do not show very encouraging results (for example three of the Nordic cases) in relation to effectiveness.

The assumption made here is that the lack of clear goals and perceptions of the societal benefits of introducing and implementing EIA in different national contexts will result in poor prerequisites being made in respect of making EIA effective, or seeing that it performs to a high quality and is thus successful. Bartlett and Kurian's (1999) work underpins this assumption. Their conclusion is that a number of implicit models of how EIA works and the impacts it has on policymaking (see box in appendix) exist. Questions in respect of the normative assumptions underpinning these models and the normative values and principles that ought to be driving EIA are, on the whole, unaddressed and unanswered by scholars in the field. As pointed out earlier, this lack of clear and context specific goals for EIA legislation, implementation and operation is part of a larger picture. This relates to the overall need for improvements in the planning and decision-making processes for development projects in respect of how environmental issues, perspectives and information is dealt with in different national contexts. In essence we can state, out of context that:

If the claimed attribute of EIA to be one of the more successful policy innovations of the 20th Century (Sadler 1996) is actually to become true, then our assumption is that the following improvements are needed:

- The desired results of national EIA systems and processes need to be defined more accurately and in relation to the national context needs (defining context specific effectiveness).
- Understanding the national context need includes an overview of the overall legal project planning and decision-making situation in relation to how environmental considerations are handled and the improvement needs following up from this.
- Understanding the national context needs also include the specific approach to national professional planning and decision-making practice in relation to environmental considerations, information production etc in project planning and decision-making.
- Effectiveness, good and bad quality and success can only be measured in relation to a defined and desired goal for EIA implementation and this needs to be context specific, and as Sadler (1996 p ii) puts it, in relation to the policy and institutional framework in which EIA operates.
- EIA implementation cannot remedy all flaws in the way in which wider environmental issues are handled in project planning and decision-making. Moreover, other tools and measures are needed (Hilding-Rydevik et al 2004). The role of EIA needs also to be defined in relation to the other tools and measures that are available.
- Further empirical studies of the actual contribution of EIA in different contexts is needed to enhance the understanding of the concepts of effectiveness, quality and success and in order to more accurately formulate context specific aims and operational needs.

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The Bartlett and Kurian (1999) typology of how and why Environmental Impact Assessment (EIA) works (very short version)

According to Bartlett and Kurian all of the below models have been empirically validated by different researchers

'The *information processing model*, with its emphasis on EIA as a technique for producing, processing and transmitting information, assumes that rational, comprehensive decision making is not only desirable but possible. The driving normative assumptions of this model are *value neutrality, technical and scientific rationality*, and *the power of 'perfect' information* to ensure that the right decisions are taken by policy makers.'

'The *organisational politics model* of EIA makes the fundamental assumption that what is 'right' will prevail by the import of virtue into organisations. Bureaucratic organisations, in other words, will change for the better by getting the right people into the right place who will then incorporate environmental values into the organisation.'

'The *pluralistic model* seeks to achieve a higher degree of public participation in the decision-making process. EIA is primarily then a tool for ensuring more democratic processes and practices through citizen involvement.'

'The normative principles of the *political economy model* are *efficiency, innovation, flexibility* and *integration* – the mutually reinforcing environmental and economic benefits of using resources more efficiently by integrating environmental objectives into economic decision-making and providing incentives for the development and adoption of adaptive, minimising, preventive technology.'

'The *symbolic politics model* is *Janus-like* in the values and norms to which it subscribes. From one perspective, the purpose of EIA is assumed to be duplicitous – EIA is a formality that serves no purpose other than to generate huge volumes of information that remain inaccessible to people and are superfluous to the decision-making process. Others however see EIA as serving to create particular kinds of meaning that shape the world we live in. EIA's goal then is to become a tool for moral reaffirmation of certain values that have environmental preservation as their core. '

'Of all the models examined here, the institutionalist model most explicitly and extensively integrates normative principles with its operative aspects. The *institutional politics model* sees the purpose of EIA as the transformation of institutional values by changing the way of doing things in such a manner as to incorporate environmental values. Successful EIA will bring about changes in the mandates, rules and procedures of the agencies that in turn will influence and shape the notions of culture, values, norms and principles throughout society. Fundamental to the institutionalist politics model is a vision of EIA as a mechanism to bring about ecological rationality in decision – making - ...'

PUBLIC DELIBERATION IN STRATEGIC ENVIRONMENTAL ASSESSMENT: AN EXPERIMENT WITH CITIZENS' JURIES IN ENERGY PLANNING

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Abstract: The purpose of this paper is to contribute to the search of effective tools for public participation in strategic environmental assessment (SEA) through an experiment with citizens' juries in municipal energy planning. The results show that the citizens' jury enabled a constructive dialogue between ordinary citizens and experts. This indicates that citizens' juries represent a public participation tool for reforming SEA in a more deliberative democratic direction.

Key words: Strategic environmental assessment, public participation, citizens' juries, democratic deliberation, municipal energy planning.

Project: MiSt 1 – Exploring Strategic environmental assessment (SEA) and public participation (PP) tools. (SEA participation)

The aim of the project is to strengthen municipal planning and decision-making by developing and applying tools for strategic environmental assessment (SEA). A well designed SEA process including analytical tools, such as life cycle analysis, risk analysis and scenarios, and novel tools for public participation, such as public hearings and comments, is assumed to improve planning and lead to more rational and legitimate decisions.

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PUBLIC DELIBERATION IN STRATEGIC ENVIRONMENTAL ASSESSMENT: AN EXPERIMENT WITH CITIZENS' JURIES IN ENERGY PLANNING

Hans Wiklund and Per Viklund

Introduction

Public participation is a key component of environmental assessment (EA); both of environmental impact assessment (EIA) of projects and strategic environmental assessment (SEA) of plans, programmes and policies. There are several standards of good practice of public participation in EA (e.g. André et al. 2004, Bond et al. 2004, Palerm 2000, Webler et al. 2001). Most of these standards have been developed for EIA while their guidance regarding the appropriate forms of public participation in SEA is more limited. This indicates a general need of searching for effective public participation tools in SEA.

A recent trend regarding public participation in EA is the interest for deliberative democratic and deliberative planning ideals. EA has been described as a potential arena of democratic deliberation (Bond et al. 2004, Palerm 2000, Petts, 2000, 2003, Sager, 2001, Wilkins, 2003). As Petts puts it: 'EIA (including SEA) has the potential to be a decision process which includes deliberation, inherent learning and decision influence through stakeholder and public input' (Petts 2003, p.373).²⁵ Richardson expresses a similar idea by stating: 'What has been described as the 'communicative turn' in planning seems to be repeating itself in EA' (2004, p.24). There is also a still limited, but growing, number of empirical studies of deliberation in EA (e.g. Diduck and Mitchell, 2003, Fitzpatrick and Sinclair, 2003, Petts, 2000, 2001, 2003, Saarikoski, 2000, Sinclair and Diduck, 2001, Soneryd, 2002, Webler et al., 1995).

The purpose of this paper is to contribute to the search of effective tools for public participation in general and public deliberation in specific in SEA through an experiment with citizens' juries in municipal energy planning. Citizens' jury is a public participation tool that has been developed with the intention of implementing deliberative democratic and deliberative planning ideals.

Deliberative democracy and deliberative planning

Deliberative democratic ideals are very popular (e.g. Bohman and Rehg 1997, Dryzek 2000, Elster 1998, Gutmann and Thompson 2004), and several models of deliberative democracy have been formulated, e.g. 'discursive democracy' (Dryzek 1990), 'contestatory democracy' (Pettit 2000) 'reasonable democracy' (Chambers 1996), 'communicative democracy' (Young 1993), and 'deliberative politics' (Habermas 1996a, 1996b). In addition, there are several models of deliberative planning, e.g. 'communicative planning' (Forester 1993, Sager 1994), 'collaborative planning' (Healy 1997), 'planning through consensus building' (Innes 1996) and 'deliberative planning' (Forester 1999). In common for models of deliberative democracy and models of deliberative planning is the emphasis on the significance of voice, even though the models disagree about what forms of voice that should be enabled.

²⁵ Environmental Impact Assessment (EIA) is used on projects while Strategic Environmental Assessment (SEA) is used on plans and programmes.

A key challenge for deliberative democratic and deliberative planning theorists is bridging the gap between theory and practice (cf. Klymicka 2002, p.292, Uhr 1996). At what levels should arenas for deliberation exist – local, national or international? How should these arenas be integrated into the public policy-making process? Is the goal to make established decision-making and planning mechanisms more deliberative or to create novel arenas for deliberation?

In response to this challenge a number of deliberative tools have been developed, such as ‘citizens’ juries’ (Crosby 1995), ‘deliberative opinion polls’ (Fishkin et al. 2000), ‘planning cells’ (Daniel and Renn 1995), ‘consensus conferences’ (Joss 1998), ‘authentic dialogue’ (Innes and Booher 2003) and ‘deliberative mapping’ (Eames et al. 2004). There is also an increasing number of evaluations of experiments with deliberative decision-support tools (Erikson and Fossum 2000, Hajer and Wagenaar 2003, Premfors and Roth 2004).

Citizens’ juries is probably the most frequently used deliberative tool, and it has been applied in many different contexts, for example national health care reform, budget prioritising, elections, medical ethics, education and land use planning (Jeffersson Center 2000). The basic idea of citizens’ juries is that ordinary citizens, if they are given time, information and opportunity to discuss, are able to give qualified recommendations on complex problems of public concern.

Design of the experiment

The experiment combines design principles of citizens’ juries with scenario methodologies used. A jury of ordinary citizens have participated in a series of scenario workshops with the objective to formulate of a local strategy for sustainable production, distribution and consumption of energy in a Swedish municipality.

The jury consisted originally of 12 participants, of which 9 participated on a regular basis. The participants were recruited through an advertisement in a local newsletter distributed to all households in the municipality.²⁶ In order to create a more diverse group, the advertisement was complemented by contacts with individual citizens. These contacts were managed by the municipality.

A core ambition of the experiment was to promote interplay between “ordinary citizens” and “experts”. Therefore experts, hand picked by the research team, attended the scenario workshops. The experts contributed with their expertise, while the citizens analysed and evaluated the information.

The scenario methodology used followed the Shell-GBN approach (Dreborg 2004). Three scenario workshops were conducted during the spring 2005. The aim of the first workshop was to generate a vision of a sustainable energy system. The goal of the second workshop was to formulate possible internal and external development scenarios. The objective of the third workshop was to develop robust strategies for realising the vision.

The workshops followed a structure consisting of six steps. First, the research team explained the rules for the workshop. Second, the research team and the invited experts provided background information, for example regarding energy consumption and environmental problems. Third, the participants generated ideas through structured

²⁶ According to the design principles for citizens’ juries the ideal method of participant selection is a process of stratified random sampling (Crosby 1986).

brainstorming. The process leader asked the participants one by one to put forward an idea. This was repeated until the participants had no more ideas to contribute with. Fourth, the ideas were clustered into themes. Fifth, the participants prioritised among the ideas through voting. Six, the research team summarised the results of the workshop and submitted the results for comments to the participants.

Method and material

The evaluation of the experiment has been structured around a framework of analysis (Wiklund 2002, 2004, 2005a, 2005b) derived from Jürgen Habermas's notion of discourse as an ideal democratic procedure (Habermas 1990, 1996a, 1996b, 2001). The main reasons for focusing on Habermas's theory of deliberative democracy is that the theory is coherent and structured, and that most arguments for a more deliberative style of decision-making have been strongly influenced by his writings (Bohman and Rehg, 1997, Elster, 1998).

The four principles derived from Habermas's notion of discourse have been used as an ideal type. This is a conceptual construct which stylises a phenomenon, and an analytical tool that can be used for studying practice (Eliaeson 1982, p.104-122). The difference between an ideal type and a hypothesis becomes clear when the two are confronted with empirical findings. While the hypothesis claims to describe and explain reality, the ideal type provides a perspective from which practice can be viewed. An ideal type, by definition cannot be falsified; it can only be found to be less useful in some situations than others (Pettersson 1987, p.30).

The analysis is based on a number of materials: minutes and background materials from project meetings (the research team and municipality representatives) and scenario workshops, participatory observation in the scenario workshops, and in-depth interviews with the 9 ordinary citizens who participated on a regular basis. The minutes and background materials have been used to describe the formal structure of the experiment. The participatory observations have been used to explore the interaction between the individual citizens and between the citizens as a group and the experts in the workshops. The interviews have been used to document the experiences of the participants.

Framework of analysis

In his model of deliberative democracy, Habermas identifies discourse as an ideal procedure for rational and democratic decision-making.²⁷ At the core of the notion of discourse is the view that the democratic legitimacy of an outcome is dependent on the soundness of the reasons provided for its support (Habermas, 1990, pp. 43-115, 1996a, pp. 157-168, 296-302, 1996b).

To fulfil the requirements of discourse, communication must be structured in a very special way. The notion of discourse specifies a number of conditions aiming at ensuring that the outcomes of public deliberations are nothing but the result of 'the forceless force of the better argument' (Habermas 1975, p. 108).

In the essay *Discourse Ethics: Notes on a Program of Philosophical Justification*, Habermas outlines the structure of discourse (1990, pp. 43-115). More precisely, he identifies three sets of rules applying to three levels of rational argumentation (ibid., pp. 86-89). The first set is based on the premise that 'argumentation is designed to *produce* intrinsically cogent

²⁷ For a thorough description of the model and derivation of the framework, see Wiklund (2002, 2004, 2005).

arguments with which we can redeem and repudiate claims to validity' and stipulates that participants in discourse must make use of the same logical-semantic rules, e.g. participants may not contradict themselves and they must use expressions in a consistent way over time as individuals as well as across individuals (*ibid.*, p. 87, italics in original). The second set is based on the principle that 'arguments are processes of reaching understanding that are ordered in such a way that proponents and opponents ... can test the validity claims that have become problematic' and states that participants must follow certain procedural rules, e.g. participants must state and defend only what they believe, and they must provide reasons to justify their opinions (*ibid.*, p. 87). The third set is based on the idea that 'argumentative speech is a process of communication that, in the light of its goal of reaching a rationally motivated agreement, must satisfy improbable conditions'. The set of process rules insulates the communicative process from coercion and inequality and specifies that no one with the competence to speak and act should be excluded from discourse, that everyone is allowed to question or introduce any assertion as well as to express his or her needs, beliefs and wants, and that no one should be prevented by external or internal coercion from exercising these rights (*ibid.*, pp. 88-89).

From the notion of discourse four principles can be derived against which institutional arrangements and practice can be assessed with regard to deliberative potential (cf. Chambers, 1996, pp. 193-211, Kettner, 1993).²⁸

First, generality: a principle derived from the first rule of the third set, stipulating that discourses shall be open to all competent speakers whose interests are, or will be, affected by a matter of common concern or the norms adopted to regulate a matter. The principle stipulates that all actors affected, or at least their interests, shall be included in the deliberative process.

Second, autonomy: a principle derived from the second rule of the third set, specifying that participants in discourse shall be granted the right to take sides with or against raised validity claims. They shall be granted the right to effective participation, i.e. equal opportunities to express and challenge arguments and counterarguments in the deliberative process.

Third, power neutrality: a principle derived from the third rule of the third set, stating that in discourse only 'the forceless force of the better argument' (or communicative power) shall be allowed to sway participants.¹ To produce legitimate and rational outcomes, asymmetries of the three kinds of power with distorting effects on deliberation, which can be derived from Habermas's model of modern society as lifeworld and system, must be neutralised. Administrative power finds expression in formal organisation in general and the political system in particular, economic power follows the logic of market exchange and is represented by financial resources, and cultural power finds expression in values and norms generated in the lifeworld.

Fourth, ideal role-taking: a principle derived from the first set of logical-semantic rules and the second set of procedural rules, stipulating that participants in discourse shall adopt attitudes of reciprocity and impartiality. If participants do not adopt attitudes of reciprocity and impartiality the deliberative process, no matter how structurally equal, will not be productive. Reciprocity implies that participants talk and listen sincerely and that they do not act strategically. Impartiality means that participants engage in sincere attempts to view matters of common concern from the perspectives of others and against the background of this multitude of views try to find an independent stance.

²⁸ For a more elaborated account of the four principles, see Wiklund (2002, pp. 35-71).

Table 1. A Habermasian framework of analysis

Principles and conceptual definitions	Operational definitions
<p>Generality All those affected, or at least their interests, shall be included.</p> <p>Autonomy Everyone included shall be granted the right of effective participation.</p> <p>Power neutrality Distortions related to administrative, economic and cultural power must be neutralised to ensure that only the 'forceless force of the better argument' affects the outcome.</p> <p>Ideal role-taking Participants must adopt attitudes of reciprocity and impartiality.</p> <p>Effects</p>	<p>Are the relevant stakeholders included, is there a procedure for identifying the public concerned, and are the interests of the public reflected in the definition of the environmental issue and the description of its adverse impacts?</p> <p>Are the participants (developers, authorities, citizens, etc.) provided equal opportunities to put forward and challenge arguments and counterarguments in the various stages of the EA process?</p> <p>How do EA regulation, participants' financial resources as well as institutional and expert culture and citizens' level of knowledge affect the EA process with regard to generality and autonomy?</p> <p>Do the participants listen and talk sincerely, are they striving to find a collective solution, and do they try to find independent stands based on their own and others' views?</p> <p>Do participants change their opinions as a result of the deliberative process and do the citizens' recommendations influence decision-making?</p>

¹ In later works Habermas (e.g. 1996a) uses the term communicative power. However, the notion of communicative power does not refer to power in the same sense as administrative, economic and cultural power; it refers to the view that the better argument is a force to take into account in organising and regulating collective action.

An experiment with citizens' juries in energy planning

In the following, the experiment with citizens' juries in energy planning is assessed against the four principles derived from Habermas's notion of discourse. The analysis illustrates the deliberative potential of the citizens' juries as a deliberative tool and the deliberative qualities of the specific planning process under study.

Generality

The principle of generality stipulates that all those affected, or at least their interests, shall be included in the process. The generality potential of EA is estimated in terms of access to and scope of the EA process. Is there a systematic procedure for identifying the public concerned? Are all legitimate stakeholders included? Are the interests of the public concerned reflected in the definition of the environmental issue and the description of its adverse impacts?

As noted above, participants were recruited through an advertisement in a local newsletter that was distributed to all households in the municipality. This procedure for recruitment is inclusive and random. But it requires an initiative from potential participants in the sense that they must contact the municipality to announce their interest in participating. This circumstance is likely to explain why few citizens volunteered to participate. The procedure seems thus to have a quite limited ability to mobilise less easily mobilised citizen groups. The limited response to the advertisement forced the municipality that was responsible for recruiting participants to adopt an alternative strategy. The contact person at the municipality asked citizens that he and his colleagues expected to have an interest to join the experiment. In these two ways a dozen “ordinary people” was recruited.

Nine of them attended two or all three of the scenario workshops. All these 9 have been interviewed.

In socio-economic terms, the ordinary citizens can be described as follows. Two were women and seven are men. Their age varied between 18 and 73 years. Three of the participants were pensioners, two were students, two were employed by the municipality, one was employed by a private company and one was an entrepreneur.

Another way of describing the group is in terms of attitudes. The interviews show that the motives for participation varied. Four said that the most important reason for participating was an interest in energy matters. Three said that the most important reason was an interest in environment issues. Two said that the most important reason was an interest in regional development. None of the participants were members of political parties, but all of them thought they had a greater interest in political affairs than people in general. Nor did any of the citizens have a specific energy or environmental interest, but as in the case of political interest, they thought that they had a greater interest in energy and environment issues than people in general.

This leads to the question whether the group of ordinary citizens is representative of the population of the municipality. It should be noted that the objective was not to create a representative group in a statistical sense. A jury of 12 cannot, in socio-economic terms, fully represent a municipality with a population of 21 000 persons. Instead, the ambition has been to create a diverse group. The guiding principle has been Patsy Healy’s idea of ‘stakeholder communities’ (Healy 1997, p.271). It is clear that the jury was diverse with regard to occupation. However, it was more difficult to recruit employees and entrepreneurs than students and pensioners. The participants also varied with regard to age and attitudes.

In sum, it is clear that citizens’ juries cannot fulfil the requirement of representativeness. Instead, it is reasonable to have diversity or inclusivity as guiding principle. In this connection, it is also important to note that there is a generality dilemma. On the one hand, a large number of participants is likely to increase the representativeness of the group. On the other hand, a large number of participants is likely to obstruct deliberative processes in general and the scenario workshops in specific. Consequently, it is necessary to balance the ideal or representativeness with the instrumental need of workability.

Autonomy

The autonomy principle states that it is not enough that those affected are included; they shall also be granted the right of effective participation. This raises the operational question whether the participants are provided the opportunity to put forward and challenge arguments and counterarguments in the various stages of the EA process, i.e. in screening, scoping, prediction and evaluation, drafting of environmental statement,

There is a variety of public participation tools that can be applied in EA (Petts, 1999, pp.161-168), and various tools have different autonomy potential. The differences in potential can be illustrated through the 'ladder of participation' developed by Sherry R. Arnstein (1969). The ladder provides a typology including eight levels of participation, and a higher level on the ladder corresponds to a greater autonomy potential. Levels one and two (manipulation and therapy) are denoted as nonparticipation since they assume passive citizens who are given information, levels three to five (informing, consultation and placation) are referred to as symbolic participation since individual citizens are provided the opportunity to hear of a matter or submit comments but not given influence over decision-making, while steps six to eight (partnership, delegated power and citizen control) are referred to as 'real' participation since citizens are given the opportunity also to discuss and debate matters or even have decision-making power (ibid.).

The public participation tools that are normally used in EA, such as public hearings and information meetings, have a limited autonomy potential. They are primarily designed and used for information provision from the developer to the public (Almer and Koontz, 2004, Petts, 1999, pp. 163-164, 2003).

A core ambition of the experiment was to provide an arena for critical dialogue between ordinary citizens and experts. In the interviews all but one of the participants said that there were no problems of expressing one's ideas and arguments. Many of the participants said that the structure of the scenario workshops created a situation in which everyone felt free to speak. In the structured brainstorming each and all, in turn, was asked to express his/her opinion. For the participants this made it clear whom that had the right to speak. It also gave the participants time for reflection. In other words, the structure of the process created a situation giving the participants equal possibilities to express arguments and counterarguments. As one of the participants put it: 'At one moment the university professor was speaking and at the other little Lisa was saying what she had in mind.'

However, two complications of more principal nature were brought up in the interviews. First, the ideas generated in the brainstorming had to be summarised into a few keywords and written on post-it notes. The notes were then put on a white board. This procedure led to some loss of information. The original meaning of the idea expressed was sometimes missed. Second, a couple of the participants found a group of 20 persons (jury and experts) too big. They thought it would have been more convenient to speak and discuss in a smaller group.

As indicated above, one participant was critical. In particular, he questioned the result of the first workshop, in which the participants formulated a vision of a sustainable energy system for the municipality. He did not find the vision realistic and after the workshop he formulated an alternative vision. At the following workshop, he was given the opportunity to present his alternative vision, but he turned down the offer. He choose not speak. Maybe he thought that it would disturb the work of the group or that presenting would make no difference, or maybe he felt a lack of support from the other participants.

In sum, it is clear that the scenario workshops created good conditions for dialogue and that the planning citizens' jury as public participation tool has a significant autonomy potential.

The example of the alternative vision illustrates the ambition of the process leaders to create conditions for unrestricted communication. But, at the same time, it indicates the difficulties of creating such communicative conditions. Despite the fact that the participants did not identify any significant barriers to talking, the openness had limitations.

Power neutrality

Discourse prescribes that nothing but ‘the forceless force of the better argument’ shall affect the outcome of the deliberative process. In the EA literature, the importance of resources for participation is emphasised (Bond et al. 2004). Power neutrality is measured in terms of how EA as a decision process affects the generation and distribution of administrative, economic and cultural power.

Administrative power finds expression in formal regulation. The EA legislation has been identified as a major barrier to public participation and deliberation. As noted above, the legislation is criticised for requiring too weak forms of participation in too late stages of the EA process (Adomokai and Sheate, 2004, Almer and Koontz, 2004, del Furia and Wallace-Jones, 2000, Diduck and Sinclair, 2002, Palerm, 1999, Palerm and Aceves 2004, Petts, 2003).

The experiment takes place early in the EA process. It is probably best described as a screening exercise with the aim of formulating a first definition of a sustainable energy system. But that public participation takes place at an early stage of the EA process does not have to mean that the impact of participation is great. The citizens’ jury had no formal decision-making power. The task was to provide a background material. If the ambition is to have great public influence over decision-making, it is necessary to combine different participation tools. In this case, it would be necessary to combine the citizens’ jury with another public participation tool in the decision-making stage of the planning process. The energy plan will be finally decided on by the members of the municipal council.

The three scenario workshops can be viewed as an expression of administrative power. It is clear that the selection procedure restricted access. The interviews indicate that the participants had a quite vague picture of the structure of the scenario workshops and the effects of their structure on deliberation. But the participants who commented on the structure said that it furthered a communicative situation that enabled participation on an equal basis.

Cultural power is informal in nature and finds expression in values and norms. Institutional and expert culture can be a significant obstacle to participation (Emmelin, 1998, 2000, Petts, 2003).

The citizens’ jury included people with various backgrounds. It included students, pensioners, public and private employees and an entrepreneur. In addition, at the workshops hand picked experts from the Royal Institute of Technology, Linköping University, the Swedish Defence Research Agency and Jönköping International School participated. In the material, there are different interpretations of how this asymmetry of cultural power affected the communicative process. Most participants did not view the various backgrounds as a barrier. In contrast, they saw it as enriching. A couple found the various backgrounds to have represented a significant asymmetry of cultural power. They put it like this: “it is easier for researchers to reason than for us more ordinary people”, “we technicians did understand (but others did not)”, and “X work for company Y. He has access to a lot of background information”.

Economic power is expressed in financial resources. In EA, different participants tend to have different financial resources at their disposal (Adomokai and Sheate, 2004, Diduck and

Sinclair, 2002). Economic power seems have had a very limited impact. The only indication of economic power is that it was harder to recruit employees and entrepreneurs than students and pensioners.

In sum, it is clear that there were significant asymmetries of administrative and cultural power. Administrative power had a considerable impact on both the generality and the autonomy criterion, while cultural power mainly affected the autonomy criterion. The limited asymmetries of economic power affected mainly the generality criterion. Interestingly, the administrative power, as expressed in the structure of the scenario workshops, seems to a large extent to have neutralized the asymmetries of cultural power, as expressed in various backgrounds. This neutralising effect created a communicative situation in which the young, the introvert or the amateur was not subordinated to the old, the extrovert or the expert.

Ideal role-taking

The principle of ideal role-taking stipulates that participants must adopt attitudes of reciprocity and impartiality. Ideal role-taking focuses on qualities in practice. But this does not challenge the fact that the design of EA systems is of great importance. Systems can facilitate reciprocity and impartiality, and different participation tools have different role-taking potential.

An institutional precondition for reciprocity is that tools allow for two-way communication. The need for two-way communication is also stressed in the literature on public participation in EA (Bond et al. 2004). But, as noted above, the public participation tools most frequently used in EA assume passive citizens who are given information by the developer. A precondition for impartiality is that tools allow for public communication. This indicates the need of the EA process to be transparent (Bond et al. 2004). However, the structure of the traditional participation tools tends to further conflict and strategic action rather than dialogue and consensus (Fitzpatrick and Sinclair, 2003).

The structure of the scenario workshops restricted the opportunities for two-way communication. In the brainstorming phase, the participants were forced to express their views. But they were not allowed to challenge the views expressed by others. Despite this restriction, it is clear that the workshops provided opportunities for dialogue. Furthermore, all the participants interviewed claim that they talked and acted sincerely in the scenario exercises.

Strategic action means that the actor violates the principle of reciprocity by not being sincere or having a “hidden agenda”. In the interviews, some participants expressed suspicion regarding that other participants acted as representatives of interest groups or employers. This suspicion was verified by other participants who stated that they acted as representatives. One participant mentioned that he felt that he was supposed to take his employer’s interest into consideration. Interestingly, however, during the course of the experiment he adopted a wider perspective, and in the last workshop he did not act as a representative for his employer, but as a citizen concerned with the development of the municipality. This indicates that he tried to adoption an independent stand based on a multitude of views expressed in the process.

One step of the scenario workshops involved prioritising between different alternatives through voting. This exercise illustrates the tension between communicative action and strategic action. Three models of voting behaviour can be identified in the empirical material:

1. Prioritise own arguments/ideas.

2. Prioritise first own arguments/ideas, second friends' arguments/ideas, and third the arguments/ideas that others prioritise.
3. Prioritise the most convincing arguments/attractive ideas.

In the first model, the actors prioritise only their own ideas. This means that both the principle of reciprocity and the principle of impartiality are violated. The principle of reciprocity is violated if an actor does not listen and talk sincerely, and the principle of impartiality is violated if an actor does not try to adopt an independent stand. In the second model, a voting strategy based on social relations is present. The question guiding the actors' behaviour is: "Who deserves my vote"? As in the first model, both the principle of reciprocity and the principle of impartiality are violated. In the third model, there are similarities with the ideal of communicative action or ideal role-taking. Actors who adopt this mode of behaviour do not have a hidden agenda. Instead, they listen to others', evaluate their arguments and take their own independent stand.

In sum, it is clear that the experiment provides institutional preconditions necessary for ideal role-taking. At the same time, it is obvious that there are elements of strategic action. However, the constructive climate that seems to have characterised the process in general suggests that the importance of the elements strategic action should not be overrated. All the interviewed participants found the experiment stimulating and interesting. New insights, valuable information and stimulating discussions contributed to this.

Summary and conclusions

The purpose of this paper has been to contribute to the search of effective tools for public participation in general and public deliberation in specific in strategic environmental assessment (SEA) through an experiment with citizens' juries in municipal energy planning.

The results show that the citizens' jury enabled an exchange of arguments and counterarguments. This suggests that citizens' juries are a participation tool that can be used to reform SEA in a deliberative democratic direction. But the analysis has also identified a number of distortions.

First, regarding generality, it is clear that citizens' juries cannot fulfill the ideal of representativeness. It is impossible to create a jury of 12 citizens that fully reflects the socio-economic structure and the attitudes of a large population. A more reasonable guiding principle is inclusivity; to create a diverse citizens' jury – a jury of many voices. It is not ideal that some of the participants were recruited by the municipality based on personal contacts. The weakness with this method of selection is that it is open to manipulation. Nevertheless, the diversity of the jury seems to have enriched the planning process.

Second, concerning autonomy, a core ambition was to provide a forum for critical dialogue. The public participation tools that are normally used in EA, such as public hearings and information meetings, have a limited autonomy potential. They are primarily designed for information provision. It is clear that the scenario workshops created good conditions for dialogue. This suggests that citizens' juries have a significant autonomy potential.

Third, regarding power neutrality, it is clear that there were significant power asymmetries. Interestingly, the administrative power, as expressed in the structure of the scenario workshops, seems to have neutralised the asymmetries of cultural power, as expressed in

various educational, professional and social backgrounds. This balancing of powers created a communicative situation in which the young, the introvert or the amateur was not subordinated to the old, the extrovert or the expert.

Fourth, concerning ideal role-taking, it is clear that the citizens' jury provided institutional preconditions for reciprocity and impartiality. At the same time, it is obvious that there were elements of strategic action. The constructive climate that characterised the scenario workshops in general suggests that the importance strategic action should not be overrated.

All in all, viewed from a Habermasian perspective, a quite positive picture of the citizens' jury appears. The scenario workshops provided good communicative conditions. That distortions are identified is a normal result when analysing against an ideal type. The distortions also provide guidance regarding how the deliberative potential of SEA can be further improved. Furthermore, the exchange of arguments and counterarguments seems to have generated new and fruitful ideas as well as increased the knowledge of the participants.

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STRATEGIC ENVIRONMENTAL ASSESSMENT IN ENERGY PLANNING – EXPLORING NEW TOOLS IN A SWEDISH MUNICIPALITY

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Abstract: Tools for strategic environmental assessment (SEA) have been applied in municipal energy planning. A hypothesis is that such tools will improve the planning process and subsequently facilitate the development of local energy systems towards less environmental impact. A planning process based on energy planning research, the EU SEA directive, and earlier SEA processes was proposed and implemented in a Swedish municipality. Scenario analysis, life cycle analysis, and public participation were included. Methodology development and process implementation are described.

Key words: Energy planning, sustainable energy system, local energy system, environmental assessment tools, scenario methods, public participation

Projects: MiSt 1 – Exploring Strategic environmental assessment (SEA) and public participation (PP) tools and Mist 7 – Scenario methods in strategic environmental assessment.

The aim for the project *Exploring strategic environmental assessment and public participation tools* is to strengthen municipal decision making by applying, evaluating and developing tools for strategic environmental assessment (SEA) in energy planning. A well performed SEA process with analytical tools, such as LCA and scenario analysis, and novel tools for public participation is assumed to improve planning and lead to more legitimate decisions resulting in energy systems with less negative environmental impact.

One aim of the project *Scenario methods in strategic environmental assessment* is to explore how elements of different types of scenario approaches can be combined within SEA. Another aim is to see if workshop techniques adopted from scenario planning can be a good forum for broad participation. The goal is to present a SEA-approach based on scenario methods that works under practical conditions.

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Introduction

Efficiency and environmental performance of a national energy system is to a large extent determined by the features of local energy systems, i.e. supply, distribution, conversion, and use of energy in a municipality. The direction of development on the local level is thus important for the performance of the national energy system. It follows that the availability and effectiveness of instruments to control this development are of great interest. For local authorities, energy planning may be such an instrument. Swedish legislation mandates each local authority to issue a plan for all supply and use of energy within the municipality borders.

In accordance with the EU directive 2001/42/EC, legislation now also requires that such plans include environmental assessments. This is often referred to as strategic environmental assessment (SEA). Such assessments have been applied in particular in the area of spatial planning. Application of SEA in energy planning has not been frequent internationally and even less so in Sweden. Hence, there is a lack of experience and methodology for application of SEA in this field. In this paper a research project is reported where tools for SEA are implemented and evaluated in municipal energy planning. The project aims to test an SEA process and different analytical and procedural tools and to analyse whether such tools will improve the planning process, compared with current practice, and subsequently the energy plan in terms of its ability to direct the development of local energy systems towards less

environmental impact. This development includes both increased energy efficiency and use of renewable energy sources. Furthermore, it is expected that the project will result in development of energy planning tools generally applicable by local authorities.

This paper aims to present the scope and objective of the project, the proposed SEA process and its tools and to provide some results regarding the methodology development and implementation of the process.

Current practices and development in Swedish energy planning

Swedish legislation on municipal energy planning was first established in 1977. This law mandates each local authority to issue an up-to-date energy plan. However, not all local authorities conform strictly and in practice there are no penalties available. Thus, the law has been criticized for not being effective. However, there appears to be a large variety in quality and effectiveness of energy plans. In an earlier research project, features and practices in energy planning in 13 Swedish municipalities have been assessed (Stenlund Nilsson and Tyskeng, 2003). The investigated municipalities are all situated in the county of Östergötland and show a variety in size, type of business and industry, and natural resources. Also, the results show that energy plans have considerable differences in terms of age, comprehensiveness regarding analysis of the energy system and its environmental impact, definition of goals, and specification of implementation measures. The conclusions by Stenlund Nilsson and Tyskeng were that energy planning in several of the municipalities could be improved with regard to extent of environmental assessment, goal definitions, implementation, and follow up issues. Also, it was suggested that the planning process would be more effective if it allows for involvement by actors such as industry, energy companies, the public, and representatives of different sectors of the local government.

The Directive 2001/42/EC "on the assessment of effects of certain plans and programmes on the environment" (hereafter called the Directive) was issued in June 2001 with the requirement that member states shall bring into force the necessary laws before 21 July 2004. On this date, the Swedish parliament adopted new legislation which brings the Directive into force. In principle, the earlier law on environmental impact assessment has been amended to include environmental assessment of plans and programmes. The law states that environmental assessment is mandatory for a few types of plans and programmes. Municipal energy plans are included which means that SEA must be included in the planning process resulting in the document required in the Directive. Thus, the project described here, where energy planning based on SEA is tested in a municipality, connects closely to the Swedish legislative development.

Methodology development and implementation

In the municipality of Finspång in southern Sweden the local government has decided to issue a new energy plan and it was determined that the plan should be part of the development of the municipal comprehensive plan (in Swedish: "översiktsplan"). This municipality was chosen as suitable for the research project described here. Several factors facilitated this choice: the timeliness of the planning start; the relatively small size of municipality, which means that developed methods may be useful for many other municipalities; the interesting energy system with interconnected waste incineration and several energy-intensive industries; and also the open attitude from the local authority.

A methodology was proposed where SEA is an integrated and integrating component of the energy planning process. A research team works together with civil servants in the municipality to develop, apply, and evaluate the methodology. The methodology, i.e., the SEA process is based on an earlier proposed framework for SEA in practice (Finnveden et al., 2003). Furthermore, input has been gained from methods for SEA proposed by the Swedish EPA (Naturvårdsverket, 2000), manuals for municipal energy planning (Joanneum Research, 2000; Energimyndigheten, 2001) and a manual for SEA (Tyldesley, 2003). Also, results from an earlier research project "Strategic environmental assessment of local energy systems" (Stenlund Nilsson and Tyskeng, 2003) were important for the design.

Different kinds of analytical tools as well as tools for public participation are part of the process. According to the SEA legislation, the objective of the environmental assessment is to identify the likely significant effects on the environment of implementing the plan. It should also present a similar assessment of reasonable alternatives, the current state of the environment, and of the likely evolution thereof without implementing the plan (SFS 1998:808). The law gives little guidance as to how this should be done in practice, and there are no specific requirements regarding methodology and level of detail of the assessment. Public participation is seen as an essential component which is assumed to provide a better decision-making (compared to current practice) regarding the energy plan and its influence on the local energy system. Public participation is also part of the legislation based on the Directive but in this project a more far-reaching approach is applied compared to the requirements of the Directive. In particular, tools including deliberative processes are included.

The process includes a number of steps, figure 1, which will result in the energy plan. However, the research process goes even further (see last row in figure 1) as the intention is to evaluate the effectiveness of the tested process and tools in terms of their ability to provide a plan which would be efficient in controlling the development of the local energy systems in a direction towards improved environmental performance.

Step no.	Task	Responsible and participants
0	Start of process including definition of objectives	Researchers, civil servants, politicians
1	Situation assessment (Assessment of the current energy system)	Researchers, civil servants
2	Workshop "Development of a visionary image of the future"	Researchers, citizens, civil servants
3	Choice: Decision on vision by politicians or information only	Civil servants (politicians)
4	Workshop "Development of external scenarios"	Researchers, citizens, civil servants
5	Workshop "Suggestions of actions and strategies"	Researchers, citizens, civil servants
6	Environmental assessment	Researchers, civil servants
7	Evaluation of future alternative energy systems	Civil servants, researchers
8	Choice of robust strategies	Civil servants, researchers
9	Feedback to the panel	Civil servants, citizens
10	Development of implementation part in energy plan	Civil servants (researchers advisory)
11	Compilation of energy plan	Civil servants
12	Remittance of energy plan	Civil servants
13	Decision on acceptance of energy by the local government	Politicians
14	Follow-up and evaluation of the plan	Civil servants, researchers
	Evaluation of the process and its outcome	Researchers

Figure 1. The process for the energy planning implemented in Finspång. Emphasis here is on steps which are important for SEA. Also indicated are the responsible actor and other participants in each step.

The first step included initial meetings where a working group consisting of civil servants from several departments in the municipality was formed. This group is the leading actor in the subsequent process. Objectives of the process were discussed and defined at this step. Furthermore, the process was presented for acceptance by the local government.

Several actors are involved in the following steps. In particular, public participation has been ensured through a citizen panel consisting of citizens in the municipality and also representatives for industry. The panel was selected after step 1. Together with the group of civil servants and a group of researchers this panel was active in the three Workshops (figure 1) where scenario methods are used as tools in the SEA process. These tools as well as the environmental assessment tools will be described in the following. However, it should be noticed that the process was not fully developed before the application in this municipality. It is inherently flexible as there are a number of choices along the road where decisions for the continuation are taken by the actors involved. In several steps in the process new methods and tools were introduced. These are described explicitly below.

Situation assessment

At this stage the status of the current energy system was documented in terms of energy sources, conversion plants, energy use for different purposes, and annual energy use in the different sectors of the municipality. Also, the environmental pressure from this system was analysed. Furthermore, general information about the municipality was gathered at this stage. This concerns, e. g., demographic data, industry structure, and development plans in various sectors of the municipality. This information was used later when alternatives were designed for the future development of the energy system.

Scenario analysis and formulation of alternatives

As a basis for the formulation of alternatives a scenario approach was used. The approach is inspired by back-casting (as described by Robinson, 1982; 1990; 2003; Dreborg, 1994; 2004) and scenario planning (as described e.g. by van der Heijden, 1996; Dreborg 2004), and combines features from these two methods.

In back-casting, as opposed to forecasting, one, rather than making projections from the present into the future, starts with designing a desirable image of the future showing a solution to a major societal problem. Then one tries to come up with ways to realize that future state. The time horizon is typically long, often several decades, in order to allow for real change to take place. This is a visionary way of thinking and it presents a means to free the mind from the burden of prevailing trends and makes it easier to find new and interesting options (Dreborg, 2004). This may be useful when faced with a problem that requires action to be taken and a new and radically different solution. In our case we wanted to test if elements of back-casting could be an effective means to incorporate the vision of sustainable development into the planning process. With an awareness of long-term goals it is possible to avoid lock-in situations although the planning horizon is short.

In scenario planning, as developed by Royal Dutch/Shell, external scenarios are developed and used. These scenarios describe the development of factors that greatly affect but are outside the control of the relevant actor, e.g., a company or a public decision-maker. The aim is to make a strategic analysis of the options open to the actor. The different options are assessed against the external scenarios in order to find a combination of measures that gives a fair outcome in all or most of the scenarios. The idea is to obtain a flexible planning. External

scenarios may make it easier to realize emerging patterns in the organizations environment (van der Heijden, 1996) and often strategies and measures are continuously evaluated and adapted according to experiences gained. This allows for adaptive planning.

A prominent feature of scenario planning is the use of panels in the scenario development process. The panels typically consists of representatives of the actor organization, often from different management levels, and often some external experts or ‘remarkable people’.

The approach we designed, based on these two methodologies, can be divided into three main steps:

- * The development of a visionary image of the future,
- * the development of external scenarios, and
- * the generation of suggestions for actions and strategies to be included in the energy plan.

In the following description of these steps, reference is made to the numbering of process steps in figure 1.

Development of a visionary image of the future (Step 2)

The first step is to develop a visionary image of the future. We wanted to create a process where opportunity was given to discuss and agree on common long-term goals. For this purpose we adopted the workshop methodology from scenario planning, where a panel is invited to participate in a structured brainstorming. The panel consisted of municipal civil servants, representatives from local companies, including the local energy company, citizens and researchers from our research group. The topic for the brainstorming was: How do we live and work in Finspång in the year 2040 so that the energy use is sustainable in the long term ecologically, economically, and socially? After the brainstorming the participants were allowed to vote on the ideas they found most attractive. In this stage the researchers, who are not actually living or working in Finspång, were inactive. After the workshop the ideas were compiled into a draft of consistent image of the future. The draft was then sent out to the panel for comments and based on the comments the draft was revised.

Development of external scenarios (Step 4)

The second step is to develop external scenarios. Ideas for these scenarios were collected in a second workshop with structured brainstorming. The same panel as in the first workshop was invited to participate, plus three additional experts – one expert on energy markets, one official from the national energy authority, and one expert on the regional development. The topic for this brainstorming was: What outside factors influence the possibilities for Finspång to achieve a sustainable energy system? The time horizon was set to 15 to 20 years from now. After the brainstorming the participants were encouraged to vote, first on which factors they found most important and then, in a second round, on which of these important factors they thought were most uncertain. After the workshop four external scenarios were developed based on the result from the brainstorming and the voting. Two prominent factors that were deemed by the panel to be both important and uncertain were chosen as dimensions in a scenario cross, and for each of the quadrants in the cross a scenario was formed.

Suggestions of actions and strategies (Step 5)

The third step is to generate suggestions of actions and strategies that could be included in the energy plan. This was done in a third workshop where the same participants as in the first workshop were invited. This time the participants were divided into four groups. Each group was responsible for one of the external scenarios and was to come up with as many ideas as possible on actions and strategies suitable for their scenario. In this work the image of the future developed in the first step served as inspiration. When this was done the entire panel gathered again to discuss and evaluate the usefulness of the generated ideas in the other scenarios. After the workshop the most viable ideas were taken to environmental analysis and based on the results from this, alternatives were subsequently formed.

Environmental analysis

The environmental analysis should consider the environmental effects of alternative strategies, but also the current state of the environment, and of the likely evolution thereof without implementing the plan (the no-action, or baseline alternative). A range of qualitative and quantitative analytical tools are available for environmental analysis in SEA (Finnveden et al., 2003). The choice depends on availability of data and on required level of detail of the results. While experience has shown the difficulties of qualitative approaches to prioritise between alternatives (Hochschorner and Finnveden, 2003b), there is also an advantage of including qualitative information as a complement to quantitative methods (Hochschorner and Finnveden, 2003a).

In this project the environmental analysis is primarily based on quantitative Life Cycle Assessment (LCA), complemented with qualitative checklists and some site-specific analysis. LCA is a tool to assess the environmental impacts and resources used throughout a product's use and disposal (ISO 1997; 1998; 1999). A product in this sense is not necessarily a physical item, but may also be a service, such as energy supply or transportation.

Environmental indicators

According to Swedish legislation, the environmental analysis is to cover issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, and landscape. Depending on the type of impact, the environmental analysis will be done with a local, national, or global perspective. We have chosen to use the Swedish environmental objectives and indicators as criteria for identification of impact categories and choice of indicators. Objectives and indicators with a regional focus have also been developed (Anonymous, 2003a; 2003b), which were used for assessment of local impacts. Many, but not all of these indicators can be derived using LCA. Some indicators may only be assessed qualitatively.

Description of the technical system

A significant challenge lies in linking the scenario analysis and formulation of alternatives to the LCA. This requires that the results from the workshops, which are mainly descriptive and non quantified, are 'interpreted' into a more specific and quantified description of the technical system, suitable for LCA modelling. Subjective influence when doing this 'interpretation' may be minimised by following a well-defined structure. We chose to use the Swedish Municipal Energy Balances (Kommunala Energibalanser, KOMENBAL) as a

template (SCB, 2005). These are yearly updated matrixes that are based on best available statistical data, describing energy use in all Swedish municipalities in terms of different sectors and energy carriers. These data were used to develop an LCA model, which calculates the life cycle emissions and resource use related to energy use in the municipality.

Scenarios

The *current state scenario* is taken as the KOMENBAL report of a certain year. This was done by Eriksson (2004).

The *no-action scenario* is to mirror energy use in the municipality in 15-20 years from now, in case no energy plan is implemented. It is to be used as a reference when evaluating whether a suggested strategy in the energy plan is likely to lead to environmental improvements. As far as possible, this scenario should be based on current trends and knowledge about decisions already taken. As a consequence of working with four external scenarios that were identified in Workshop 2, there are four parallel no-action alternatives. Each one of them will be based on the same known decisions, but placed in different future environments.

Alternative strategies scenarios describe strategies and measures suggested at Workshop 3, complemented with additional suggestions from the municipality. Each individual strategy or measure was evaluated against the no-action scenarios. Robust strategies, which lead to environmental improvement for all or most external scenarios, will be considered in the final energy plan.

Valuation

There may be at least two dimensions of valuation. One is to weigh different environmental impact categories against each other. This is done using some kind of valuation methods. Because different issues may be emphasised by different valuation methods, it is recommended to use two or more methods to compare. Valuation is also necessary to compare environmental impacts to other impacts, e.g. economic or social. It is also important to evaluate the energy plan against other municipal goals.

Implementation of plan and measures and follow up of measures

Implementation of the plan includes a number of measures and decisions to be taken by the local authority in order to direct the development of the local energy system as indicated in the plan. To be able to evaluate the real development and its compliance with the plan a number of check-points shall be introduced for the whole time span of the plan. Legislation also requires that the energy plan shall be up-to-date which means that revised plans must be issued regularly at relatively short intervals, for example, four to five years. At these instants parts of the process must be repeated, such as, the assessment of the actual energy system and its environmental impact. However, if monitoring of the energy system development and environmental effects is built into the normal activities in the municipality revision of the plan will be greatly facilitated.

Evaluation of the process and the tools

The aim of the research project as a whole is to evaluate the effectiveness of the applied SEA tools in terms of facilitating decisions which would improve environmental performance

when compared to current practice. The effectiveness concept here includes both legitimacy and rationality of decisions. Legitimacy in this context means that the process and the decisions caused by the process are well founded in the local authority, among policy makers, and the public. This can be evaluated by analysing the process in terms of, for example, the degree of participation by citizens, industry representatives, political bodies etc.

Evaluation of the actual outcome of the energy plan in terms of environmental performance of the energy system can ultimately only be done after several years beyond the time span of the plan. However, there are ways to analyse the contents and quality of the plan in order to find indications of its ability to fulfil its goals. Stenlund Nilsson and Tyskeng (2003) have analysed a number of energy plans. Based on this research the following aspects are proposed for the analysis:

- * Extent of system boundaries used in the analysis of the energy system
- * Scope of environmental impact assessment: included impact categories, time and space boundaries etc.
- * Quality of environmental impact assessment: data and methods used etc.
- * Quality of analysis regarding links between proposed system and environmental impact
- * Extent of goal setting in terms of both short and long term goals
- * Degree of detail and plainness in implementation issues
- * Scope of follow-up and evaluation measures

Results

The energy planning process is ongoing and steps 0 through 8 have been executed so far. This means that no results in terms of answers to the main research questions are available yet. Nevertheless, some results regarding the development of methodology and some experiences from the initial steps can be reported. One interesting result concerns the start of the process. Our experience is that the setting up of a working group in the municipality is crucial in the sense that this group shall be the driving force of the process and it is thus important that this group gets strong legitimacy in the local authority. Regarding public participation it was relatively easy to involve citizens and civil servants to participate in the panel, but it was difficult to get representatives from the local business community to volunteer.

After having completed the nine first steps including the three steps of public participation we can say that the process so far has been fruitful in the sense that it has contributed numerous empirical data on the implementation of SEA in energy planning. The workshops have been possible to carry out as planned, providing useful results.

The evaluation of the process and its outcome is ongoing based on the criteria mentioned above. Evaluation will also include results from interviews with panel participants and the municipal working group. Furthermore, a questionnaire has been distributed among the citizens in the municipality. Questions regard, e.g., the support for actions to change the energy system proposed by the citizen panel. The responses from this questionnaire are currently being analysed.

Discussion

New tools for strategic environmental assessment have been proposed for municipal energy planning and a process including these tools has been implemented in a Swedish municipality. The outcome will be evaluated in terms of improvement in the energy planning in comparison with earlier planning practice. Evaluation will focus on the plans ability to direct the development of the local energy system towards decreased environmental impact and improved energy efficiency.

The initiated process involves a number of methodological challenges. The ambition was to involve citizens to a large extent and during a large part of the process. Scenario methods were included in a way that needed development in this particular application. Quantitative environmental assessment methods, such as LCA, are mixed with qualitative methods to assess environmental impact of alternative development of an entire municipal energy system. Environmental aspects were weighed against other aspects in the municipality, such as, economic and social factors.

Experience from this process indicates that the approach facilitates involvement by a wide range of actors, certainly a wider range than is normal in energy planning. This involvement appears to have contributed both to the method development and substantially to the process. Although the ambition to use far-reaching environmental assessment applied to several alternative strategies is demanding, it appears to be feasible and will most likely lead to proposals for simplified methods which can be useful in other municipalities as well. It is also encouraging that the application of scenario methods in energy planning has shown that our approach is feasible and, as far as can be judged now, also successful.

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SEA, EXPECTATIONS, IMPLEMENTATION, AND EFFECTIVENESS: SNAPSHOTS FROM SWEDEN, ICELAND, AND ENGLAND

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Abstract: This article explores the relationship between the expectations of SEA as a tool, its likely effectiveness, and the existing planning system. The article focuses on the way in which the SEA literature and the EU's SEA directive, relate to the literature on context and planning. The introduction of the SEA tool into national planning systems will be illustrated with “snapshots” of developing national practice in England, Iceland and Sweden

Key words: Strategic Environmental Assessment, EU Directive 97/11/EC, comprehensive planning, comparative study, Sweden, Iceland, and England.

Project: MiSt 3 – SEA as intervention.

The research focus is on the implementation of the political goal of integrating environmental perspectives into comprehensive planning. The empirical focus concerns the introduction of Strategic Environmental Assessment into comprehensive planning at the municipal level. A comparative approach is applied, including cases from Sweden, Iceland, and England, where the national approaches to SEA introduction are studied, as are its effects on the planning process and on the contents of the plans at the municipal level.

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Introduction

Debate is currently raging across the international research community concerning the role, both actual and perceived, of SEA. There exists an abundance of both academic and practical studies exploring the aims of SEA and outlining what could be perceived as best SEA-practice. At the same time, the introduction of the EU SEA directive provides a framework for SEA implementation that the member countries need to follow, thus providing a definitive approach to the aims of, and the main steps to be undertaken in, conducting the Strategic Environmental Assessment.

This chapter explores the relationship between expectations, implementation, and existing national planning contexts, relating to of SEA. The expectation levels in respect of SEA, illustrated both in the general literature as well as in the SEA directive will be related to the literature on context and planning. The highlighted national approaches chosen to introduce SEA will be illustrated with snapshots from experiences garnered in England, Iceland, and Sweden. The basic research thesis is that the perceived need for SEA, as well as the expectations attached to it as a tool for environmental integration, differs depending on the existing planning system. In order to assess the effectiveness of SEA as a tool, the expectations of SEA illustrated in the legal implementation of SEA and in the previous introduction of SEA as a part of the planning process must be considered.

The article is based upon work undertaken on an ongoing research project examining the introduction of SEA to the existing planning system, focusing on the introduction of the EU directive 2001/42/EC. A comparative approach is applied where the implementation of the SEA directive in three countries; England, Iceland and Sweden, forms the empirical basis of the research; both with regard to legal introduction at the national level, and actual implementation at the municipal level as well as the effects on the existing planning practice.

At the outset

Internationally, the need to apply environmental assessment at an early stage of the decision-making process, i.e. in respect of the effects of policy, programmes, and plans, has been highlighted since the late 1960s (e.g. NEPA 1969). Following on from the experience of applying Environmental Impact Assessment (EIA), the need to apply environmental assessment in policies, plans and programmes, so-called Strategic Environmental Assessment (SEA) was illustrated in a large number of studies, carried out by both practitioners and researchers, during the 1990s. Following on from this, a large number of countries subsequently introduced requirements for SEA in the preparation of plans, programmes, and policies²⁹, while widespread voluntary application of the SEA process by authorities at the national, regional and local levels also took place.

²⁹ See for example the federal SEA process established in Canada in 1990; SEA for national policies and bills in Denmark in 1993; for the environmental impacts of plans, policies and programmes in

As well as the introduction of the SEA requirements into national legislation, SEA has also been endorsed by international organisations. In 2001, the European Union (EU) introduced a directive, “On the assessment of the effects of certain plans and programmes on the environment” (2001/42/EC) which had to be implemented in all EU member countries, as well as in the countries subject to the Agreement of the European Economic Area³⁰. Furthermore, the Protocol on Strategic Environmental Assessment - the 'SEA Protocol' that supplements the Convention on Environmental Impact Assessment in a Trans-boundary Context (Espoo), was signed in Kiev in 2003. These demands present a definition of what SEA is, the role of SEA and the main steps in, and expectations with regard to the SEA process.

The introduction of these requirements means that the countries involved need to make legal adjustments to implement the directive, while note should also be made of the fact that the directive must be implemented at the different operational planning levels. Fulfilment of the SEA requirements is therefore an integral part of the existing planning system and application process, both with regard to the planning legislation in place, governmental levels and the accountability placed on these, as well as on existing planning practice in these countries.

Knowledge gaps

The methodology used to apply SEA has been thoroughly developed, with the high level of expectations in respect of its achievements being reflected both in the SEA literature, and in numerous international policy documents. Notwithstanding this however, a perceived lack both of systematic evaluations and empirical investigations remains in terms of the experiences of SEA application and the obstacles and actual effects on planning processes and plan preparations. When introduced to land-use planning, it can be argued that the international SEA methodology is essentially based upon the assumption that comprehensive planning is an instrumental rational decision-making process (Lawrence, 2000), and the actual experiences of the decision-making context are thus often overlooked. This view is generally based on a realisation that there is insufficient follow up in respect of the effectiveness of the SEA tool and limited understanding of implementation contexts.

Among the criticisms of SEA is that it stands on weak theoretical foundations, and that it could therefore benefit from taking advantage of the theoretical debate and ongoing developments in related fields, such as *planning and institutional theory*. Within these fields, discussions over issues that are highly relevant to SEA, such as those on different methods and the relationship between decision-making, public participation and the institutional context, have been debated, with different models being presented and discussed.

The starting point the research reported here is that knowledge of the *context* into which SEA will be introduced is of crucial importance for the process and the outcome of the application, which is largely dependant upon the proficiency and capacity of existing decision-making processes. In order to prognosticate on the effect of the implementation of the EU directive 2001/42/EC, improved knowledge is therefore needed on the specific planning context to which SEA is being introduced. This includes the establishment of a body of systematic knowledge on existing SEA practice and on environmental integration in land use planning, as well as on the legal and institutional framework.

Finland in 1999; and for the environmental assessment of specified plans and programmes in the Netherlands in 1987.

³⁰ This includes Iceland, Norway, and Switzerland.

Framing SEA – a brief overview of the academic discussion

Since the mid-1980s, the literature on SEA has steadily increased, both in terms of academic publications, focussing on the meaning of the concept, and practice reports, focussing on the actual experiences of SEA application. With the increasing provision for and application of SEA in national legislation and in planning practice, as well as its adoption by international organisations, we have therefore seen a continuing diversification of SEA approaches and applications. At the same time, several attempts have been made to define what sort of a ‘tool’ SEA is, and in particular, what the main steps of the process entail and what the desired outcome of the SEA application should be. These definitions have resulted in the emergence of a number of ‘best-practice’ recommendations both in respect of the main steps of the process, and in terms of the aspects that should be included. Potential examples here include the IAIA’s Strategic Environmental Assessment Performance Criteria (IAIA, Special Publication Series No. 1 January 2002), and the identification of SEA as a key implementation tool in the World Bank’s environmental strategy (World Bank, 2002).

The various interpretations of what SEA entails and the level of expectations in terms of what it is likely to achieve differ markedly across these studies, both theoretically and in practical terms. The discussion ranges from seeing SEA as a tool for environmental impact assessment on a larger scale, through the assessment of the environmental effects of plans and programmes, to a wider view of SEA as a process applied to a range of policy tools and strategic approaches (e.g. Sadler, 1986, Wathern, 1988, Breghe et al, 1990 in Dalal-Clayton and Sadler, 2005). Many of the initial attempts to apply SEA were introduced in the early 1990s when requirements similar to SEA were introduced in several countries, and were accounted for in e.g. Therivel et al 1992. These ‘para-SEAs’³¹ do not meet the formal definitions of SEA or their specification in the EU directive or the SEA protocol, although they do meet some of the characteristics. It is one of the suppositions of the current research, that by studying the existing experiences of those processes, lessons can be learned regarding the application of the EU directive and that eventually therefore conclusions can be drawn on the nature of national attitudes towards environmental integration in planning.

Development of the SEA concept – from assessing impacts to improving processes?

The definition of what SEA actually is also varies and has indeed developed over time, as have its basic principles and the identification of its main steps. In an overview provided by Bina³² (2003) the conceptions of SEA by leading scholars in the field during the period 1992 – 2003 are presented. On the basis of this overview, it can be concluded that the focus has moved from evaluating the environmental impacts of plans, policies and programmes and their alternatives, towards a stronger emphasis on the wider aims of integrating environmental aspects in decision making and contributing to the goal of sustainable development more generally.

In the early days of the SEA discourse, the focus was on the development of SEA as an evolution from the well-established practice of Environmental Impact Assessment (EIA). According to this view, the rationale and the design of SEA builds upon a discourse developed in the context of the EIA of projects, and the processes bear many resemblances. The academic focus was on the comparison with and the limitations of the EIA process, such as for instance the fact that EIA occurs too late in the process, a call for a wider geographical focus and the assessment of cumulative impacts (Lee and Walsh, 1992; Wood and Djedjour,

³¹ This term was adopted from Dalal-Clayton and Sadler, 2005

³² Table 2-a, page 22.

1992, Dalal-Clayton and Sadler, 2005). Furthermore, emphasis was also placed on attaining an overview of existing practices in the field (Partidario and Clark, 1999). In the mid-1990s, the emphasis shifted towards models and methodologies of SEA (e.g. Therivel and Partidario, 1996; Petts, 1999). Other large areas of the SEA literature are concerned with the sectoral studies that have been carried out, most notably in the transport sector (Fischer, 2002, Goodland, 1997, Pinfield, 1992, Sheate, 1995).

Much of the recent SEA literature has focused to a larger extent on the role of SEA in decision making processes, while the assessment of environmental impacts has been widened to include economic and social components, in order to promote sustainability (Partidario and Clark (2000); Brown and Therivel (2000). This can be interpreted as a sign of the general move from an 'EIA-type' approach to the embracing of a broader view of SEA and of increased integration with planning. According to Petts (1999), this illustrates the difference between Environmental Assessment and other assessment instruments such as risk Assessment, Environmental Auditing and Cost-Benefit Analysis, where Environmental Assessment can be regarded as a 'process' while the others are regarded as 'tools'.

Many of the issues currently discussed in the field have however simply re-emerged with time, while others have remained persistent themes throughout the 1990s (Bina, 2003). Such issues include SEA's 'EIA heritage' (addressed by Partidario and Clark, 2000), the move from focusing on environmental impacts to the actual sources of impacts (addressed by Sadler, 2001), and importance of scoping (also included in Bina, 2001). Similarly, some of the issues identified in Therivel *et al* (1992), as problematic, such as the over-simplification of the hierarchy of policies, plans and programmes, as well as the 'messiness' of the planning systems with unclear system boundaries, the lack of information, and uncertainty due to the political nature of decision making were subsequently reiterated by Noble (2002), Nilsson and Dalkman (2001), Renton and Bailey (2000) and Kørnø and Thissen (2000). Finally, the inclusion of sustainable development as an issue for SEA, and the accompanying challenges, was already identified by Therivel *et al* (1992) and has been also addressed in Partidario and Clark (2000), Sadler (1996) and Owens and Cowell (2002).

Defining SEA - preconceptions and ideology

Examples of changing SEA definitions over time:

The development in the interpretations of what SEA actually entails is reflected in the following definitions, from the widely applied definitions of SEA that are very similar to those of EIA, e.g. Therivel *et al*, 1992:

“SEA is the formalised, systematic and comprehensive process of evaluating the environmental impacts of a policy, plan or programme and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision-making” (Therivel *et al*, 1992),

to an increased emphasis on the linkages to decision- making and the inclusion of economic and social considerations, e.g. Sadler and Verheem, 1996:

“SEA is a systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest stage of decision making on par? with economic and social considerations” (Sadler and Verheem, 1996).

More recent definitions, e.g. Partidario and Clark (2000), and Brown and Therivel (2000) have an even broader view of the purpose of SEA. strengthening the linkages to decision-

making and political processes still further while "distance[ing] themselves from the traditional view of assessing draft proposals, and highlight[ing] numerous stages in planning and decision-making as the focus of the assessment effort" (Bina, 2003).

“Our conceptual definition of SEA is thus a process directed at providing the proponent (during policy formulation) and the decision –maker (at the point of policy approval) with a holistic understanding of the environmental and social implications of the policy proposal, expanding the focus well beyond the issues that were the original driving force for the new policy” (Brown and Thériverel (2000:184).

Despite the fact that a number of common trends can be identified among these scholars’ views of SEA, their definitions and expectations of the SEA process continue to differ markedly. According to Sheate et al (2001), the explanation for such differences can be found in the fact that SEA can be seen to originate from two main disciplines; natural resources management and political science and that the optimal SEA process is something of a hybrid between these two approaches. The view of SEA as a rationalistic process, which draws strongly on natural resource management, has been handled by e.g. Therivel and Partidario (2000), and by Ortalano and Shepherd (1995). According to the authors, this approach draws heavily on the EIA heritage; both with regard to the environmental assessment methodology, and to the extent that it is a process with clearly identifiable steps. The second approach is based upon the discipline of political science, with more emphasis on the nature of the process. Collaborative and consensus building elements are central here while this approach is "[...] more concerned with process than outcome" (Voogd, 1997 in Bina).

The theoretical basis for SEA – the relevance of planning theory

Several SEA-scholars have identified the weak theoretical basis of SEA as problematic, i.e. that SEA publications have devoted insufficient attention to the development of the instrument’s theoretical foundations (Bina, 2003, Dalal-Clayton and Sadler, 1998, Flynn et al, 1999, Lawrence, 2000). Furthermore, the view has been expressed that SEA would benefit from drawing on theory from other disciplines such as planning as well as developments in the field of sustainable development. According to Dalal-Clayton and Sadler (2005) these fields and SEA rarely interact, and “...use different terminology for approaches and processes that have much in common and could benefit from sharing experiences and lessons.” There is however currently no agreement as to what those expectations and lessons are or could be.

The following section provides some insight into recent developments in planning theory with regard to its potential relevance for the study of SEA. There is however as yet no consensus within the Impact Assessment research community over how SEA shall be introduced into the planning system, or in respect of what the desired effects of the directive are. As an example of these differences in opinion, one line of argument is that SEA should be flexibly adapted to the planning process, whereas others argue for a separate SEA procedure. We should note however that conceptions of the role of planning often differ markedly, and that there are several different ‘schools of planning’ representing different ideas of ‘what planning is’, what it aims to be as well as what it can achieve. In what follows we include a number of examples relating to the main categories of the planning theory discourse considered to be of relevance to the discussion over SEA.

Recent discussions in planning theory

According to Allmendinger (2002) in the past 20 years, planning theory has witnessed an explosion of theoretical thinking. Consequently, an abundance of planning theory classifications can be found. These include synoptic or rationalistic planning theory³³, incremental planning, advocacy planning, communicative planning theory and attention to the “dark-side of planning”, i.e. focusing on the political forces at play in planning, including the application of power etc., based on the theories of Foucault. What is included and understood by these groupings or categories differs between different scholars. There is however a general consensus that instrumental rational planning³⁴ as the ruling paradigm in planning has been abandoned, and that it is now challenged by the other theoretical views and has indeed, in part been replaced by other ‘post-positivist’ paradigms, and most notably, by communicative planning theory (Allmendinger 2002, Richardson, 2000).

The plurality of planning theory does not however provide a blueprint for planning, and it is even debated whether planning theory can be regarded as an endogenous theory, as planning theory is essentially based upon other disciplines (Allmendinger, 2002). Unlike other areas of the social sciences such as economics, or other professions including medicine, planning has no endogenous body of theory (Sorensen, 1982 in Allmendinger, 2002). Instead, it draws upon a wide range of theories and practices from various other disciplines. As such, it can be argued that development of planning theory has not been about the adoption of a central paradigm, but rather about the engagement *with* theory. In this context then, the debate between different perspectives that is gradually providing a set of theoretical reference points for astute planners and others to work out their basis for action (Richardson, 2005) is the result. Planning theory and planning doctrine typologies provide a ‘frame of reference’ for understanding in much the same way as discourse – they convey a common understanding of a subject area, its methodologies, and the language and history of the development of its central ideas and modes of practice.

Planning theory and SEA

Environmental Assessment and planning theory have developed along parallel but separate paths (Lawrence, 2000). Despite the similarities in principle and in the main steps of the SEA and planning processes, only a handful of scholars have explicitly addressed planning theory in their writings, and furthermore relatively little attention thus far has been given to planning theory or to the policy and decision making processes (Kjørnø and Thissen, 2000). The importance of understanding planning and planning theory is however now recognised by a growing number of both planning and environmental assessment theorists who have addressed the connection between planning theory and environmental assessment (e.g. Lawrence 2000, Richardson 2000, 2005, Hildén, 2004). Many of the issues addressed in an SEA context in recent years, such as the best way of involving the public in the decision-making process, and the question of how to handle information in a highly politicised context etc, have of course previously been discussed at some length in the sphere of planning theory.. Moreover, many of these issues are of particular relevance for SEA.

³³ By rationalistic or synoptic planning the traditional understanding that planning is a ‘process’ including four main elements: (1) goal setting, (2) identification of policy alternatives, (3) evaluation of means against ends, and (4) implementation of decisions, is referred to (Hudson, 1979).

³⁴ It should be noted that a single definition does not apply to rationality, while in the case of environmental planning, three main sources of rationality are used to legitimise policy and decisions: scientific, economic and communicative. Furthermore, the ways in which they can be applied differ between substantive and procedural rationality (Rydin, Y, 2003).

Lawrence argues that rationalism has persisted as the dominant planning paradigm applied in environmental assessment (Lawrence, 2000) and that many negative tendencies, attributed to rationalism, appear equally valid for the EIA planning process:

“The EIA planning process is, for example, often autocratic and technically biased, poorly designed to match contextual characteristics and weak in planning. It, too, can be prone to artificial assumptions regarding comprehensiveness, a unitary public interest, objectivity, predictability and control” (Lawrence, 2000).

According to this view, SEA follows the track laid out by the environmental planning discourse, a track that is strongly permeated by instrumental rationality and coloured by a strong belief in the need to improve decision-making and planning with improved information strategies and assumptions about the ‘value-free’ objectivity of policy analysis in support of planning to protect environmental values. The call for structured approaches to integrating environmental considerations, can, according to Richardson, be seen in other spheres of planning in the emergence in the post-Rio era of what could be termed “rational environmental planning”, where the rational techniques of policy analyses are used to support planning in the protection of environmental values (Richardson, 2000). “Examples of this is the development of techno-centric tools, including Geographic Information systems, computer modelling, and technically oriented project and strategic level environmental impact assessment (op.cit)”

Looking at the legal basis of the introduction of SEA in Europe, and specifically at EU directive 2001/42/EC the objectives and the definition of the different steps of the SEA process reflect a view of SEA as an instrumental tool with clearly demarcated steps. The actual application, i.e. whether these steps are applied in parallel with the planning process or in an integrated way, is however left to the discretion of the implementers of the directive. Meanwhile, although the SEA process as described in the EU directive largely builds on instrumental rationality, there are also obvious parallels between the theoretical basis for SEA and the communicative strands of planning theory. This is e.g. reflected in the requirements for public influence in the assessment process (public consultation), as well as the expectations that the outcome of the assessment shall feed into the decision-making process. The potential of communicative planning theory in respect of environmental assessment relates to the relevance of public education, involvement and shared decision -making as well as the need for fair dialogues and effective communication, which are recurrent themes in EIA literature (Lawrence, 2000).

Regarding the academic discussion of SEA, some argue that the recent debates in the Environmental Assessment literature echo the shift in planning in the 1990s, i.e. representing a turn from instrumental rationality to communicative planning theories (Richardson (2005). However, it can hardly be argued that a shift towards applying communicative planning as a theoretical basis for SEA is universally accepted. Among the critics of communicative rationality is Fischer (2003) who argues that the quest for increased flexibility and for the greater adaptability of SEA to the planning process can become the means to an end, thus undercutting the underlying rationale behind Environmental Assessment and the main reasons for conducting SEA in the first place.

Planning theory in context

The factors discussed above, i.e. how SEA shall be carried out, what sort of tool it is or could be, and how it is integrated into existing processes is highly dependant upon the existing planning context to which SEA will be applied. This includes both institutional and organisational factors, as well as the cultural aspects that can determine planning outcomes.

In the field of planning research, the importance of context has been addressed, often in connection with institutional theory. In 1970, Faludi addressed the role of context in planning where his explanatory categories were, the level and pace of development, institutional structure, political system and administrative structure, norms and values, cleavages in society, and the specific features of society (Faludi, 1970). Sager (2001) addresses the issue of context in the discussion of planning from an institutional perspective (with the aim of contributing to 'institutionally enriched planning theory'), e.g. by examining, how, in practice, planning processes, implementation, and success are influenced by agency organisation and regulatory style. However, he stresses that factors other than those related to institutional settings can influence planning styles, e.g. pressure groups and strong stakeholders that affect the process, as well as political pressure directed to the planners themselves. According to Sager (2001), an increasing body of recent work- studies planning from an institutional perspective, e.g. examining, how, in practice, planning processes, implementation, and success are influenced by agency organisation and regulatory style. It is again stressed however that factors other than institutional settings can influence planning styles; planning is not carried out in an institutional vacuum but is essentially a political activity where pressure groups and strong stakeholders can influence the outcome. Further analysis focussing on an institutional analysis of planning practice is presented in Healey et al (1997), including the role of planning in the national institutional context, the interrelation between agency and context and the tools available to evaluate and develop planning practice. The context of EIA application in the Nordic countries has been studied by Emmelin (1998a, 1998b). On the basis of an empirical study of environmental administrations in the Nordic countries, the importance of including the issue of context, an understanding of the professional and organisational cultures, as well as the implementation structures, is highlighted.

The SEA directive – objectives and reference to comprehensive planning

With the introduction of the EU directive on the assessment of certain plans and programmes (2001/42/EC), the first binding international demands on Strategic Environmental Assessment were introduced. Before turning to the actual implementation of the directive in the three countries of interest here, the content of the directive is worthy of closer study. The following section provides an analysis of the contents of the directive with the aim of gaining an insight into the expectations for SEA reflected in the directive, as well as the underlying ideas and assumptions towards 'comprehensive planning' as an activity.

The introduction of the EU directive provides a common definition of SEA and of what the requirements of a SEA process entail in practical terms. This can be seen as an attempt to unite the aims of carrying out SEA and the main steps of the process. The directive is, however, being introduced into an already existing discussion and debate on the nature of SEA as a tool as well as, in practice, into existing planning systems, both with regard to existing planning legislation, governmental levels and accountability, as well as local planning cultures. The importance of the directive as a leading European or even 'global' document has been highlighted in recent SEA publications (Dalal-Clayton and Sadler, 2005 and Kläne and Albrecht, 2005). However, the interpretation of SEA reflected in the directive is not universally accepted as representative of the ruling paradigm with regard to SEA implementation. The directive has been discussed within the framework of the EU over the last 20 years and, as such, is a result of long negotiations and bureaucratic processes, which also imply that the actors involved in the process did not reach unanimity in respect of its final contents. Furthermore, the directive is vague in many respects and provides scope for numerous interpretations.

Objectives of the directive

The overall objectives of the directive are as follows, “[...] to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment” (Article 1, Directive 2001/42/EC). Thus, the directive aims both at protecting the environment, and at the procedural aspects of integrating environmental considerations into the preparation and adoption of plans and programmes. Furthermore, beyond those objectives is the overall aim of promoting sustainable development. The dual objectives are in line with the environmental strategy of the EU, where environmental protection and the integration of environmental considerations are promoted. The issue of sustainable development is included in the Sixth Environmental Action Programme 2001 – 2010 and in the European Union’s Strategy for Sustainable Development (2002) and the EU Treaty that requires the integration of sustainable development into all European policies. As such then, they are designed in a balanced and mutually reinforcing way to meet economic, environmental, and social objectives. What is meant by Sustainable Development is however never adequately defined, while questions relating to what ‘weight’ the environmental component is given in relation to its social and economic counterparts is never spelled out. Furthermore, the dual objectives of the directive are not prioritised (Dalal-Clayton and Sadler, 2005).

The planning ideas illustrated in the directive

With regard to the coverage of plans, programmes and planning processes in the directive, articles 1, 2, 3, and 5 are of particular interest. Article 1, *Objectives*, emphasises the importance of integrated environmental considerations into the preparation and adoption of plans and programmes. There is however, no example of what those plans and programmes should be. In Article 2, *Definitions*, the plans and programmes (PP) are defined by i) the authority preparing and/or adopting the plan, ii) the PP which are prepared and adopted through a legislative procedure, and, iii) the PP required by legislation, regulatory or administrative provisions. With regard to the scope of the directive, i.e. Article 3, *Scope*, the plans and programmes covered by the directive are identified. This includes e.g. that a SEA shall be carried out for plans and programmes prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use, as well as plans and programmes which set the framework for the future development consent of projects listed in Annexes I and II to Directive 85/337/EEC. Furthermore, the Member States have the scope to determine whether other plans and programmes are likely to have significant environmental effects and shall undergo a SEA. In article 5, *Environmental Report*, the requirements of the environmental report that shall identify the significant effects on the environment of implementing the plan or programme are stated. What the implementation of the plan or programme actually entails, is however not specified.

The implications of the directive on planning

The need to prepare an EC directive on strategic environmental assessment has developed from the critique of, and the need to, supplement the Council Directive on the Environmental Impact Assessment for projects 97/11/EC, with extended scope to also cover plans and

programmes that have consequences for the application and permission-granting of projects (Kläne, Albrecht, 2005). With regard to the procedural steps of the directive, which include screening, scoping etc, there are a clear parallels with the main steps of Environmental Impact Assessment presented in the directive 97/11/EC. However, the only direct reference to the EIA directive, regards the attempt to avoid duplication between the two processes. With regard to the dual objectives of the directive, i.e. environmental protection and integration on the one hand and the promotion of sustainable development on the other, the procedural steps seem to be better suited to meeting the former objectives, although it is not clear how the latter shall be achieved, using the methodology outlined in the directive.

The directive applies to plans and programmes for which an environmental assessment shall be carried out. These plans are defined according to the authorities preparing and adopting them, their legislative framework, and their scope. The directive also aims at integrating environmental considerations into the preparation and adoption of plans and programmes, but does not define what the process entails or in what way this shall be done. It is difficult to discern what ideas of the planning and the processes of planning are the grounds for the directive. In the examples given of the plans that always require an Strategic Environmental Assessment there is however a strong emphasis on regulatory, physical plans (which set the framework for the future development consent of projects that are likely to have significant environmental effects), with less emphasis on plans that present a strategic vision of the development of an area or authority. The limited guidance available on the procedural elements on the implementation of the directive will inevitably make its effect dependant on the discretion exercised by the Member States in their transposition and implementation.

Implementation of the SEA-directive in three different national contexts: 'National Snapshots' of Sweden, Iceland and England

The three countries included in the project; Sweden, Iceland, and England have all introduced, or are in the process of introducing, the requirements for SEA into their national legislation and spatial planning systems. All three have documented experience of both environmental integration in land use planning and attempts at the systematic assessment of impacts as part of the planning process. Furthermore, promotion of sustainable development is included in all the countries' planning legislation while national strategies for sustainable development have been prepared and adopted by the respective national governments. It can be argued moreover that the countries represent different 'schools' of planning, both with respect to legal structures, roles, and levels of government, and in terms of the history of their planning systems.

Sweden

In Sweden, the integration of environmental aspects in land use planning has been an explicit political ambition for 35 years (SOU 1971:75). A legal requirement for impact assessment as a part of comprehensive municipal planning was introduced into the Planning and Building Act (PBA) in 1997. According to the PBA the assessment should combine assessments of environmental, social and economical aspects. It is also stated in the Act, that detailed development plans with probable significant environmental impacts should undergo an EIA and/or SEA, while the impacts or consequences of a plan must be stated clearly in the planning document and must be available during the public participation process. Prior to the putting in place of such requirements, a number of municipalities developed and carried out voluntary environmental assessments (Asplund, Hilding-Rydevik, 1996). Since the requirements on impact assessment were introduced into the PBA in 1997, numerous impact

assessment have been carried out, although the requirements in the Act are not specific in respect of the contents, extent or the methodology used in the impact assessment, and have resulted in a broad scope of impact assessments being undertaken. The experience of SEA application in Sweden, prior to the implementation of the directive, and with special attention given to the municipal level, is thoroughly covered in Bjarnadóttir and Åkerskog, 2003.

The legal transposition of the EU directive 97/11/EC occurred in the framework of changes in the Swedish Environmental Code (SFS 2004:606). Furthermore, relevant changes were made in the Building and Planning Act. The changes came into effect on the 21st of July 2004. The implementation coincides with a thorough revision of both the environmental and planning legislation in Sweden. A new ordinance on Environmental Assessment (SFS 2005:356) was introduced on the 1st of July 2005 and guidance for the application of the requirements in the planning and building Act were published by the National Board of Housing, Building and Planning and the Swedish Environmental Protection Agency (Boverket) in March 2006.

The SEA requirements are integrated with the existing requirements on the Environmental Impact Assessment of projects in the Environmental Code (the same terminology of Environmental Assessment used for both the processes of EIA and SEA). Emmelin and Lerman (2005) describe the Swedish implementation of the directive as minimalist, with regard to the lack of clear objectives in respect of SEA, as well as a notable lack of clarity on several points relating to the application of the terminology of the directive, supported by government notes that the approach has been to implement the Directive with as little disruption to present Swedish legislation as possible (SOU 2003). Furthermore, Emmelin and Lerman argue that the implementation of the directive into Swedish law is coloured by a professional struggle between the spatial planning profession and an emerging environmental profession.

The Swedish planning system is comprised of two main types of planning; sector planning and municipal spatial plans. There are no statutory spatial plans at the national or regional levels, though sectoral planning is carried out at all three levels. Environmental assessment has been carried out for both planning types. Several studies have been carried out by governmental authorities on the application of impact assessment at a strategic level, including studies by the National Board of Housing, Building and Planning and the Swedish Environmental Protection Agency, the National Heritage Board and the Swedish Road Administration. Prior to the new SEA requirements, guidelines were presented by the Swedish Environmental Protection Agency on how SEA can be used in different planning contexts, on the assessment of planning of transport systems as well as environmental assessment of the structural funds.

Iceland

In Iceland, at the current time of writing (April 2006), the SEA directive has not yet been implemented in national legislation. An inter-ministerial committee was appointed by the Minister for the Environment in 2002 to prepare the transposition of the EU directive and a proposal for a bill on Strategic Environmental Assessment was submitted to the Parliament in November 2005. The bill is currently under discussion and is expected to be adopted during the spring of 2006. The bill follows in all main principles the EU directive 2001/42/EC, both with regard to the requirements on the plans and programmes covered by the directive, and the environmental effects identified, as well as the main procedural steps identified in the directive (Althingi, 2005). Formal responsibility for the implementation of the SEA directive rests with the Ministry of the Environment, though operational responsibility lies with the national Planning Agency.

The existing legal requirements for the environmental assessment of policies, plans or programmes in Iceland are found in the Planning and Building Act no. 73/1997, which came into force in January 1998, in respect of development plans (i.e. land use plans or physical plans). According to *article 9, paragraph 5* of the 1998 Act, development plans shall account for the impacts of the plan, its objectives, and proposed development on the environment, natural resources, and the community, including a comparison of possible alternatives. This requirement is taken a step further in Planning Regulation no. 400/1998, which came into force in July 1998. According to *article 3.3*, regional and municipal plans shall account for the impacts of the plan, its objectives, and proposed developments on the environment, natural resources, and the community, including a comparison of possible alternatives. Guidelines on municipal planning which include detailed guidance on the environmental assessment of municipal plans were published in November 2003 by the national Planning Agency. Other work conducted at the national level in relation to the implementation of the directive includes the Public Road Administration's preparatory study on the implementation of SEA according to the EU SEA-directive into the National Road Programme process.

Several environmental assessments have been conducted for plans and programmes in Iceland in recent years, with the earliest dating from 1989, though most of the examples were conducted after the year 2000 and can, in the main be related to the environmental assessment provisions introduced in the Planning and Building Act of 1998. Most of the environmental assessments have been conducted on land use planning proposals at the municipal level. A few have also been done on regional land use plans and plans for infrastructure projects. Two examples of the environmental assessment of sectoral plans at the national level are an afforestation plan in Northern Iceland and a national framework programme for the utilization of hydro and geothermal energy resources. The bill also covers other planning types that are being developed, such as sector planning and planning at the regional and national levels, of which there is limited experience in Iceland (Elmarsdóttir and Theodórsdóttir, 2003).

The Icelandic land use planning system has undergone a period of substantial development in recent decades, with the introduction of the SEA requirements coinciding with an ongoing revision of the planning process, which is expected to see the introduction of several important changes, e.g. a new national planning level. Among the changes that have occurred in the previous revisions of the Planning and Building Act in 1997 is that the main responsibility for spatial planning has been moved from the national level to the allocation of planning responsibility to the municipal level. The call for the integration of environmental issues in planning has a legal basis in the Icelandic Planning and Building Act (1997). Furthermore, initiatives relating to the work carried out within the framework of sustainable development, such as the national strategy for sustainable development and the considerable amount of work carried out at the municipal level particularly in relation to the formation of sustainable development policies under the label of Local Agenda 21, has raised awareness of environmental issues (Ministry for the Environment, 2003). Another influential factor here is the European Economic Agreement, to which Iceland is party and must therefore implement relevant directions of the EU. The expectation of the directive as being an important tool in modernising the planning system and contributing to the development of a new planning culture have been expressed by leading figures in the Icelandic national planning administration.

England

In England, the directive on Strategic Environmental Assessment was implemented by SEA Regulations for England, Scotland and Wales and Northern Ireland, all of which came into

force on the 20th of July 2004 (Statutory Instrument 2004 No. 1633, The Environmental Assessment of Plans, and Programmes Regulations 2004). The implementation of SEA in England is set against a background of over 10 years of experience with Sustainability Appraisal (SA), which was introduced in a governmental guidance paper, instructing local planning authorities to consider the environmental effects of development plans (DoE, 1992 in Jones et al, 2005). The process of sustainability appraisal is a wider approach than that of Environmental Assessment, encompassing the social and economic, as well as environmental impacts of development plans, and incorporating the requirements of the Strategic Environmental Assessment Directive (Planning Policy Statement 12).

As an example of the degree to which SEA implementation has been influenced by the experience of sustainability appraisal, the Office of the Deputy Prime Minister's (ODPM) *guidance for planning authorities on applying the SEA Directive to land use and spatial plans in England* (A Practical Guide to the Strategic Environmental Assessment Directive), published in September 2005, recommends that the practice of SEA shall be based upon the experiences already achieved in Sustainability Appraisal (ODPM, 2005)³⁵. The reform in the planning system introduced by the Planning and Compulsory Purchase Bill, also paves the way for the Sustainability Appraisals that are required by the bill and shall incorporate the SEA Directive's requirements. The overlap between the two processes is furthermore highlighted in the ODPM's guidance on Sustainability Appraisal for Regional Spatial Strategies and Local Development Documents. The purpose of the guidance is to help regional planning bodies and local planning authorities to carry out sustainability appraisal for regional spatial strategy revisions and local development frameworks and provides information to assist users to comply with the SEA Directive (ODPM, 2005).

Other guidance regarding the implementation of SEA in England, as well as other parts of the UK, include 'SEA and Biodiversity Guidance' (English Nature et al, 2004), SEA Good Practice Guidelines' (Environment Agency, 2005), guidance on 'Strategic Environmental Assessment and Climate Change: Guidance for Practitioners' (Levett-Therivel Consultants et al, 2004), and guidance for strategic environmental assessment for transport plans and programmes (DfT, 2005) and the guidance paper published in November 2005 on sustainability appraisal for land use and spatial plans in England (ODPM, 2005: Sustainability Appraisal for Regional Spatial Strategies and Local Development Documents).

According to Jones et al (2005), the implementation of the SEA directive is taking place "[...] in a complex and dynamic situation, involving four distinct but related dimensions." These are, the SEA directive itself; the reform of the land use planning system; the existence of devolved administration with responsibility for planning and the environment; the legacy of knowledge of and experience of the environmental and the sustainability appraisal of development plans. The relationship between those factors presents a basis for an analysis of the introduction of SEA that does not merely present a direct transposition of the European directive, but has to be studied in the implementation context, both of the municipality, as well as the national, legal, and institutional framework.

Among the changes resulting from the reform of the land-use planning system is the introduction of Local development frameworks which are the non-statutory term for the portfolio of local development documents which will comprise the spatial planning strategy for a local planning authority's area. These documents, introduced as a result of the Planning and Compulsory Purchase Act 2004 and accompanying Regulations will replace the existing

³⁵ The relationship between SEA and SA (from SEA guidelines): The Environmental Report required by the SEA Directive can be included in an assessment report on the wider effects of the plan or programme, such as a Sustainability Appraisal Report. However it must clearly show that the Directive has been complied with, for example by signposting to enable the components that meet the requirements for the Environmental Report to be readily identified.

system of local, structure, and unitary development plans. The new planning framework includes a wider spatial planning approach, identifying a range of delivery mechanisms, instead of the previous land-use planning documents with development control as the key implementation tool. Furthermore, the previous formal plans will be replaced by a continuous process with scope for overlapping local development documents, an increased role for community involvement, and a requirement for a sustainability appraisal as an integral part of the local development framework production that should be started at an early stage and maintained throughout local development document preparation. According to a guide published by the ODPM in March 2005, “Local development frameworks provide scope for an approach to spatial planning that is visionary, wide-ranging, participative and deliverable”.

Comparative findings

The preliminary results of the national overviews undertaken here show that there are substantial differences in the approaches chosen by the countries in respect of applying the directive to the national planning context.

The Swedish approach to implementing the requirements of the directive could be termed, ‘minimalist’, with the objective of implementing the directive in the national context with minimum disruption (Lerman, Emmelin, 2005). In contrast, expectation levels have been raised in Iceland that the directive can be used as a lever to change the national approach to planning by strengthening the use of plans and programmes as policy tools (Thorgeirsson, 2003) and as a support in modernising the planning system (Thors, 2004). Some of these changes will be included in the revised Planning Act, *inter alia*; a new national planning level will be created with the preparation of a National Planning Policy. However, the parliamentary bill, currently being discussed in the Icelandic parliament, closely follows the approach of the SEA directive and thus does not reflect this expectation of SEA as an innovative instrument of change. The English approach is largely based on continuing to build upon tools that have been in development in the UK over the last decade, and specifically with the objective of promoting sustainability; i.e. sustainability appraisal. Coincidentally, the implementation of the directive takes place at the same time as fundamental changes are occurring in the English town planning system and the move from the preparation of local plans at the local authority level, to the introduction of local development documents that will effectively replace local plans, unitary development plans and structure plans.

With regard to the effects of the directive at the municipal level, each of the countries has had some experience of developing a tool to systematically assess the effects of strategic plans at the municipal level (Impact Assessment in Sweden, Environmental Assessment in Iceland and Sustainability Appraisal in England).

Table 1: Main characteristics of the national overviews

Sweden	Iceland	England
<ul style="list-style-type: none"> • Long tradition of “environmental planning” • Main legal implementation in the Environmental Code, merged with the EIA requirement • Changes in the Planning and Building Act. • Legal requirements of Impact Assessment since 1997 • Substantial experience at the municipal level • Ongoing revision of the Planning and building Act 	<ul style="list-style-type: none"> • Evolving planning environment • Coincides with revisions of the Planning Act and the introduction of a new planning level • High expectations of the directive as a tool to “modernise the planning system” • A separate SEA Act • Previous minimum requirements for SEA • Limited experience of SEA application. Mainly pilot studies at the municipal level 	<ul style="list-style-type: none"> • Long tradition of town planning • The planning system is undergoing significant change at the local (municipal) level • History of reluctant attitude towards add-on environmental requirements to planning • Experience of sustainability appraisal (SA) • SEA guidance can be used for both SEA and SA • Initial planning focus on the introduction

Conclusions

The discussion of the need for an instrument that assesses the environmental impacts of decision-making at a strategic level dates much further back than the introduction of the EU’s SEA directive. Although the term ‘SEA’ was first used in 1992 (Wood and Djeddour), environmental and planning practices similar to SEA, date much further back than this. When reviewing what has been carried out under the SEA-flag during the last two decades, it is clear that the processes that have been carried out, and the outcomes, as well as the circumstances and the underlying reasons for carrying out SEA (the aims and expectations) differ to a significant degree. Since the first discussions on SEA, there has been an attempt to present a unifying idea of what SEA is, including a view of what the main steps of the SEA methodology should entail. In the academic discussion, the most prominent ideas have changed to some extent over time, although a variety of parallel definitions are to be found; ranging from definitions of SEA as a tool for EIA on larger scale, to an instrument more closely related to policy analysis. Internationally, several actors have influenced the discussion greatly by introducing requirements that include some sort of definition of SEA and introducing common standards for SEA, both conceptually and methodologically (e.g. EC, World Bank, IAIA, UNCEC).

The focus of this particular piece of research is on the influence of the EU’s SEA-directive on the practice of applying environmental assessment and its influence on existing planning practice at the municipal level. Having established the importance of the national context in understanding the possible outcomes of the directive, the empirical evidence from municipalities in three European countries will not only provide insights into the potential effect of the SEA directive in the different planning contexts, but also on the status and development of the municipal planning system and the integration of environmental considerations in the system. The effects (including both successes and failures) of the introduction of the SEA directive relate essentially to the underlying expectations in respect

of the directive, and its relation to the existing context – whether SEA shall be adapted to the prevailing planning practice, or whether the introduction of SEA is expected to contribute to a change in the paradigm of both planning practice and planning discourse at the municipal level.

The underlying question then is to what extent do those new initiatives adhere to the existing planning framework, and to what extent are they a reflection of changes in the approach to dealing with land use and other planning issues? What, moreover, are the experiences gained thus far of utilising the different tools with regard to the existing framework and demands for changes in the planning practice and decision-making?

From the review of the legal introduction of the SEA directive to the three countries' national planning systems, it is obvious that the systems are all undergoing periods of fundamental change. In each of the countries studied, the planning legislation has either recently been revised or is currently under revision. The introduction of the SEA directive generally then coincides with this process. These findings are in line with many other European countries, most of whom face new requirements regarding the process and the contents of plans and programmes, while new modes of planning are surfacing in the form of strategies, visions, 'partnership', and other non-binding measures as the guiding principles for municipal development. The changes facing statutory land use planning are thus not only emerging through institutional measures, but also through changes in current practice. These changes correlate to the discussion in the planning literature that highlights a shift from an administrative regulatory practice to non-statutory or 'negotiative' initiatives, or as put by Healey (1997):

“In many of Europe's planning systems, the formal machinery for articulating strategies has become discredited and formal systems have ceased to be the key arenas and procedures for spatial strategy-making. This new impulse towards strategic planning has however been taking place rather informally, beyond the formal arenas provided by the planning system itself”.

With regard to the relationship between the existing context and the notion of 'effectiveness', the national SEA legislation discussed here is too recent for it to be possible to draw conclusions on the effects of the implementation. The formal aims of SEA, illustrated in the national legislation discussed in the context of this paper do however reflect to a large degree the aims of the SEA directive, with an emphasis on both environmental objectives and the promotion of sustainable development. However, these objectives are sufficiently imprecise such that they could be interpreted in different ways in the different systems. Moreover, within the context of the national overviews it became clear that the introduction and implementation directive will play a different role in the current reforms of the national planning systems. The degree to which the implementation of the requirements in the directive will build upon existing practices or contribute to the re-evaluation of the planning system will be studied at the next phase of the research.

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LACK OF INCITEMENT IN THE SWEDISH EIA/SEA PROCESS TO INCLUDE CUMULATIVE EFFECTS

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Abstract: Research on environmental effects has shown that many small cumulative impacts may result in greater environmental disturbances than a single particular action. Valuation and cumulative impacts are hence required both by the European Directive on the assessment of certain projects, 97/11EC, and in the Directive on the assessment of certain plans and programmes, 2001/42/EC. Cumulative effects are considered as good EIA practise, are shown to have the risk of giving great negative environmental impacts and is also demanded by European Directives. In spite of this several studies have shown that these effects are not included in Swedish EIA/SEA documents. Therefore an interview study has been carried out to investigate different EIA/SEA actors' views, knowledge and opinions regarding cumulative effects. This paper focuses the result from the study regarding the lack of incitement to include cumulative effects in EIA. This interview study clearly demonstrated that there was none of the interviewed EIA/SEA actors that saw cumulative effects as a prerequisite by law (or the like) to be included in EIA/SEA. On the other hand the study shows that the actors claim to have good possibilities to also include cumulative effects in the EIA/SEA scoping.

Key words: EIA, SEA, cumulative effects, EIA and SEA Directives, Swedish environmental legislation

Project: MiSt 5 – Cumulative impact assessment for municipal and regional planning.

The aim of this research project is to investigate barriers and opportunities for including cumulative effects into environmental assessment of projects and plans in Sweden. First, a review will be made of the international research surrounding the issue of cumulative impact assessment. Secondly, to explore hindrances and opportunities to investigate cumulative effects in EIA/SEA the researcher will carry out an interview study. The project will be part of a licentiate thesis.

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LACK OF INCITEMENT IN THE SWEDISH EIA/SEA PROCESS TO INCLUDE CUMULATIVE EFFECTS

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Introduction and background

Cumulative effects can be explained as changes to the environment that are caused by an action in combination with other past, present and reasonable foreseeable future actions (Council on Environmental Quality 1997; Commission of the European Communities 1999; Hegmann, Cocklin, Creasy et al. 1999) These types of effects have been shown to be of great importance when it comes to change the world we are living in. The acid deposition in Sweden during the twentieth century is one example of an incident that has had considerable impacts on Swedish lakes and watercourses. The acid deposition had its peak around 1960 but in some areas the sulphur deposition is still above a critical load. This is a case where effects from industries in central Europe and the British islands together with the pollution from road traffic ended up as major impacts on the water ecosystem. At the end of 1970 at least 17 000 lakes had become so acid from human activities that only acidification-resistant plant and animal species could survive in them. If the activities had been viewed independently, these effects might probably have been considered insignificant. But the history tells another story, and the story is that cumulatively, these activities resulted in huge significant effects on the environment.

Another example is the ongoing contamination of the Baltic Sea. This ecosystem is exposed to effects from industries, agriculture, forestry, road traffic, vessel traffic etc. Also in this case, these effects might be insignificant if viewed independently. When looking into the state of the Baltic Sea it is however not relevant to only estimate the effects from a single activity it is instead the total effect from all these activities that set the condition of this sea. The eutrophication that rises from some of these effects has proven hard to tackle and we can not still see a clear decrease in input of nutrients from land to sea.

These two cases are examples of what might happen if the cumulative effects are not taken into consideration.

In relation to the producing of Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) the consideration of cumulative effects is today and internationally perceived as good EIA/SEA practice (Dalal-Clayton and Sadler 2005; Glasson, Therivel and Chadwick 2005). However, already in 1969 the US National Environmental Policy Act (NEPA) required an assessment of environmental impacts, including the “result of all past, present, and reasonably foreseeable future actions” (MacDonald 2000). Almost ten years later, 1978, the term cumulative impacts was also defined in the US Council on Environmental Quality regulations (Contant and Wiggins 1991). Europe’s EIA practice is in many ways based on the US regulation. According to the Council Directive from 1985 on the assessment of the effects of certain public and private projects, the developer should supply information of likely significant effects of the proposed project on

the environment. This description should also cover cumulative effects of the project. The EIA directive was amended 1997, but the requirements are still the same. Also the SEA-directive mentions this type of effect and specifies that an environmental report should identify, describe and evaluate the likely significant effects on the environment of implementing the plan or programme. These likely significant effects should include positive and negative cumulative effects.

In Sweden the EIA legislation is integrated into the Environmental Code. The wording in the Environmental Code is however not as clear as in the EU directive, referred to above, regarding the requirement to describe the cumulative effects in the assessment of certain public or private projects, plans or programmes. The term cumulative effect or impact is in fact not mentioned at all.

Although cumulative effects have shown to have great negative environmental impacts and are considered as good EIA practise and also demanded by several European Directives several studies have shown that these effects are not included in Swedish EIA/SEA documents (Commission of the European Communities 1999; de Jong, Oscarsson and Lundmark 2004; Olausson, Oscarsson and Palm 2004, Åkerskog 2006).

Aim, questions and methodology

Based on the situation in Sweden, described above, a research project is conducted to investigate hindrances and opportunities for including cumulative effects in environmental assessment of projects and plans in Sweden. As part of this research project an interview study has been conducted. The interview study was made with the aim to explore the practice and understanding of cumulative effects amongst different groups of EIA/SEA actors: their understanding and knowledge of cumulative effects; their way of working with cumulative effect issues; and their experience of hindrances and opportunities to include cumulative effects in the EIA process. The questions that were used as a basis for the interviews were all aiming at providing information, directly or indirectly, concerning the obstacles and opportunities for including cumulative effects in environmental assessments.

Three main research questions from the research project constitute the basis for the analysis made for the interview study:

- 1) Why should cumulative effects be dealt with in EIA?
- 2) What hindrances and opportunities are there to include cumulative effects into Swedish EIA processes and documents?
- 3) What experiences do the EIA actors have concerning possible approaches and methods to include cumulative effects and impacts?

Effects are in this paper seen as changes to the environment, and **impacts** as the consequences of these changes (Munn 1979 see Wathern 1990, p. 7).

The above questions were used in the interview study with the aim to gather as much information as possible on how different EIA actors conduct the EIA scoping on environmental effects in general and more specifically in relation to the geographical and time boundaries.

This paper is based on some of the results from the interview study. More specifically it focuses the lack of incitement to include cumulative effects in EIA. In order to examine this problem the analysis here is mainly based on interviewee statements concerning cumulative effect issues in relation to scoping approach, responsibility, review and requirements.

The interviews had an explorative purpose and they were performed by using a half structured interview technique. The research questions could not be used directly in an interview situation and an interview guide were therefore established. (Kvale 1997) This interview guide was used as a base for the interviews but depending of the answers from the interviewees different follow-up questions not included in the guide was also asked. The questions were also asked differently depending of the type of actor that was interviewed (reviewer, proponent, consultants etc.). The interview guide is presented in Appendix 1.

Since previous studies show that cumulative effects are more or less not described in EIA/SEA, the interview was opened with questions that indirectly gave the researcher information on how cumulative effects are dealt with. These initial and rather general questions were about scoping approach, requirements regarding consideration of effects etc. The other themes that were examined were: should cumulative effects be dealt with in EIA; hindrances and opportunities to consider cumulative effects; definition and understanding of the term cumulative effects; and experience of approaches and methods to include cumulative effects and impacts in EIA. Since it was a half structured interview the interviewees also gave input on other areas connected to cumulative effects not directly mentioned in the themes above.

The interviews were performed from mid 2005 until early 2006. The interviewees represented the municipality level, the regional level (county administrative boards), consultants, the Swedish Road Administration (SRA) and the Swedish National Rail Administration. In total ten interviews were carried out and they were all done at the interviewees' offices and lasted between 45 minutes and two hours. All interviews were recorded. The interviewees were selected based on the criteria that they were thought to be actors that could contribute useful information on the issue of cumulative effects in EIA/SEA. The interviewees were chosen having recommendations from the lecturer and the manager at the Swedish EIA Centre as a starting point.³⁶ They have both worked with EIA in Sweden for many years and thought by the researcher also to have a good insight into suitable EIA/SEA actors for the interview study.

³⁶ Swedish EIA Centre, Department of Urban and Rural Development, the Swedish University of Agricultural Sciences <http://mkb.slu.se>

The half structured interview technique used in this study was found to be a good method to explore different EIA/SEA actors' knowledge, understanding and approach to cumulative effect issues. The interviews gave information of whether today's approaches on scoping have features of cumulative effect approach or not and also about these actors' opinion on the phenomenon of cumulative effects. However, the interview statements on scoping for physical boundary, including of other past, present and future activities and of cumulative effects in specific resulted in modest information of potential methods for inclusion of cumulative effects. Therefore the research question on potential methods did not get any input from this interview study. The only input regarding method was a statement that a discussion of cumulative effect issues in the projects group could be used to consider these effects. However, having in mind that these effects are not investigated this outcome is not surprisingly and should be seen as a result in itself.

Cumulative effects as expressed in the Swedish legislation

The European directives on the assessment of the effects of certain public and private projects and of certain plans and programmes on the environment are so called "de minimis Directives" (Council Directive 85/337/EEC 1985; Council Directive 97/11/EC 1997; Council Directive 2001/42/EC 2001). This implies that the EU member countries have to implement the essence of the contents in these directives into their own national legislation. The member countries could however choose to have more far-reaching requirements. Sweden has chosen to implement these directives into the sixth chapter of the Environmental Code. The Environmental Code should thereby as a minimum demand the same requirement as the directives do regarding cumulative effects. Concerning the SEA Directive, Sweden has taken a clearly minimalist approach to implementation (Emmelin and Lerman 2005).

In spite of the minimum demand, the term cumulative effect is not mentioned in the Swedish legislation text concerning EIA. Sweden is probably not alone among the European Member States to lack the term in its national legislation. A study that was made 1999 showed that out of the then fifteen European Member States it was only seven that had included the term "cumulative impacts" into national EIA legislation. (Commission of the European Communities 1999) It may thus have happened a lot since then due to the implementation of the SEA directive. On the other hand the result regarding Sweden is the same and the same might also be true for other Member States. There are however elements in the Swedish Environmental Code that could be interpreted as demanding cumulative effects to be analysed and/or described. The Swedish legislative tradition is that of framework laws which means that legislation does not specify regulatory details. To a large extent the effectiveness of legislation is instead determined by its interpretation in guidelines and its subsequent implementation in professional practice. (Hilding-Rydevik and Fundingsland 2005)

Interpretation of the wordings in the Environmental Code

The following text is a discussion of the wordings in the Environmental Code and the interpretations that can be made in relation to demands for cumulative effects to be handled in EIA and SEA (Swedish Code of Statutes 1998).

According to the Environmental Code the purpose of an environmental impact assessment is to establish and describe the ***direct and indirect impacts*** of a planned activity or measure

(Swedish Code of Statutes 1998). As a cumulative effect in some cases emerges from indirect effects this text in the Environmental Code could therefore be interpreted to put demands on that a certain type of cumulative effects and impacts shall be identified and described. According to a report on the effectiveness of the EIA directive, there are “*clear links between the issues of ‘cumulation with other projects’, ‘changes and extensions’ and ‘salami-slicing’ and the requirement under Article 3 to assess both the direct and indirect effects of a project*”. (Commission on the European Communities 2003)

Another purpose of EIA is to enable an **overall assessment** (Chapter 6, Section 3) to be made of this impact on human health and the environment. This overall assessment could be said to have features of a cumulative approach. Unfortunately there is no explanation in the preparatory work to the Environmental Code regarding the meaning of this overall assessment or what it is supposed to involve.

In line with the Environmental Codes’ requirement for environmental impact assessment of plans and programmes, the assessment should contain “*a description of relevant existing environmental problems that has a connection with such a natural area that is intended in 7 chap. or another area of special importance for the environment...*” (Chapter 6, section 12).³⁷ This could be a type of cumulative description if the description not only considers existing environmental problems as such but also weights the existing environmental problems together with the likely inherent environmental effects from the plan or programme. Cumulative impacts, as mentioned above, result from changes in the environment that are caused by an activity in combination with past, present and future actions.

The most evident connection to cumulative effects in the Environmental Code is perhaps in the part outlining the contents of an SEA of plans and programmes: “*a description of the likely significant effect on the environment including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritages including architectural and archaeological heritage, landscape and the interrelationship between the above factors*”. (Chapter 6, Section 12). It is the requirement for describing the interrelationship between certain types of environmental aspects. This could be understood to be a demand for a description of cumulative effects. This requirement looks much like the one that is in force for certain public and private projects. But when it comes to plans and programmes it should not only be *possible* to do an overall assessment from what is stated in the environmental impact assessment. In addition it should also be a *description* of how these environmental effects relate to and impact each other.

To conclude, the text in the Environmental Code is unclear when it comes to requirements on cumulative effects of a project, plan or programme to be described in an environmental impact assessment. However, as has been shown above, there are some possibilities to interpret some of the wordings in the Environmental Code as more or less indirect demands for analysing and describing cumulative effects.

³⁷ The translation from Swedish to English of this quotation in the legislation is made by the author.

Interview results related to the issue of incitements to include cumulative effects in EIA/SEA

The interviews were carried out based on an interview guide, Appendix 1. The guide was developed by the researcher for this particular interview study. The aim of the interview study was principally to gain as much information as possible of how different groups of EIA/SEA actors treat the phenomenon of cumulative effects in the EIA/SEA process. For this paper however, the main focus has been on statements regarding lack of incitements to include cumulative effects.

Are cumulative effects assessed today?

In different ways all interviewees expressed that cumulative effects was an issue that is poorly described in EIAs of projects, Detailed Development Plans or other strategic plans depending on which level the interviewees are working with environmental impact assessment.

Two municipal employees expressed that cumulative effects are not investigated. Also consultants expressed that cumulative issues are not described in environmental impact assessments. There were also comments regarding these effects not being asked for from the referral authorities. Two interviewees representing SRA and the Swedish National Rail Administration expressed that cumulative effects is an issue that they do not really consider in their environmental impact assessments.

At the county administrative board level one interviewee responded that s/he had not seen the board to ask the proponent to describe cumulative effects. Another interviewee expressed that cumulative effects were not observed to be an important feature in environmental impact assessments.

Attempts to consider cumulative effects

It appeared from the interviews that the term “cumulative effect/impact” is rarely or never used in the EIA/SEA process. This has also been seen in other studies (Burris and Canter 1997; Cooper and Sheate 2002; de Jong, Oscarsson and Lundmark 2004; Olausson, Oscarsson and Palm 2004). The phenomenon as such could on the other hand be seen to be dealt with in diverse ways according to the interviews.

A consultant gave an example of an EIA of a road design plan where they had tried to raise focus and introduce larger questions. In this process they had also tried to look at other projects that were going on in the area. S/he thought it could not be read very clearly in the EIA and that s/he could wish that they had gone further. This demonstrates a case in which the EIA document was not transparent regarding the cumulative effects. The EIA could be said to be ineffective when it comes to providing decision makers with information on cumulative effects. This example might however indicate that there is an improvement on its way since the consultants actually raised the cumulative question in the process even though it was in a late stage. On the other hand, it could also illustrate a common phenomenon where cumulative issues are discussed during the process but for different reasons like knowledge, time and financing is scoped out and not further investigated. Thereby the cumulative effects

are not revealed for decision makers because these effects are not described in the documents that function as the basis for decision (the EIA/SEA).

An example from a municipality could point towards an approach that the combined effects from several activities set the outer zone for where to investigate how an activity influence resources in the area. The example concerned two industries that were involved in an ongoing Detailed Development Plan process for an expansion of a housing area. In this case they first identified the safety zone for one of the industries and then for the other. The safety zones were then indicated to overlap each other. Thus they set the safety zone as the outer line of these two zones which thus got the shape of a “number eight”. However, according to the interviewee they never put together the effects from the two industries in an effect valuation.

The overall assessment

During the interviews two interviewees, one at the municipality level and one employee at the Swedish National Rail Administration, referred to a so-called *overall* or *all in all assessment* as an example of how they describe cumulative effects without using the exact term. This overall assessment is an assessment description that can be found in some EIA documents. This type of overall assessments could probably be derived from the Environmental Code. According to the legislation, one aim of environmental impact assessment of a planned activity or measure is to enable an overall assessment to be made of effects on human health and the environment.

Thus, during the interview one of them concluded that these overall assessments are actually more or less a summary of what is stated in the effect chapter. Further s/he stated that it is probably this overall assessment that is the basis for their decision whether they should investigate cumulative effects more thorough or not. Having in mind that these overall assessments are written in the very end of the EIA process, this points towards an approach where cumulative effects are considered very late in the EIA process. Based on this statement, the cumulative effects do not seem to be an integrated part of the EIA process at the Swedish National Rail Administration.

The role of the reviewers

Reviewers at county administrative boards, at other authorities or instances or internal reviewers that comment on the scoping and content of the EIA/SEA are an important part of the process. They have an important role to play for which environmental effects that will be considered and investigated. However, statements from this interview study illustrate that these parties seldom or never ask for cumulative effects to be investigated or when actually asked for; these effects are still not described in the EIA/SEA document.

One employee at a county administrative board said that the board is never slow to use the argument that also the marginal effects of an activity are influenced of today's situation. This answer could be interpreted as if the board does actually demand the proponent to investigate also cumulative effects. The answer could be interpreted as if they judge it to be important to consider also “the last straw”.

On the other hand it seems like they in the role as reviewers have difficulties to get the proponents to consider effects when the effects are below set norms and rules. Noise could be one example. According to the interviewee it is possible to pursue a discussion with SRA about lowering noise level when it is over the norm because they are ready to compensate for the excess noise. But in housing and recreation areas that receives effects below these norms SRA do not really want to have a discussion, even if the noise might have a significant negative effect.

An interviewee at SRA gave an example on a case where the county administrative board had put demands especially on cumulative effects. In this case the board had asked for information on cumulative effects for the aspects *other roads* and *building of housing*. In spite of this demand the proponent did not really include these effects in the EIA. It is interesting to note that the county administrative board approved the EIA even though the proponent did not investigate what they were asked to do. A statement from one of the employees at a county administrative board could probably explain this outcome. During the EIA consultation the board, according to the employee, tries to get an EIA that is “as good as possible”. But when they make the decision whether to approve the EIA or not, the criterion is instead that the EIA should be “good enough”, which is a lower level of demand compared to what they ask for during the consultation. Based on these two statements, it could be assumed that the county administrative board that approved this road EIA determined that the EIA met the demands set by the Environmental Code even though the proponent did not investigate the cumulative effects.

This interviewee at SRA also gave an example of a case where they had remarked that the consultants should include cumulative effects. During the interview s/he concluded that the term cumulative effect was explained in the EIA’s terminology dictionary. In this EIA only a short section contains a few sentences on cumulative effects. In this section it is stated that a new road communication increases the attractiveness for housing and activities in the area. Beyond this it is stated that the EIA investigation did not find further cumulative effects for the suggested communication. This is a very complex project with many system alternatives and environmental effects and in many respects concerns the whole city (which is one of Sweden’s largest). With this in mind, it is very doubtful that the investigation of the cumulative effects has been carried out in a comprehensive way in this EIA process. This case is yet another example of when a reviewer asks for investigation of cumulative effects but the final EIA more or less lacks information on this issue. The case exemplifies the lack of transparency and lack of effectiveness for the cumulative effect issue in the EIA process.

A consultant expressed that the county administrative board had once suggested a geographical boundary for the environmental impact assessment that, according to the interviewee, was too narrow. The interviewee expressed that by using this boundary they missed that it was actually also positive effects from the activities, but these effects happened outside the geographical area studied. This is another example of lack of information to the decision maker regarding description of some effects and its role as part of a bigger picture. In this case it was the county administrative board that seemed to be the party that missed an opportunity to make the EIA a good basis for decision concerning likely cumulative effects.

It was also stated by this consultant that there are some requirements from the reviewer, but that the reviewer might have even less experience than themselves (the consultant and her/his colleagues) and it is seldom that the reviewer has requirements on the contents. Therefore the requirements concern just on formalities, choice of words and how the company as EIA producers should structure the report.

Another consultant said that when it comes to the EIAs for Detailed Development Plans the knowledge they have at the municipalities as comes to EIA it is very varying and they are not always active to set requirements. An example was given of a municipality that on the other hand is rather clear regarding which environmental effects the municipality demands the consultant to be investigated. This municipality makes an EIA programme for the Detailed Development Plan where these demands are listed. S/he could not yet refer to the new regulations on environmental impact assessments on plans and programmes because the knowledge in the municipalities is still not very good.

Compared to the municipalities, the county administrative boards are very clear as it comes to calling for demands when they are approver of the EIA (road and railway projects). However, it also appeared that s/he had never experienced that a reviewer had asked for cumulative effects to be investigated.

Requirements concerning investigation of effects

The interviewee's knowledge and experience regarding requirements on considering cumulative effects is an important aspect related to the incitement to include these effects. As discussed above, the environmental code does not mention the term cumulative effects/impacts, but according to the European EIA and SEA directives the description of the likely significant effects should cover positive and negative cumulative effects. The statements from this interview study clearly show that these actors do not see cumulative effects as a prerequisite by law (or the like) to be included in EIA/SEA.

For example two consultants expressed that they have the environmental code, the Swedish Railroad Administrations' regulations and handbooks as support for requirements regarding what should be described in the EIA. One of them said that cumulative effects are mentioned in the handbook but probably not in the review checklist in the handbook.

Another consultant said that there are not any expressed requirements on inclusion of cumulative effects in EIA/SEA.

Another interviewee said that they partly look at what is stated in the legislation and partly on what the proponent says. It was stated that proponents often have a predetermined way of presenting their ideas and certain issues to check. It was also expressed that s/he believed that they delivered what is required in the legislation regarding description of the effects in the EIA and that they had not got any indication of the opposite.

One employee at a municipality expressed that they do not have any requirements regarding consideration of different types of effects. S/he said that this is something that might change now because they now in special cases have to consider also what is stated in the environmental code regarding environmental impact assessments of both plans and programmes.³⁸ This interviewee did however express that the increased requirements in the environmental code will probably not have any considerable effect on their work.

Boundaries in space and time

Traditionally, the EIA scoping in space and time is made based on the activity the proponent is applying for. If not only direct effect, but also cumulative effects should be included, the set boundary in space and time should instead be based on the resources and interests that the activity might influence. The scoping boundary is thus set by studying the activity in a context of other activities which in past, present or future might cause effects on the same resources and interests as the activity applied for. Therefore it was crucial to explore the interviewees scoping approach for space and time.

Physical boundaries

The physical boundaries set in the scoping were dealt with in the interview to get a picture of whether the actors consider other activities that have had an effect, are presently causing effects or will have an effect on the same area. The interviewees were therefore asked on how they do the geographical scoping. The statements indicated that the influence zones are set using the project or plan as a starting point. However, there was no indication of that they had ever paid attention to affected resources and their respective geographical dispersion. In addition they did not pay attention to other activities that caused effects on these resources within this dispersion boundary.

One interviewee, who is working in the railway sector, said that they look at the surroundings quite close to the railway and how it might be physically, directly affected. This was also expressed by a consultant, who has been working with EIA in the road sector for some years. According to her/him, they look at what is happening within a rather limited area and what effects these projects could give. In the projects s/he has worked, they have taken into account how the road is connected to municipal planning and if there is something going on regarding a railway or a motorway that is located close to the road concerned.

A municipality interviewee explained that they are not restricted by the geographical boundary of the Detailed Development Plans when they identify environmental effects. These comments indicate that they most look at how the surrounding affects their plan. However, a drainage case indicates that they also look at effect boundaries in a rather broad way. It is probably too little to establish the fact that this is an indication of a cumulative approach. Perhaps this is more a sign of that they set the influence zone in relation to the actual boundary of an effect and not in relation to where the plan border is.

³⁸ The Environmental Code's requirement on environmental impact assessment did not cover the municipalities' EIAs of plans and programmes previous to the implementation of the SEA directive and the following revision of the Code. Instead the municipalities followed requirements in the Planning and Building Act on EIAs of Detailed Development Plans which were likely to give significant environmental impacts.

Inclusion of other past activities

The interviewee's statements regarding the time boundaries indicate that when it comes to the description of whether the area has previously been affected by activities, this has, with few exceptions, not been assessed.

One consultant expressed that past activities are not very often included and they do not look into the past as much as they should. Another consultant said that s/he had never experienced that they had look backwards in time to describe effects.

Contaminated land is however one sort of effect from past activities that was mentioned to be concerned by several interviewees. This was mentioned by an interviewee that reviews EIAs and works at a County Administrative Board, by an employee working at a municipality and also by a consultant. An explanation of the effects from past activities regarding the aspect contaminated land being included might be that these environmental effects are especially addressed in the Swedish legislation. In the Environmental Code there is a special chapter regarding polluted areas. The chapter treats issues on responsibility for investigation and after-treatment, compulsory notifications and also environmental hazard zones.

Inclusion of other present activities - Baseline information

Several of the interviewees mentioned that they included other activities than their own in the baseline description of what the area looks like today. This could for example be information on infrastructure, housing or industries. There was, on the other hand, no indication of that these effects were included in the valuation of effects together with their own projects or plans effects. The interpreted wording in the Environmental Code regarding the issue of demand for description of cumulative effects are, as stated previously, unclear. However, compared to the very unclear demand to include effects from past and future activities, the demand to include effects from present activities seems a bit clearer with claims like description of indirect impacts; enabling an overall assessment and a description of interrelationship between factors.

The statements regarding the consideration of present activities in EIA/SEA indicate that these activities are more or less only dealt with through the description in the baseline. The information in the baseline of both past and present activities does not seem to be included in the valuation of the effects. In the valuation of the effects it is instead only the effects from the present project or plan that are considered. The cumulative effects from other past and present activities are thereby not described in the EIA/SEA document. It is perhaps at least possible to expect that some cumulative effects might arise when reading the baseline and compare it to the effect valuation of the present project or plan. Maybe this makes it possible even if it is very difficult for the decision maker to consider cumulative effects when they decide on a project, plan or programme.

A consultant stated that they sometimes also consider other activities together with their own activity. However, the interviewee expressed that s/he thinks they do not do it on a regular basis. They to some extent describe other activities such as secondary exploitation in the

baseline. But other statements from this interviewee indicated that they do not include effects from other activities in the effect valuation.

Also statements from an interviewee at the Swedish National Rail Administration illustrated that there are other present activities than their own that to some extent will be described in their EIAs. Certain things were said to be mentioned in the baseline since they are part of the base line conditions. This could for example be if the planned railway will cross a lake which is also contaminated by a nearby industry. This interviewee also gave other examples that illustrate how they described the area's base line conditions. There was however no information regarding if they really used this information in the effect valuation. Also her/his statement regarding their work with mitigation measures indicates that they only take their own effects into account when they evaluate how the area might be affected by their presence.

Some of the interviewees talked about how they describe the present situation in the baseline and by doing so they said that they in a way describe the history of the area. These statements do not indicate that they by doing so will get a picture of past activities that might still have an effect on the area. It could however be an indication of the opposite namely that they just consider what the area looks like today and not if there is still any effects from past activities in the area.

There were also statements which indicate that there are actors that seem to think more in terms of how present activities might have an effect on their own project or plan than they consider how present activities together with their own project/plan might effect the environment. An interviewee from a municipality said that they consider activities within or close to the plan area. For example they find out if a railroad is passing where the housing will be established, and if there is a busy road or industry nearby that should have a safety zone. An approach like this one is yet another example of the fact that other activities might be included in the baseline but not in the valuation of effects. This might also indicate that information about their own plans' effect on the surrounding interests will be missing.

Inclusion of other future activities

The interview results indicate that time boundaries for the future most often are set very narrow. Some statements indicate that the interviewees feel themselves that the time limits they use are too narrow in relation to how far in the future some project might still be active. The statements on the consideration of future activities indicate that these possible effects are not included in the effect valuation together with the present project or plan. However, the effects of these activities might to some extent be described in the baseline or perhaps more probably in a zero alternative (no action alternative).

One interviewee mentioned that the railways s/he works with will most probably be in use for 50-100 years, but that they use a forecast year that is at present set to the year 2015. This interviewee was very sceptic to that for example expansion plans for a present road from the road administration would be taken into account in their own railway sector environmental assessment Another consultant mentioned that they use special forecast years for which they already have information. S/he mentioned that they to a great extent use the forecast years

used in the Regional Plan in the same area (year 2015 or 2030) as a basis. A third consultant said that they set a target year which is ten years into the future.

A consultant expressed that they use a rather narrow time boundary. It was stated that their county administrative board usually says that only projects that had gained legal force should be looked at as future projects. S/he said that then the time horizon becomes rather short and that the reasonable scenario description might be only a couple of years ahead in the future.

According to one of the consultants they take in other decided projects in their scenario descriptions but that all in all effects are most often not studied because it is much more difficult to set boundaries for that. Further, it was stated that they in spite of this might set up a kind of scenario taking into account that this project might be found in a totally different context in 10-20 years than what it is today.

One municipality employee gave an example of when they consider future activities in their scoping of time boundaries. If there is a road reserve and they know that a road will be built there, then they have to include this fact even though it will be realised in the future. But s/he claimed that they more often assume how much noise something discharges today or how much of emissions they have in the area today when they plan and set limits.

Another example of how other activities are described in a baseline but not estimated together with the effects of the project was given by a consultant who expressed that they usually try to include some secondary effects caused by the road projects. These secondary effects could be things like how the road influenced housing development and establishments around an intersection. But s/he thought that they did not include information regarding whether these secondary establishments could cause problems or not.

Responsibility issues

In different ways several consultants mentioned the responsibility for inclusion of effects from other activities as being an issue that is difficult to address when it comes to cumulative effects.

One of the interviewees said that it is tremendously difficult to consider things that you can not control or perhaps can not influence, because it is in someone else's hands or far away in the future. But on the other hand s/he believed in highlighting it. This statement was made in connection to the theme of responsibility and cumulative effects. This could also be understood as being done in cases where the zero alternative (no action alternative) is more difficult to describe and predict than the own project or plan. This stated difficulty is a bit remarkable since the development of the surroundings should also be a part of the own project or plan.

Another statement was the difficulty found when discussing cumulative effects to make the question of responsibility clear. For example the SRA is responsible for the effects and impacts of the *road* and is obliged to take measures for that. But if a significant impact

emerging from the road together with another project will give a severe consequence it could, according to the interviewee, rise difficulties regarding which proponent should describe this and who should take measures.

It was also expressed that a huge problem regarding environmental assessment at a strategic level, is that it should actual need several proponents for the same assignment but they (as consultants) do not have that. If they for example have an assignment from the SRA they could not also investigate shipping because the SRA will not agree to pay for that part.

Possibilities to influence scoping

Several of the interviewees, no matter type of actor in the EIA/SEA process, expressed that they have great possibilities to influence the scoping. If it is something they think is important to be investigated, in this case a cumulative effect of any kind, most of them expressed that they could influence the work so that also these effects would be looked upon in the EIA/SEA process. But even though the interviewees expressed that they could influence the scoping to also include cumulative effects, there were statements on this question that indicated that it is not easily done.

An employee at a municipality said that it sometimes happen that their politicians have opinions on what should be described in the municipal EIA. Some people in the municipal committee of planning and building were stated to think that it is unnecessary to waste energy on things like nature inventories. But s/he still expressed that her/his possibilities to influence the scoping are good. This situation with different opinions on the scoping from different parties was also expressed by a consultant who said that the proponent's attitude is often that the EIA should not be too big and it should not cost too much. The county administrative board and the municipality on the other hand, were stated to most often be rather cooperative and considered that several projects should be weighted into the EIA.

One employee at a county administrative board expressed that s/he felt some difficulties regarding possibilities to lay on the proponent to investigate cumulative effects. Today they are too understaffed in their role as reviewers to have the desired possibilities to put demands on cumulative effects.

Another interviewee at a county administrative board expressed that they could in principle call for anything like regarding cumulative effects because they will approve the EIA (of roads and railways). But it was also stated that the board also has a responsibility and that they could not ask for investigations that would not lead to anything good. It is their imagination that sets the limit regarding demanded effect consideration. There is also the aspect of what is reasonable from an economic aspect. These statements indicate that this employee in practice feels free to impose an investigation of cumulative effects on the proponent but that s/he also felt some kind of hesitation for when it is reasonable to ask for these investigations in terms of when it is really motivated economically. The statement regarding demanding anything that does not lead to anything good might mean that s/he was worried about demanding investigations that in the end indicated that cumulative effects was not an issue and thereby caused the proponent an unnecessary expenses.

One of the consultants said that they could maybe include cumulative effects in large projects if s/he and the project group at the consulting company considered it important and could argue in favour of it against the proponent.

Another consultant expressed that s/he as an editor for the EIA has the last word on the scoping towards the project group. But against the proponent s/he said that there is a balance to maintain, if s/he wants to investigate an issue further while the proponent for some reason thinks that it is already described enough to describe their project. A municipality EIA proponent was on the other hand stated to most often not think so because they have an entirety responsibility. A private proponent could however question the scoping and what a certain issue has to do with their project, but s/he had never really experienced that a proponent had said that “*you must not write about that*”.

Discussion

When it comes to EIA/SEA it is, according to the EIA and SEA Directives, a legislative requirement to include the cumulative effects of a project, plan or programme. However, this interview study clearly demonstrated that there was none of the interviewed EIA/SEA actors that knew about this legislative requirement.

What might be the reason for reviewers, proponents and consultants not to include cumulative effects in EIA/SEA? The main explanation to this situation is most probably the lack of clear demands on cumulative effects in the legislation (the Environmental Code). The awareness of the legislative requirement should probably have been very different among EIA/SEA actors if the term “cumulative effect” had been spelled out in the Environmental Code. This lack of knowledge was apparent in the results from the study of reviewers’ and proponents’ demand for investigation of cumulative effects. With some exceptions the interviewed actors expressed that they do not demand or are not demanded to or asked to include cumulative effects in EIA/SEA. The above interpretation of the wordings in the Environmental Code does however show that there are some demands, even if unclear, to include the phenomenon of cumulative effects in EIA/SEA. This study does however show that neither the term nor the issue of cumulative effects/impacts is included in today’s EIA/SEA processes.

However, during some of the interviews it was mentioned that the SRA’s handbooks on environmental impact assessment mention cumulative effects. Going through the handbook on *methods* it is seen that the concept is mentioned and that also synergistic effects shall be included along with cumulative effects in the analyses but that the term as such must not be used (Vägverket 2002). In the handbook on *analysis and assessment*, secondary development is mentioned as an indirect effect that should be dealt with in EIA. But the statement that “such (development) that will occur no matter if the road project in question will take place or not shall not be described in an EIA on a road project” is remarkable. It is further stated that “road and railway projects located next to each other could be more or less dependent on each other and needs to be estimated together”.³⁹ Thereby SRA has excluded cumulative effects from other past, present and future activities unless these are not from a road project (or

³⁹ These quotations from the handbook from Swedish to English are made by the author.

possibly a railway project) or secondary developments connected to a road project. It is further stated that it is only in those cases the net effects are larger than the sum of the individual projects that the cumulative effects have to be dealt with in analysis and assessment of a road project. This means that, according to this handbook, only the cumulative effects of synergistic character should be taken into account in a road EIA. (Vägverket 2002)

Thereby SRA is using a very narrow view on which kind of cumulative effects that should be included in EIA compared to international literature on cumulative effects. For example, in three international handbooks especially considering the issue of cumulative impacts in EIA, the definitions are much more open and inclusive. The definitions are quite similar and if a common definition should be given having these as a starting point, it could be phrased “cumulative effects are changes to the environment that are caused by an action in combination with other past, present and reasonable foreseeable future actions” (Council on Environmental Quality 1997; Commission of the European Communities 1999; Hegmann, Cocklin, Creasy et al. 1999).

To conclude, neither the Environmental Code nor the handbooks made by the SRA is clearly encouraging cumulative effects to be included in EIA/SEA. Therefore it is difficult for Swedish EIA/SEA actors to understand that these effects should be included in the effect identification of the EIA/SEA. Cumulative effects are mentioned in the EIA and SEA directives and should have been implemented in the Environmental Code. If doing so the EIA/SEA actors should not need to study both the Environmental Code, the preparatory work of the Code, and the EU directives to understand the true responsibilities.

In a report regarding the effectiveness of the EIA directive, it is stated that the Member States should check their EIA legislation and subsequently remedy shortcomings for example with regards to cumulation. It also urges Member States to make more widespread use of existing guidance on scoping, review and cumulative impacts. (Commission on the European Communities 2003) There is unfortunately no exhaustive handbook in Swedish on cumulative effects/impacts in EIA/SEA. If that had been the case, maybe the knowledge among EIA/SEA actors on cumulative effects would have been more thorough and the cumulative effect issue would be more mainstreamed into the EIA/SEA process. As regards the statement in the report to check legislation, Sweden did not take the chance to add the term “cumulative impact” to the legislation when the Environmental Code was revised to implement the SEA directive.

However, it is not unrealistic to think that the actors should figure out by themselves that environmental effects/impacts should be looked at as an entirety and not just one by one. For example, in an EIA project it is often the same consultant that analyses the effects from noise and vibrations. It is then tempting to think that it is obvious for the consultant that people living near a project that will give rise both to noise and vibrations will experience these negative impacts as a entirety, not independently. The case might also very well be that these people are living in an environment with already existing negative effects from other activities. When analysing how these people might be impacted by this additional activity it seems evident that these peoples' situation must be described as a whole and include also already existing impacts on their environment. If the EIA/SEA actors out of their profession actually understand the importance of looking into effects from one activity in an integrated

way, it is then not far away to conclude that it is important also to include effects from other activities into the effect valuation. The EIA/SEA actors should thereby already today be so skilled that they in spite of knowledge of cumulative effects/impacts as a term should have an understanding of the phenomenon.

Presume that this way of experience of effects from activities in the surrounding environment is actually obvious for most EIA/SEA actors. And also presume that these actors believe, from their profession and by considering themselves as “friends of the environment”, that environmental effects are important to study in an entirety and an integrated way. Are these attitudes to the environment and environmental effects maybe enough as incitements to include cumulative effects into EIA/SEA? The answer to this question could be that just considering oneself as a friend of the environment or having an opinion that environmental effects should be viewed as an entirety, is not enough to include cumulative effects in EIA/SEA. This statement are based on the finding that cumulative effects are, more or less, never included in EIA/SEA and an assumption that quite many people in Sweden consider themselves as persons that care about the environment.

The interview study on the other hand shows that the actors claim to have good possibilities to include cumulative effects in the EIA/SEA scoping. This is a remarkable result as it is contradictory to their statements on whether they include cumulative effects or ask for cumulative effects to be included. One explanation might be that they actually do want to include cumulative effects but the hindrances in form of time, financial aspects, responsibility issues and requirement experience and the like, are in total a stronger obstacle than the interviewee’s claimed opportunities. Another explanation could be that the interviewees have not been thinking about the issue of cumulative effects before the interview. If so, the issue might have been introduced to them during the interview, and when the interviewees were talking about cumulative effects and opportunities to include them into the EIA/SEA process, it was out of a standpoint that they just realised about these effects.

The phenomenon of cumulative effects is complex. These effects can be of several different characters. Depending on type of cumulative effect, they can arise from the same or different types of effects (e.g. noise and vibrations) caused by one activity or by two/several activities. These effects can “react” differently when put together. *Additive* effects are the kind of cumulative effects that can be summarized. *Interactive* effects can not be added up in this way because when two effects are put together the net adverse cumulative effect is less than the sum of the individual effects (*countervailing*). An interactive effect could also be of the kind that two effects strengthen each other. This is called *synergistic* effect. (Peterson, Chan, Peterson et al. 1987; Council on Environmental Quality 1997) The picture gets even more complex when estimating whether these cumulative effects are *significant* or not. And on top of this, there are also environmental quality standards to consider for ambient air, fish and mussel water, and noise (Swedish Environmental Protection Agency 2005).⁴⁰

⁴⁰ The definition used in Sweden is that “environmental quality standards are legally binding limits for an environmental status which may not be infringed, or is to be attained where possible, after a specified date”.

To some extent the interviewees used the above description when they were asked about their definition and explanation of the term and phenomenon of cumulative effects. However, they did not use such a complex description as given above but their explanations were instead very simplified. If all interviewees' statements regarding the understanding of cumulative effects are put together, the above picture could however be seen. But since the interviewees independently only mentioned fragments of the explanation above, their understanding of the complex phenomenon cumulative effects must be stated to be quite limited.

Some of the EIA/SEA actors expressed that it was problematic to get proponents to also consider other activities because they were stated to feel that they have no responsibility for them. This demonstrates that there is a lack of sense of responsibility for overall questions. The above examples in the results section illustrate proponents' lack of understanding of the issue of cumulative effects and the importance of investigation of such issues. It seems to be a fundamental lack of understanding among proponents about their role and responsibility to put their activity in a context and look at the environmental effects of their projects together with other past, present and future actions. The responsibility issue will be looked into more carefully by the researcher in coming papers from this research project.

As mentioned in the beginning of this paper cumulative effects can result in huge negative environmental impact. So if the society is interested in a sustainable development it is essential to have an entirety approach on environmental effects. This implies that the cumulative effects have to be included in estimations of environmental effects.

The findings in this study show that cumulative effects are not investigated in today's EIA of projects, Detailed Development Plans, Comprehensive Plans or Regional Transportation Plans. Nor do the examples of attempts to consider these effects, point at any considerable changes in the near future of a scoping approach that should include cumulative effects. To conclude, it points towards a state for which there is an absence of incitements to investigate cumulative effects. The study result illustrates a situation where EIA/SEA has certainly not become a forum to consider environmental effects in an entirety way. These documents thereby lack the potential to prevent consequences caused by cumulative effects.

This paper shows yet another deficiency of the Swedish system. Not only are practitioners unaware of the need and demand for consideration of cumulative effects. They seem not to take them into account even in cases where this is clearly warranted by other demands such as the demand for a no-action or zero alternative.

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APPENDIX 1.

Table 1: Interview guide

Research questions	Interview questions
“Encircling” of the subject cumulative impacts/effects	What is important to consider when assessing effects?
	Is it difficult to consider “all in all” effects?
	Which delimitation are done when estimating effects? (Scoping to set boundaries for time and geographical aspects)
	How are these delimitations done?
	Do you think this scoping is difficult to do?
	Which types of effects are demanded to be considered in EIA/SEA?
	Do you think you do what is required to treat these effects in EIA?
	Do you want better chances/opportunities to treat these effects in more detail or in a better/different way?
	Or do you think they are handled good enough today?
	Do you think the work with cumulative effects is different from the work with direct effects? (here the term cumulative effect is introduced if the interviewee has not already mentioned it her/himself)
Are there any differences in approach?	
How do you think cumulative effects are treated by other EIA actors?	
Do you think that cumulative effects are important to consider?	
Why should cumulative effects be considered in the EIA process?	Why/Why not?

Which are the hindrances and opportunities to consider cumulative effects in EIA?

Which opportunities do you have today regarding the work with cumulative effects?

Is it possible for you to work with cumulative effects as you want to? Which opportunities do you have to influence how cumulative effects are handled?

Do you think there is a better way to consider cumulative effects?

Do you think that it is motivated to improve the treatment of cumulative effects?

Is there anything that makes it difficult to consider and include cumulative effects?

How do you do to consider cumulative effects?

How (methods to study, estimate, describe etc.) could cumulative effects be treated in the EIA process?

What does the term cumulative effect mean to you?

Is there a difference between different actors' definition and interpretation of the term cumulative effects?

How do you define the term?

Is this a term that you and your colleagues use? Do you use other words/terms for this phenomenon?

Do you think that other EIA actors define the term in the same way?

Are there any differences in how to scope an EIA/SEA for cumulative effects compare to direct effects?

Do you have any example of a case when cumulative effects has been considered in a good way or when these effects obviously should have been considered in a more detailed way?

OUTPUTS FROM IMPLEMENTING IMPACT ASSESSMENT IN SWEDISH COMPREHENSIVE PLANS 1996-2002

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Abstract: In 1996s rather vague impact assessment demands were incorporated into the PBA for municipal comprehensive plans (MCP). Sweden is currently, like the other European Union (EU) members, in the process of implementing the directive 2001/42/EC of 27 June 2001 from the European Parliament and Council on “Assessment of the effects of certain plans and programmes on the environment”. The practice of municipal comprehensive planning and SEA following the vague impact assessment demands in PBA has neither been extensively or empirically investigated nor evaluated to date. In essence, there is still no systematic knowledge about the SEA practice preceding the introduction of the EU directive 2001/42/EC into the Swedish environmental and planning legislation. Therefore we do not know to what extent the new legal regulations and the handbooks following it are remedying any of the difficulties in implementing the previous vague SEA demands. The aim of this paper is to present and discuss the methodology and some of the results from a study aiming at partly filling this void of empirical and systematic knowledge. The demands in the PBA 1996 are expressed in the following sentence, which is the translation as expressed in the Swedish official English version of the legislative text:

“The substance and the consequences of the comprehensive plan shall be easily understood.”
(SFS 1995:1197, Ch 4 §1)

This paper will evaluate the output in the planning practice of the above sentence on the format of and contents in Swedish municipal comprehensive plans during the period of 1996 – 2002.

Key words: SEA, Municipal comprehensive planning, Evaluation, Effectiveness

Project: Ann is a member of the MiSt doctoral school. She has co-operated with MiSt 3 -SEA as intervention.

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OUTPUTS FROM IMPLEMENTING IMPACT ASSESSMENT IN SWEDISH COMPREHENSIVE PLANS 1996-2002

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Introduction

The need to incorporate environmental impact assessment into the Swedish land use planning system was recognized in the first draft of the original 1987 Planning and Building Act (PBA) (Hilding-Rydevik, 1990). During the subsequent years rather vague impact assessment demands were incorporated into the PBA for municipal comprehensive plans (MCP) and more detailed demands concerning detailed development plans (DDP) in 1994 (Emmelin, L. and Lerman, P. 2005). Sweden is currently, like the other European Union (EU) members, in the process of implementing the directive 2001/42/EC of 27 June 2001 from the European Parliament and Council on "Assessment of the effects of certain plans and programmes on the environment". In Sweden the regulations were integrated into the Environmental Code, the major environmental piece of law, in June 2004. The revisions were approved of in June 2004 and the legal provisions nearly a year later in June 2005. The Swedish National Board for Housing, Building and Planning has recently published the first official hand book (Miljöbedömningar för planer enligt plan- och bygglagen – en vägledning, 2006) relating to the implementation of the EU directive 2001/42/EC.

The practice of municipal comprehensive planning and SEA following the vague impact assessment demands in PBA has neither been extensively or empirically investigated nor evaluated to date (Emmelin and Lerman, 2005), Hilding-Rydevik and Fundingsland, 2005). However, a pilot study was conducted in 2002 on the application of impact assessment to comprehensive municipal planning (Bjarnadottir, H, Åkerskog, A, 2003). This study saw the necessity of further and more extensive research on the subject. There have also been some follow-up studies and evaluations of SEA for the more detailed development plans (see Olausson, Oscarsson and Palm 2004, Hilding-Rydevik and Fundingsland 2005). Statements concerning the expected role of SEA and how the process should be conducted abound however (for example SAMS 2000). In essence, there is still no systematic knowledge about the SEA practice preceding the introduction of the EU directive 2001/42/EC into the Swedish environmental and planning legislation. Therefore we do not know to what extent the new legal regulations and the hand-books following it are remedying any of the difficulties in implementing the previous vague SEA demands. Since the Swedish legislative tradition is that of frame laws, an evaluation of practice is crucial for understanding the impacts and effectiveness of the legal regulations. The aim of this paper is to present and discuss the methodology and some of the results from a study aiming at partly filling this void of empirical and systematic knowledge of the experiences of implementing impact assessment in municipal comprehensive land use plans during the period 1996-2002.

The demands in the PBA 1996 are expressed in the following sentence, which is the translation as expressed in the Swedish official English version of the legislative text:

"The substance and the consequences of the comprehensive plan shall be easily understood."
(SFS 1995:1197, 4:1.3)

This paper will evaluate the output in the planning practice of the above sentence on the format of and contents in Swedish municipal comprehensive plans during the period of 1996 – 2002.

Project aim

The results presented in this paper constitute parts of the PhD project “Environmental assessments in Swedish municipal comprehensive planning”. The PhD project aims at exploring the practical experiences of implementing the vague SEA demands in the PBA 1996 (SFS 1995:1197) in Swedish municipal comprehensive land use plans. Since the municipalities have a so called planning monopoly, it is only in the municipalities that land use planning is conducted in Sweden (no national or regional level land use planning is conducted.) This is also why this planning level is chosen as the target for the study. The comprehensive planning level is the arena where the municipalities can make strategic long term choices for the land use in the whole territory of the municipality and where the implementation of SEA could make a difference. (See Fact Box for more background concerning Swedish land use planning and SEA). The project combines the “expectations” expressed concerning the role and output of impact assessment implementation, with the actual output in the municipal comprehensive plans. In essence the project therefore provides an evaluation of the effectiveness of the legislation e.g. the impact of the legislation on contributing to the practice of SEA.

In this study effectiveness is defined as the outcomes from a comparison between existing practice and the expectations concerning and perspectives of an ideal practice. The criteria used for the evaluation are objectives-led. The objectives in this case are the expectations put forward in the preparatory work to the PBA and the interpretations of the law declared in handbooks.

Fact box

Swedish land use planning and SEA (Hilding-Rydevik and Fundingsland, 2005)

“In Sweden there is no formal spatial planning at either the regional or the national level, and the main responsibility for land use planning lies with the 290 municipalities. These authorities have a high degree of autonomy and a monopoly on planning. They have the right to levy taxes and serve an important role in community planning. Central government seeks to influence spatial planning mainly through legislation and guidance, and through its 21 regional arms, the county administrative boards. These have a predominantly advisory role with respect to land use planning, and ensure that national objectives and guidelines are adhered to at municipality level. At central government level, the Ministry of Environment and Community Development is responsible for environmental, planning and building issues. The key governmental agencies for land use planning and environmental management are the National Board of Housing, Building and Planning and the Swedish Environmental Protection Agency.

The two main tools for Swedish land use planning are municipal comprehensive plans (MCPs) and detailed development plans (DDPs). These are regulated by the Planning and Building Act 1987 (PBA). The other legislation relevant to land use planning is the Environmental Code introduced in 1999 to bring together formerly discrete environmental laws into consolidated framework legislation.

MCPs cover the entire area of a municipality and provide recommendations for the long-term use of land and the management of the built environment, but are not legally binding documents. In some cases, aspects of the MCP need a more thorough treatment, in which case so called 'deepened' (fördjupad) comprehensive plans (DCPs) are developed, which have the same legal status as the MCP.

DDPs, on the other hand, regulate the land use for specified areas within the municipality, and these plans are legally binding. For areas not covered by DDPs, the municipalities may develop area regulations where it is deemed necessary in order to achieve national or local environmental objectives. Area regulations are also legally binding. Finally, real estate plans may be developed in order to assist with the implementation of DDPs. In addition to land use planning at the municipal level, there is a PBA provision which enables a regional plan to be adopted if there is an evident need to co-ordinate the plans of several municipalities. There are currently only two regional plans in Sweden, covering the counties of Stockholm and Gothenburg.

The overarching legal provisions concerning SEA of plans and programmes are contained within the Environmental Code. The Planning and Building Act specifies the legal requirements for SEA of Swedish land use plans within the framework of the Environmental Code.

The need to incorporate SEA into the Swedish land use planning system was recognized in 1979 in the first draft of the original 1987 PBA (Hilding-Rydevik, 1990). However, it was not introduced as a legal requirement until 1994, when the revised PBA formally stipulated the need for SEA of DDPs. This requirement was subsequently extended to MCPs in 1996. Both area regulations and regional plans remain exempt from the PBA SEA requirements. SEA requirements also exist in other sectors, including road transport (introduced in 1987) and energy. In September 2004, approximately 150 municipalities needed to revise their MCPs in order to comply with the SEA Directive. Approximately 30–50 DCPs are prepared every year and the Planning and Building Act requires these to include an SEA. Roughly 2000 DDPs are prepared each year, but no estimates exist for how many undergo SEA. However, an evaluation of assessment practice in the Stockholm municipality indicated that roughly 30 per cent of all DDPs had undergone an SEA (Skeppström, 1998).

Discussions about the revision of the Planning and Building Act to incorporate SEA requirements may have been the inspiration for the considerable voluntary practice of SEA in Sweden during the late 1980s and early 1990s. A number of municipalities even developed their own regulations and guidelines (Hilding-Rydevik, 1987, 1990; Asplund and Hilding-Rydevik, 1996)."

Legal framework

Legislations of interest for this study of impact assessments of comprehensive municipal plans are the Planning and Building Act (PBA) and the Environmental Code. The PBA was introduced in 1987 and regulates the public control of building activities and physical planning at municipal and regional levels. Municipalities are obliged to examine whether or not measures that significantly affect land use satisfy the established requirements and present those requirements in the form of plans.

The Environmental Code was adopted in 1999. It replaced not only the Natural Resource Act (NRA) but fourteen other environmental acts. The Environmental Code serves as an umbrella for the PBA as well as other special acts connected with the physical environment.

Planning and Building Act (PBA)

In chapter 1 section 3 the following is said about comprehensive plans. "Each municipality shall prepare an up-to-date comprehensive plan (covering the entire municipality). The comprehensive plan shall provide guidance for decisions about the use of land and water areas and on the development and preservation of the built environment. The comprehensive plan is not binding for authorities or individuals."

Chapter 4, section 1

"....

the plan shall indicate

1. the fundamental features of the envisaged use of land and water areas
2. the municipality's conception of the development and preservation of the built environment; and
3. the course of action which the municipality intends to take in order to satisfy the specified national interests and to observe environmental quality standards.

The substance and the consequences of the comprehensive plan shall be easily understood."

Chapter 4, Section 4

"The purpose of consultation is to improve the material upon which decisions are made and to enable insight and influence. During the consultation, the municipality should give an account of the reasons for the proposal, relevant planning material as well as the substance and the consequences of the proposal.

A consultation report shall be compiled presenting the results of the consultation and proposals in response to the statements given."

Nature Resource Act (NRA)

In 1987 the Nature Resource Act was introduced in the Swedish legal system and was replaced by the environmental Code in 1999. In the meantime the NRA regulated environmental issues and the connection to PBA and comprehensive planning.

The Environmental Code

"The purpose of the Environmental Code is to promote sustainable development, which will assure a healthy and sound environment for present and future generations. Such development will be based on recognition of the fact that nature is worthy of protection and that our right to modify and exploit nature carries with it a responsibility for wise management of natural resources." The environmental impact assessment is regulated in chapter 6.

This is, in short, what could be read in these laws 1996 (1999) about impact assessment of municipal plans. But what were the intentions and expectations on impact assessment of comprehensive municipal plans in the preparatory works to the PBA?

Methodology

The empirical work of the PhD-project is divided into three parts:

1. The reading and analysis of 26 municipal comprehensive plans based on a set of questions.
2. Overview of the “expectations” towards the role of SEA and the output expected from implementing the SEA regulations according to the PBA 1996 as they are formulated in the preparatory work, the explicit formulations in the legal text and the interpretations of these in handbooks.
3. Interviews with planners at the municipal level and consultants.

In this paper the results are drawn from comparing the first and the second part of the empirical work.

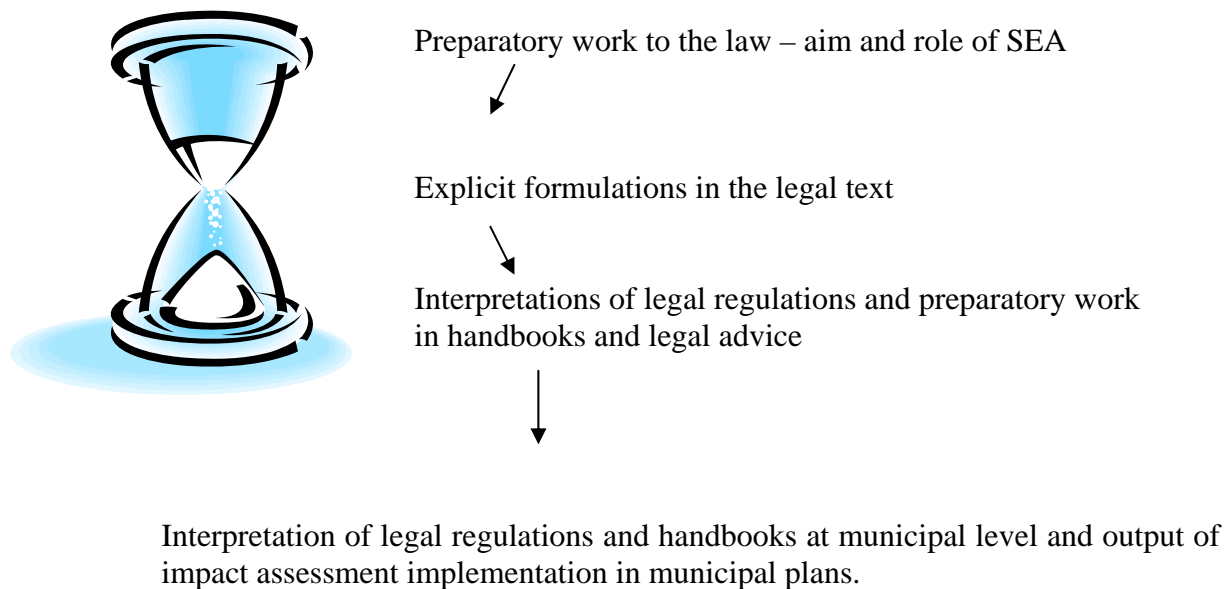


Figure 1. Structure of mind as a basis for designing the PhD-work presented in this paper.

Evaluating municipal comprehensive land use plans

Evaluation approach

The rationale behind choosing to evaluate plans is to understand the impacts and effectiveness of the legal regulations. Since evaluation can be defined as a careful ex-post assessment of results, final performance or management in the public administration, for which it serves a purpose in decision making, it seems like a suitable methodology. Evaluation is not merely done to see for example whether a planning process works, the point is also to use the knowledge brought forward to improve it further. (Now we are getting close to the definition

of implementation of evaluation.) (Vedung) Evaluation is sprung from the mighty rationalistic river (Vedung). Rationalism can be defined as the formulation of objectives or goals, to assess alternatives and to choose the best alternative or at least good enough (Stålberg 1986). Since plans are the result of the planning process and are documents which, according to the PBA, should account for the consequences of the plan, one way to reach the knowledge strived for is to evaluate the written documents. The evaluation of municipal plans posits from a rational perspective in that it solely is built upon studies of documents, (Khakee och Eckerberg, 1992) in this case municipal comprehensive plans. It could therefore be claimed that study is based on instrumental rationality, because it is excluding all other perspectives than the one that can be read in the plans, in the preparatory work to the law, the law and handbooks. Instrumental rationality implies knowledge based on technical skills. However, this rational perspective is contradicted by Hoch (2002) who claims that it might just as well be a pragmatic perspective, depending on how the questions are put, and in what way the answers are used. A pragmatist approach is to figure out what must be known to manage a certain problem. "The pragmatic outlook embraces context and seeks continuity among diverse perspectives." This study has its focus on the effectiveness of the legislation not whether the legislation was effective or not. This reflects a more pragmatic perspective on the question asked in the study. Now, the core of pragmatism consists of knowledge as a means to solve a problem and to guide in our actions. Characteristics of the truthfulness or rightness of knowledge are the practical consequences it implies. Gustavsson (2000) says that knowledge is foremost a means for problem solving and guidance for action in practice. He therefore claims that knowledge mainly has a instrumental value since it is a means for a purpose outside the action itself.

My interpretation of this is that the method of using written documents only, could be called rationalistic and the knowledge that comes out of it is therefore instrumental. But since the results are put into a context where the knowledgebase more accurately is based on *techné, knowledge in action*, it serves a pragmatic purpose, namely to evaluate the effectiveness of the law when it comes to impact assessment of comprehensive plans. The importance of context is crucial. To get results from other perspectives on these issues, interviews with practitioners will be held in further studies. This is also a way of triangulating the method (Yin, 1994).

Case studies and the checklist

The evaluation of municipal comprehensive plans has been made with a checklist. The checklist contains 52 questions all in all, 13 of them are used to answer the question specific to this paper. The study is carried through as a multiple case study which implies that it consists of many units of analysis, in this case comprehensive plans, and constitutes a series of cases. Each of the selected comprehensive plans, including the impact assessment, is regarded as a case. A comprehensive municipal plan covering the entire area of the municipality is here defined as the written document compiled and passed by the municipality after consultation and exhibition. Some of these plans are available on the municipality's home pages and in the cases where I was invoked to such plans I used printouts from these topical pages. Each unit of analysis can be said to be an individual case which is analyzed overriding in the multiple case study (Johansson). In this case the combination of the chosen plans is important (Yin).

Selection

The study comprises only comprehensive plans covering the entire area of the municipality. The reason being that these plans, except in exceptional cases e.g. The Stockholm Region

Plan, are the earliest plans in the Swedish planning hierarchy, and therefore can be said to be strategic and comprised by the Directive 2001/42/EC.

The first generation municipal comprehensive plans were made between the end of 1980 and the beginning of 1990. Ten years passed until the advent of the next generation of plans in the end of the 1990:s and until the turn of the millennium 2000. The selection of plans was therefore done due to the time period when they were passed. Plans passed before the introduction of the regulations on impact assessments of comprehensive plans in PBA 1996, are not valid for this study. Demands on impact assessments of different kinds of plans, the introduction of the Environmental Code 1999, and likewise common peoples increased knowledge of environmentalism, have had an influence on the extent and the quality on impact assessments in general. On account of what has been said above, it was most interesting to put focus on the plans done towards the end of 1990 until 2002.

Five Counties were chosen where all the municipals passed 1998-2002 were studied. Västra Götaland, Halland, Skåne, Blekinge and Dalarna (Jämtlands county was chosen originally, but since no comprehensive plan had been done during the time period, Dalarnas county was chosen instead.) were chosen to get an optimal distribution with reference to geographical position, size, population, economic conditions etc.

The result being 26 Swedish municipal comprehensive plans included in the study. In this paper 13 questions have been used to answer the question whether *“The substance and the consequences of the comprehensive plan shall be easily understood.”*

These questions were mostly built on the contents of the Directive 2001/42/EC of 27 June 2001 from the European Parliament and Council on “Assessment of the effects of certain plans and programmes on the environment”. A pilot study (ref) performed 2002 showed that many of the aspects covered by the directive could give guidance to the evaluation of the planning performances of the comprehensive plans. This is mentioned in the ”handbook on EIA part II”. Also mentioned is the fact that these demands probably will be introduced into Swedish law in the future. Furthermore, it is claimed that the preparatory work to the PBA clearly has shown that the work on environmental impact assessments (EIA) are presupposed to be conducted in accordance with “good international practice”. This is also one of the reasons to why I chose to start off with the directive (EG/42/2001) that was being worked out when the questions in the checklist were formulated.

All the answers to the question in the checklist have been put into a data base. These constitute the results of my interpretations of the texts in the plans. The questions relevant for this paper are presented in figure 2. Since this is a multiple case study it is interesting to see the full picture of the cases, a way of generalizing.

Question	yes/no	comment
1. Is the impact assessment distinctly identifiable?	X	
2. Is the impact assessment process distinctly identifiable?	X	
3. When during the planning process is the impact assessment made?		X
4. Is it apparent how, when and with whom the consultation has been held?	X	
5. Have points of views expressed at consultations been taken into consideration?	X	
6. Is a delimitation of the contents of the plan done?		X
7. Are strategic choices identified?	X	
8. Is there any baseline alternative?	X	
9. Are there any design or location alternatives?	X	
10. Is it apparent how the alternatives have been brought out?		X
11. Are the environmental impacts analyzed?	X	
12. Has the significantly environmental impact been analyzed?	X	
13. Which environmental impacts have been analyzed?		X

Figure 2. Some of the questions are answered by yes or no; others call for longer answers or comments.

Results

Interpretations of changes to the PBA in handbooks

To be able to make a judgement on whether the consequences of the plans were possible to read without difficulty, I first had to figure out what was actually meant by this. From what became the legal regulations, The Swedish National Board for Housing, Building and Planning and other authorities have done interpretations of which have resulted in handbooks and legal advice for practitioners. Handbooks available for planners and other actors in the comprehensive planning process, were above all the “Book about comprehensive planning 1996, part II (Boken om översiktsplan 1996, del II, Boverket 1996)

The SAMS study on the integration and application of environmental objectives in planning (Boverket, Naturvårdsverket, 2000) has addressed the application of SEA in municipal plans, highlighted the experiences and recommended a methodology for the application of SEA.(Bjarnadottir, H, Åkerskog, A 2002) Examples of how to make the comprehensive plans

more strategic are expressed but the demands on SEA are introduced in the directive 2001/42/EC in 2001, and in Swedish legislation in June 2004. The SAMS-study was published in 2000 and can solely have had an influence on the plans made 2000-2002. Since it is the interpretation of the PBA that is crucial in this study, I have chosen not to take any notice to what is said in these reports, even though this may have influenced some of the plans to be more environmentally adapted and clearer in their description of the environmental concerns.

To elucidate what is meant by the sentence “The substance and the consequences of the comprehensive plan shall be easily understood.” I started out with the interpretations done by The Swedish National Board for Housing, Building and Planning in “The book on comprehensive planning” (Boken om översiktsplan II, 1996). The substance of the meaning breaks up into two pieces; what importance the planning process has and what importance the substance of the impact assessment has to the explicitness.

The purpose of the demands on the reporting on the consequences of the plan is, according to the handbook (Boken om översiktsplan II), ”that an explicit description of the consequences of the standpoints in the comprehensive plan eases the application and the comprehension of the municipality’s assessments”(p. 16) and furthermore “---- the prerequisites for decisions that imply long-term environmental considerations are improved.”(p. 92)

This purpose is said to be reached if the planning follows the following criteria.

Process

Clarity in the process is followed up by the demands on presentation of the consequences of the plan at consultation and in the description of the plan. The impact assessment shall be joined to the plan during the exhibition. In the handbook it is also expressed that the impact assessment shall develop gradually during the planning process and that early presentation of consequences contributes to active citizen participation. The main reason for emphasising active citizen participation is that it is believed to supply the planning process with important aspects of environmental impacts on the local community.

Substance/product

To be able to fulfil the demand on lucidity of the impact assessment, the handbooks claim that scoping of the contents is necessary. The reason being that a delimitation to the essential consequences is important both to avoid unnecessary investigations and a confused base for decisions. Another important reason for doing impact assessments of the comprehensive plan is the possibility to develop alternatives. Alternative uses of the land, the formulation of strategic choices and alternative relocation of activities or projects can seldom be handled in a meaningful way in late planning phases. For the same reason the comprehensive plan is assumed to handle broad issues which enables indirect and cumulative consequences to be observed. According to the handbook (Boken om översiktsplan II) the overall judgement of different alternatives is facilitated by the clarity of the substance of the consequences. Furthermore, it enhances the prerequisites for the overall assessment to actually be performed. This is central when the decision concern choices between conflicting interests. Analyses and

reporting of consequences cannot be made exact or detailed in the comprehensive plan. Instead the handbook suggests that the description can be formulated so as to show whether the consequences are positive or negative, if objectives are promoted or counteracted, if there are any obvious risks and if the consequences concern all-important interests. Therefore, it is essential to use many different means of expressing the consequences and to make sure they are suited to the particular prerequisites that account for diverse environmental aspects. It is also said that the impacts shall be described so as to strengthen the role of the comprehensive plan as guide when decisions are to be made. This can be brought about by making decisive issues distinct, and to make sure that the main differences between various alternatives are clarified.

what is said above is emphasised in "The book on EIA, part II" (I boken om MKB del 2,1996). The purpose of doing the impact assessment early in the planning process is stressed, together with the emphasis on its connection to environmental and sustainability aspects. "The work with impact assessment should follow the entire planning process, with start in the comprehensive plan." (p 50, author's translation)

"Since the public, environmental organizations and others can take part in this, their possibilities to have an influence on authorities and companies to take greater considerations to environmental and conservation interests increase. Ultimately the purpose is to promote a more environmentally applied decision making in society," (p 10, author's translation)

According to the handbooks the sentence "*The substance and the consequences of the comprehensive plan shall be easily understood.*" has, in conclusion, been interpreted as follows;

For a clear process it is crucial to:

- Account for consequences at public consultation and in the description of the plan.
- Make impact assessments part of the entire planning process.
- Report the consequences early in the process to promote an active citizen participation, which in turn leads to increased legitimacy and a more environmentally concerned decision making.

To make the substance and the consequences of the plan easily understood it must:

- be delimited (scoping must be done)
- develop alternatives
- facilitate the overall judgement of the assessment of alternatives
- put attention to indirect and cumulative consequences
- Adjust the different means of expressing the consequences to make sure they are suited to the particular prerequisites that account for the diverse environmental aspects when the impacts are described.

- Describe the impacts so as to strengthen the role of the comprehensive plan in guiding the decisions to be made.

Expectations on impact assessment of comprehensive plans in the preparatory work to the PBA-revision 1996

In this section I will present what is said in the preparatory work to the PBA about impact assessment of comprehensive municipal plans.

In the preparatory work that preceded the changes of the PBA 1996(Propnr.1994/95:230), a great confidence in what physical planning will be able to bring about when it comes to environmental integration is expressed. The expectations on increased environmental concerns in the physical planning can be found in chapter 4. "The demands on environmental impacts to be analysed and described has been intensified and the citizens demand on insight and influence has increased. These and other circumstances have contributed to the need for physical planning's direction to change and develop. -...- The physical planning shall be seen as a means to a collective policy towards sustainable development."

Further is written in section 4.1;"The tools on all levels – i.a. long-term sector plans, municipal comprehensive plans and environmental impact assessments – need to be developed so as to make sure that the consequences of various decisions become clear and the prerequisites for decisions safeguarding long-term environmental interests are increased. Physical planning can contribute to this by bringing about as complete a base for decisions as possible where, except all traditional interests and claims, also environmental circumstances, alternatives and consequences are analysed". Further the Government means that "clear descriptions and analyses of values and qualities can give important guidance to changes in the built environment. Environmental impact assessments give the citizens possibilities to understand the substance of the changes that are brought to the fore well in advance." The Government's judgement is that the comprehensive planning "should be able to describe complex connections and make clear the effects of different alternative actions in a broad perspective." The Government also claims, for many reasons, that it is desirable to "make the regulations on the comprehensive plan more distinct and to widen them to answer to the demands on increased environmental concerns and increased citizen participation."

In the proposal for the substance of the comprehensive plan from the investigator (5.1.3) it is said: "To make clear the wish of making early analyses of environmental impacts in the comprehensive plan, the investigator proposes that the consequences of intended greater changes in the use of land and water areas shall be accounted for." The investigator here claims that the governmental proposal only partly agrees with the investigation's proposal. The Swedish National Board for Housing, Building and Planning suggests that the function of the comprehensive plan as a base for decision making in application to the NRA put demands to the format and accountancy of the comprehensive plan." The National Environmental Protection Agency (NEPA) "recommends the proposal of the investigator of more distinct and broadened demands of accountancy in the PBA in view of former experiences, but has viewpoints on and suggestions of how these demands shall be expressed. Many municipalities however, oppose to the investigation proposal on broadening the demands of substance of the comprehensive plan and claim that the regulations must give freedom of actions to develop

the comprehensive plan to a municipal tool with regards to various local prerequisites. Some instances “question in particular the proposal that the comprehensive plan shall account for environmental circumstances and analyses of consequences, and regard the vague substance of the broadened proposals make space for the governmental authorities to make far-reaching claims on the accountancies.” The Government claims that “the regulations should be changed and more specific on the one hand to ease the comprehension of the plan and on the other hand increase the environmental concern.” Further is claimed that new regulations should be put on the comprehensive plan to show standpoints in different issues more clearly. This is done because former experience has shown that the municipalities commonly account for a broad base on general interests, but more seldom are the conclusions or standpoints to the general interests distinctly put into the plan.

In point 5.1.5 the government motivates its proposal to changes of the substance and consequences of comprehensive plan; “The Government shares the investigation’s judgement that the comprehensive planning should be used to elucidate impacts of proposals of changes to the use of land and water or the built environment early in the process. The municipal comprehensive planning has obvious advantages in this respect – both in relation to detailed planning and to planning in different sectors or pursuits. Since comprehensive planning is founded on a base of various general interests, the analyses are simplified by the assessment of consequences for environment, health and conservation of natural resources.” The reporting of consequences provides important functions during the whole planning process. Authorities’ concerned, municipal inhabitants and others may easily understand the substance of different proposals if the consequences are expressed early during consultation. Impact assessments should be developed gradually during the planning process and be a part of the basic data put forward before the councillor’s decision to pass the plan. A distinct description of the impacts of the standpoints made clear in the comprehensive plan can facilitate the application and increase the understanding of the municipality’s assessment. Furthermore, the Government considers the “impact assessments in comprehensive planning to conduce to the municipal council’s greater knowledge on the consequences of the plan as a whole and to be a part of the prerequisites for environmental impact assessment (EIA) in decisions to follow in different laws”.

My interpretation of the preparatory work to the PBA is that the main reasons to introducing impact assessment of comprehensive plans are to:

- strengthening the environmental concerns in comprehensive planning
- increase the legitimacy of comprehensive planning
-
- facilitate tiering

Essentials of the results

In essence the formulations described and explored above can be summarized in the following expectations of output – effectiveness – for implementation of impact assessment. These bullet points are thus my interpretation of what is meant by “The substance and the consequences of the comprehensive plan shall be easily understood.”

The impact assessment shall:

- be clearly defined
- be scoped
- be integrated into the planning process
- be made before and supplement the plan at consultation and public exhibition
- contain alternatives which enable an agglomerated judgement
- indirect and cumulative consequences shall be considered and the description of impacts shall be adapted to the particularities that concern different environmental aspects

The authors of the "handbook on EIA part II" (Boken om MKB del II) made their interpretation of the law that seems to be built on the international praxis rather than on the expectations in the preparatory work to the PBA1996, and how the law was actually formulated. This is perhaps due to the experiences from working with environmental impact assessments (EIA) and to the more clear regulations on them in the Environmental Code. The authors of "Handbook on comprehensive planning part II" (Boken om översiktsplan del II) on the other hand, seem to have looked more into the preparatory work to the PBA when it was written. This was probably done to get more guidance in a case when experiences were few.

Comparing "expectations" and checklist evaluations

In order to evaluate the plan according to the criteria's presented above I had to assess the main dividing lines between plans that could be said not to fulfil the criteria's at all and those that had reached further. I have divided the results into three categories: Those that do not meet the criteria, those that do meet the criteria and those in between. There were only a few plans that met the demands. The majority of plans are found in the intermediate section, displaying a variety of results falling within a span from a close failure to almost fulfilment. If neither of the questions 1 or 5, see figure 2, had been answered by a "yes" nor most of the rest of the questions, it was assigned a failure. (These plans were all passed in 2002.)

.....be clearly defined

It is interesting to see that almost all plans have an impact assessment which is clearly defined. It differs from plan to plan how the assessments are presented. Some have put them in a separate report, many plans have a special section called "impacts" or "impact assessment", and yet others integrate the consequences into each thematic section. The plans that miss out on this, and on the report on consultation, fall into the category of failure.

.....be delimited

Also characteristic for the plans that do not meet the criteria is that there is no scoping done and no alternatives whatsoever. The scoping of the plans has in no case been done with reference to the significant environmental impacts that can be the result if the plan is being carried through. The delimitation is often done with reference to the planning objectives or the vision or strategies for the future of the municipality, even when it comes to the impact

assessment of the plan. There is but one plan that analysed the significant environmental impacts. This plan belongs to the mid section category.

....be integrated into the planning process and be made before and supplement the plan at consultation and public exhibition

Much has been done, but in none of the evaluated plans is the process of the impact assessment described. Neither is the planning process described well enough to be able to find out when in the process the impact assessment actually has been performed. It is possible that the impact assessment was done before consultation in some cases, but in most plans the guess from reading the plans is that it was handed in after the consultation but in time for the decision. The interviews that are to be performed later in the study will hopefully shed some light on this uncertainty. Since one of the criteria's for the plan's clearness states that the impact assessment shall be a part of the planning process from the beginning and be available at consultation, this criterion is not met. The majority of the plans have presented reports from the consultations, but most of them refer to separate consultations reports.

....contain alternatives which enable an agglomerated assessment

The alternatives described in the impact assessments vary from road and railroad localisations to alternative areas for housing areas. Many of the alternatives in the plans are put forward in the work with scenarios, a way to see the future possibilities and threats of the plan. The alternatives are then seldom followed up through the rest of the plan. This does not enable the decision maker to easily compare and make an agglomerated assessment.

....Indirect and cumulative consequences shall be considered and the description of impacts shall be adapted to the particularities that concern different environmental aspects.

The majority of the plans studied have presented some kind of consequences. But aspects that seem to be forgotten are the assessments of indirect and cumulative consequences, except very occasionally.

In common of the plans that can be said to meet the demands of the criteria for "The substance and the consequences of the comprehensive plan shall be easily understood." are that they have met up with all the criteria but one. That is; the task of analyzing the significant environmental impacts, which is a demand in the Directive 2001/42/EC, but is missing in the preparatory work and in the handbooks evaluated. Of the plans that meet the demands, two were passed in 2002 and one in 1998.

Discussion

My evaluation illustrates that the vague formulation in the law was not enough for the planners to understand the importance of presenting the planning process well enough in the documents to fulfil the purposes. Likewise the demands on having the impact assessment ready for consultation seems to have been ignored or were not paid attention to by the planners. However, the task of presenting alternatives and to delimitate the impact assessment seems to be better performed by the planners according to this study. If this is due to recommendations in handbooks or a part of common planning practice is impossible to say.

The expectations on the comprehensive municipal planning were not met when it came to tiering, neither were the indirect and cumulative consequences attended to. The hopes for more strategic planning with the possibilities to improve the environmental issues early in the process did not succeed. Perhaps the formulation was too vague in this respect.

Those who applied the new demands of impact assessment in the law and the handbooks in practice seem to have had a pragmatic perspective towards the demands. Presumably they started off in the planning practice knowledge base already in place. Some of the planners responsible for the comprehensive plan may have had some experience of making EIA:s for detailed plans which naturally influenced how the impact assessment was carried out.

As mentioned before, effectiveness in this study is defined as the outcomes from a comparison between existing practice and the expectations concerning and perspectives of an ideal practice. Now, what can be said of the effectiveness? Far from all expectations were met, but the level of knowledge on how to make impact assessments rose as a result from implementing even vague demands of impact assessments in comprehensive municipal plans. The study shows that different perspectives and background knowledge seem to have an important impact on the results in terms of meeting the demands of the law.

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DECISION SUPPORT TOOLS AND TWO TYPES OF UNCERTAINTY REDUCTION

Bertil Rolf

Bertil Rolf, professor of Philosophy at Blekinge Institute of Technology. After a Ph.D. thesis about logic and vagueness, his research has focussed on reasoning and epistemology of professional competence. In the 1990's, his major publications concerned the cognitive roles of institutions and traditions for professional procedural knowledge. Since 1999, his research includes software support and procedures for competent reasoning and decision making.



Abstract: Recent advancement in cognitive science and software development enables new kinds of decision support tools avoiding the collapse of the grand rationalist planning ideals of the 1960's. The older versions of decision support was directed mainly towards the reduction of epistemic uncertainty. They focused on the inference processes of reasoning. New generations of decision support tools will focus also on more pressing conceptual uncertainty. Conceptual uncertainty is at the root of so called "wicked problems" and conflicts related to "essentially contested concepts", e.g. the notion of "sustainability". The paper shows that conceptual uncertainty is a problem for Swedish environmental decision making. The paper argues that such uncertainty cannot be dealt with by decision support tools for reducing epistemic uncertainty. The paper shows that dialectic inquiry in the tradition of Arne Naess and Stephen Toulmin and multi party negotiations are ways of managing conceptual uncertainty. The paper also introduces two kinds of software packages, Athena Standard and Athena Negotiator, supporting dialectic inquiry and negotiations, respectively. Such low budget tools with low user threshold and wide applicability may help us avoid some obvious and possibly costly or disastrous failures in social reasoning and decision-making.

Key words: Uncertainty reduction, conceptual uncertainty, decision support, environmental decision making, reasoning software

Project: MiSt 13 – Tools for reasonable deliberation.

The aims of the project are to improve understanding and to develop fruitful applications of intellectual tools for reasonable deliberation in the field of environmental assessment in strategic decision making. We aim to match normative theory about reasonable deliberation and rational judgment with actual cases and processes of deliberation and decision making. We will design combined packages of user heuristics, user methods and software techniques to increase the chances of reasonable deliberation and rational decisions.

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DECISION SUPPORT TOOLS AND TWO TYPES OF UNCERTAINTY REDUCTION

Reasoning as reduction of two kinds of uncertainty

Bertil Rolf

Grand Rationality is dead, long live Reason!

The 1960's saw the heydays of Grand Rationality in social decision-making. The planning ideal of that period has been termed "comprehensive rational approach" (Benveniste, 1989), "design school" (Mintzberg, 1994), or "technical rationality" (Schön, 1991). That ideal of rationality crumbled, much due to its inherent weaknesses.

Is there at present any hope for decision support tools that does not strand on the same reefs that the rationality movement of the 1960's? Yes, research about human knowledge, social reasoning processes, and software development has come a long way since then.

The cognitive sciences have parted ways with mathematics, logic, physics, and operational analysis that formed the basis for modelling rationality in the 1960's. Extrapolating from Herbert Simon's notion of "bounded rationality", the emphasis of research has shifted from mathematics to cognition. One direction focuses on the limitations of unaided human decision processes. For instance, research in heuristics and biases, clinical reasoning, and dynamic decision-making indicates that human reasoning normally falls far short of ideal standards (Dawes, 1988; Plous, 1993). Another direction focuses on possible shortcuts in reasoning that take us a long way towards ideal standards with very simple tricks, so-called "fast and frugal heuristics" (Gigerenzer, Todd et al., 1999).

An important conclusion on which these directions agree, is that human decision-making can improve via small, but well directed cognitive effort. We know so preciously little of many relevant aspects of the future that we do not have data to feed into the encompassing models that formed the rationalist ideals of the 1960's. But we can still have simple, robust decision procedures that will substantially improve on our decisions while feeding only on meagre or deficient data.

Since the 1960's, studies of social and political decision-making have informed us of the many factors and facets of real life decision-making. Decision-making is an integral part of ongoing processes, torn between power struggle, implementation agencies, and grassroots' interference. The grand master plans of the 1960's more or less took it for granted that planning could be an enterprise for staff functions, well isolated from the turmoil of ongoing organizational processes. Not so anymore.

The software revolution of the 1990's has turned the tables on the expert model of the 1960's. A minor factor is the computational power that shifts massive capacities for calculation from the Central Planning Staff to the roadside planner in the field. More important is the widened, common access to computerized means of representation, communication, and analysis. The GUI (Graphical User Interface), the widely spread computational literacy in a population and the lower costs of computation can bring simple, reasoning tools in the hands of experts and professional planners as well as politicians and public. A well-designed GUI can lower user threshold to provide sufficiently robust reasoning tools for structuring the limited knowledge that we actually have, or can come to share.

In designing reasoning procedures coupled to software support, it is important not to repeat the mistakes of the 1960's: costly decision support procedures with zero impact on real life. There are, as I have indicated, low budget tools with wide applicability that may help us reduce the proportion of some obvious and, possibly costly or disastrous mistakes.

This gives the background of my argument: (1) Reasoning is important for decision-making. It can be applied to deliberations about past, present, and future. (2) Reasoning involves the reduction of uncertainty. This, we can divide into reduction of epistemic uncertainty and reduction of conceptual uncertainty. (3) Reasoning models for reducing epistemic uncertainty focus on inference procedures while the reduction of conceptual uncertainty focus on interpretational procedures. (4) There are sophisticated tools for dealing with epistemic uncertainty, e.g. the NEST software representing a causal model of the Baltic. However, such tools do not per se reduce conceptual uncertainty. (5) In deliberations about the Baltic, there is also considerable conceptual uncertainty. Such uncertainty is generally underestimated in decision-making. It cannot be reduced to sensitivity or fuzziness. (6) Some of the methods for dealing also with conceptual uncertainty are dialectics and negotiations. Software tools supporting such reasoning procedures are our packages Athena Standard and Athena Negotiator. (7) When software based models replace the Grand Rationalist models of the 1960's, one can focus also on conceptual uncertainty and frame new kinds of interaction between decision-makers and decision analysts.

Why be reasonable?

The semantics of "reasonable" indicates that reasonable decision-makers or reasonable processes of deliberation are better than unreasonable ones. But why should it be so?

Reasoning processes make a difference to the way we handle information. The symbolic nature of reasoning contrasts it with pure cases of animal perception. Reasoning processes are typical for humans even if they can, to some extent, also be found in higher primates. I hear a barking sound and infer that my neighbour has let his dog out. My cat hears the same sound and her brain builds complex patterns of expectations, associations, and behavioural tendencies. She has no need of reasoning involving conventional symbols or other representations. To some extent, humans can also manage without building symbolic representations or without processing them through inferences. But in general, most of our knowledge and decisions rely on our capacity for reasoning about matters not immediately present to our senses.

The power of reasoning derives from the fact that it feeds on symbols. Thus, it enables complex symbolizations of past, present and future. Learning from the past mistakes of others involves counterfactual analysis – what would have happened if the Swedish governments of the 1980's had deregulated the financial markets in another order? Projecting and selecting plans for the future involves the use of hypotheticals about means and ends.

Reasoning on a social scale can be focused towards past, present or future. It can refer to facts and values realized before, during or after decision-making and implementation. Typically, plans and decision refer to possible futures. If directed towards the future, reasoning, well performed, will reduce some uncertainties in decision-making. Therefore, in the long run, our balance of successes over failures will be improved. Acting for the future has in this respect analogies with betting. An actor paying no attention to odds will fail more often or more miserably than actors using proper procedures for grounding beliefs, decisions, and actions.

Reasoning can also be used contemporaneously where decision-making is distributed among a multitude of actors, grassroots or stakeholders. Reasoning can take a presentational and communicative role in proposing ideas for (partial) consensus. Without some reasonable guidance, decision processes of “muddling through”-type will be lost in the muddle. Participation in ideal speaker-hearers exchange will be less than ideal unless some conditions on the content of reasonable exchange takes place. The mere social processes of decision-making or communication themselves have no tendency towards quality, unless they are designed or selected to promote some logical or epistemological standard, i.e. standards of reason. In well-conducted reasoning processes, the participants will tend to reach more robust agreements and disagreements. If they bring more facts and values to bear in a reasoning process, the outcomes of processes of decision or belief formation tend to be deeper entrenched in stable reasons rather than mere whims.

Focussing backwards is unavoidable if we want to draw any systematic lessons from the past. If directed towards the past, reasoning can analyze and evaluate what we then believed and wanted with our actual accomplishment. As part of the inventory of organizational learning, evaluations of past reasoning and decision-making may hold some of the keys to future wisdom.

There is a normative aspect in executing and evaluating reasoning. To be reasonable is to be able to reason well. Good reasoning will tend to draw the right conclusions from the right information more often than bad reasoning does. Reasoning, if well executed, relies on procedural knowledge. It involves being “properly” responsive to information. A decision-maker can overreact to new, worthless information. Or she can ignore strong indications. Both are errors of reasoning. Reasoning well involves taking the precautions to be “properly” responsive to “proper” information.

To sum up, if we wish decision-making to accomplish a better future than random decisions, to communicate, test, and entrench more stable views among present stakeholders and to learn from past successes and failures, reasoning is an inevitable part of such decision-making.

Reasoning deals with two kinds of uncertainty problems

Reasoning improves on our knowledge or on our clarity. It increases a decision maker’s certainty in her beliefs and judgement or in the certainty in her conceptualization.

Correspondingly, there are two sources of uncertainty, epistemic uncertainty and conceptual uncertainty. Epistemic uncertainty is due to incompleteness of knowledge, i.e. ignorance. Conceptual uncertainty is due to incompleteness of meaning, or intention. Even if you knew every single fact about a place – climate, vegetation or geology – you might still be uncertain whether it is “suitable for hiking”. The latter uncertainty can only be reduced if we clarify whose hiking we are discussing and the preferences and abilities of those persons.

By reducing epistemic uncertainty of beliefs, judgments, verdicts or decisions one improves on their justification. By supplying more and better evidence, one can improve on the accuracy and the legitimacy of beliefs and decisions.

By reducing conceptual uncertainty, one elaborates on the concepts by means of which we think and decide. Conceptual uncertainty and its effects on reasoning have long been studied in the forms of vagueness or ambiguity (Rolf, 1981). An updated survey is found in Smithson (2004).

Reduction of one kind of uncertainty does not automatically reduce that of the other. When science reduces our epistemic uncertainty about facts, new conceptual uncertainties can arise.

For example, it seemed for many years that the answer to the following question was unproblematic:

How many planets are there in the solar system?

Recently, however, the traditional planet Pluto has been found in peculiar company. The Kuiper belt, of which Pluto is a part, contains some 100 000 other objects. Some of them have the size of Pluto and one is actually larger. Pluto is very different from the other planets of the solar system. One conceptual decision might be to define “planet” in a way that excludes Pluto and the rest of the objects in the Kuiper belt. Another conceptualization would include Pluto, but then it is problematic whether other objects of the Kuiper belt should be included as well.

The growth of knowledge in the sciences might reduce epistemic uncertainty and simultaneously increase conceptual uncertainty. When science discovers new facts, old concepts and terms no longer fit the facts. New conceptual definitions and delimitations need to be drawn in ways that seem consistent and coherent with the scientific enterprise.

Both kinds of uncertainty are also present in ordinary language and “common sense”, influenced also by experience, popularizations of older science, supposed facts, prejudices, myths, and political and commercial propaganda.

The two types of sources for uncertainty apply not only to cognition but also to values and norms. Administrative terminology draws on compromises between science, folk wisdom, supposedly moral and religious commands, legal considerations, and political expediency. Conceptual elaborations might be called for in order to treat proper things in a proper manner. An example is the legal concept of death. When medical technology enabled hospitals to keep a person’s blood circulating in spite of serious brain damage, legal decisions fixating the concept of death were called for.

We might be uncertain about the application of environmental regulation on both grounds. Epistemic uncertainty might prevent us from making up our minds, when our knowledge of laws and facts are insufficient. Conceptual uncertainty might prevent our decision, if the legal concepts and regulations are dim.

Decision support tools for epistemic uncertainty

The MARE-project is a Swedish state financed R&D project running from 1999 to 2006 and involving more than forty researchers and technicians. Its objective is “to develop a user-friendly decision support system (NEST) in order to make estimations of cost-effective measures against eutrophication of the Baltic Sea possible”.

MARE is based on causal models, involving effects on seven sub basins of the Baltic by variations of 16 mitigation measures in 23 drainage regions. Parameters can be changed, one can exclude measures and countries, and the model permits sensitivity analysis. The causal model is coupled to various cost measures, enabling users to calculate cost efficiency of various types of interferences, conducted in different countries. The outcome of the MARE-project is the software package NEST. A rich set of user interfaces allows graphical representations of effects of various measures taken:

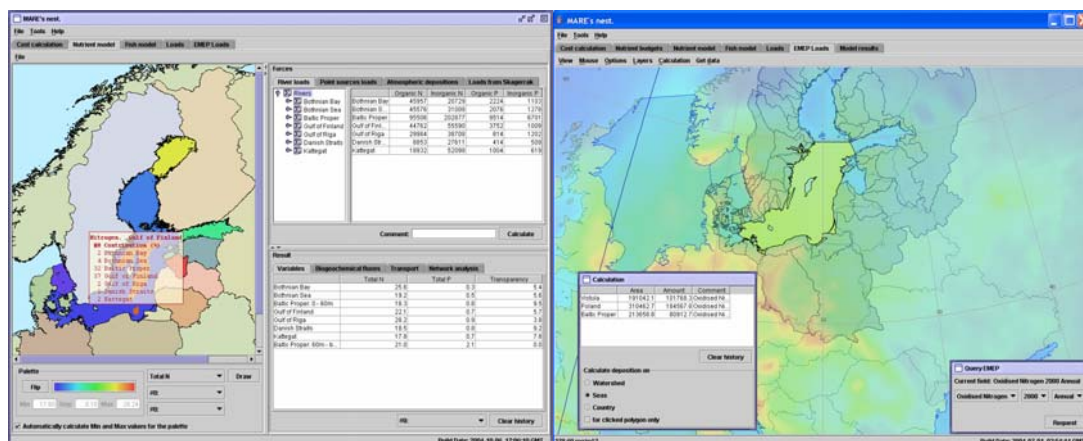


Fig. 1. Graphs of causal and economic modelling in NEST.

NEST is a very elegant way of coordinating available scientific knowledge, both as to causes and costs in order to present them to decision-makers. The project and its software product have a focus on validation of the scientific models and refinement of the input data.

There is no question about the importance of coordination of scientific and economic aspects. My point here is that even if NEST aims to reduce epistemic uncertainty, the conceptual uncertainty is not dealt with. This is admitted in the project description:

... there is a significant uncertainty in the future decision-making process for the Baltic Sea marine environment when Poland and the Baltic States will be members of EU. The relationship between EU, the member states and the international conventions have yet to be clarified. This means ... that MARE has a 'moving target group', and that the 'decision agenda' for the improvements of the Baltic Sea environment is unclear. This demands a large flexibility in our communication plan (MARE, Phase 2 A7 & A8, rev. 2003-02-20, p. 31).

The project has presumably proceeded under the strategy that, *first*, one has to get the facts, causes, and costs right, then, *second*, one has to place the decision support tool among a decision-makers with an agenda suitable to the tool, and with receptivity to sophisticated analyses provided by the NEST tool.

The approach is driven by a scientific desire to reduce epistemic uncertainty *in isolation* from the conceptual uncertainties facing decision-makers with an agenda relevant to the Baltic. I am not disputing that NEST can provide a reduction of epistemic uncertainty. In fact, it has already contributed to focussing the debate on the balance nitrogen-phosphorous.

But I wish to point out that in decision-making about the Baltic, there is *also* considerable epistemic uncertainty of a very elementary kind, blended with substantial conceptual uncertainty. Such sources of uncertainty are not addressed by MARE or NEST. Where MARE reduces one kind of uncertainty, another kind of uncertainty might come to the foreground.

Conceptual uncertainties in environmental deliberation

Fact-value uncertainties

Swedish environmental policies towards the Baltic have come to focus recently. In 2005, a report by an international panel of experts concluded that the Swedish environmental policy, related to the purification of the Baltic, had targeted wrong problems. The decisions about purification taken 15 years ago were based on scientific majority view about the key role of nitrogen. Now, there is instead a widely spread disagreement about the relative importance of nitrogen versus phosphorus in purification. Roughly 10 billions SEK (roughly 1,1 billion Euro) have been invested towards the elimination of nitrogen with marginal, or perhaps even counterproductive effects.

In the Swedish Parliament, the failed investment has led to an interchange about “Prestige and serious confusions among researchers and authorities about cyanobacterial blooms in the Baltic Sea” (Interpellation 2005/06:83). Members of the Parliament referred to a conflict between two groups of Swedish scientists, identified as “the nitrogen group” and “the phosphorous group”.

Among the researchers, a heated debate has ensued, reported in the largest newspapers and news agencies (TT, 2005; DN, 2005):

“Billion purification has missed phosphorous problem”

“Researcher brawl about the Baltic”

Scientific facts and models are highly contested among scientists. Such deep scientific disagreement would caution wise politicians, or civil servants, not to prompt more investments. Not so among the scientists interviewed. The researchers quarrelled over political recommendations concerning strategies and policies for dealing with environmental problems of the Baltic. One issue of contention is whether purification should be where it is most cost efficient, i.e. in Poland, or whether it should take place where the Swedish tax-payers see effects.

None of the professors interviewed has any political mandate to set the goals or select strategies for environmental policies. Furthermore, the researches disagree about the very facts on which their policy recommendations are based. According to one school, the Baltic has undergone a “regime shift”, meaning that past tendencies cannot be extrapolated into the future. A regime shift would imply that the state of the Baltic cannot be reversed, or at least not by known means. At worst, its state of pollution might be irreversible, and investments for purification would have little or no effects.

The scientists involved have stepped into the role of politicians. Such transgression of role, responsibility, and competence is not uncommon. There is a tendency in inflamed debates, on the borderline between science and politics, that politicians act as incompetent researchers, misinterpreting facts, while researchers act as incompetent politicians, misconstruing the policy goals (Adelman, Stewart & Hammond, 1975; Hammond, 1996).

Uncertainty about boundaries of target and priorities

In a recent scientific study of the efficiency of purification, the authors note some peculiarities of the Swedish national environmental policy about the Baltic (Elofsson & Gren, 2004).

A peculiarity is that the goal statement does not make it clear whether nitrogen should be minimized in the worst polluted parts of the Baltic, or whether the contribution of nitrogen south of Åland should be minimized. Does the goal statement concern Swedish contribution south of Åland, or does it concern the outcome for the worst polluted parts? The uncertainty about the goals creates uncertainty about the means.

A second problem is that there is no priority or trade off between sub goals. Three sub goals are stated, two related to air emissions, one to water emissions. Motivations or clues towards implementation are lacking.

Third, the policy involves both ends and means and the means are not cost efficient in relation to some of the goals. If the goals are what they are said to be, it is hard to understand the means chosen at the political level (SOU, 2000).

Finally, the goal statements rest on a peculiar Swedish presupposition. The Baltic is, according to Swedish authorities, sensitive to nitrogen emissions only south of the Åland archipelago. In contrast, EU thinks that nitrogen emissions north of Åland can also contribute to eutrofication. It seems that the Swedish problem definition depends on the means available.

The importance of goal setting is well known. If we do not know the aim of our effort, there is no way of saying whether it was successful or not.

Uncertainties about real intentions

A particular heroic goal setting lends itself to our admiration:

If the Baltic has undergone a regime shift, it probably will not suffice with present measures or measures of the same kind. It is hard to say which extra measures will be needed, but in all likelihood, very extensive measures will be needed to bring back the Baltic to the condition it had in the 1940's. Such measures could involve decreasing emissions from all sources close to zero or perhaps to the level of the late 19th century.... We do not today know which measures would be needed or whether they are technically and economically realistic. Nor do we know which resources would be needed to bring about more extensive measures. In spite of the uncertainty about scenario (i.e. the possible regime shift), the government should now prepare to handle such a situation... (*Strategi för hav och kust utan övergödning*, 2005).

The lack of realism is striking. We do not know the causal processes that drive the change. If the Baltic has undergone a regime shift, measures against nitrogen emissions might have marginal effects, no effects, or possibly even counterproductive effects due to the balance phosphorous-nitrogen. The medicine we would select, if we knew that no regime shift has taken place, might make the patient worse if there has been a regime shift.

In spite of our ignorance as to whether the goal can be achieved, this strategy calls for our preparation for the most extreme measures. Clearly, the strategists have forgotten the notion of adaptation, that is to recognize hard facts we cannot change, give up unrealistic goals and concentrate limited resources where they can produce any desired effects.

Heroic declarations about extreme measures cannot be made credible. As soon as the costs and effects can be estimated, unrealistic goals will be abandoned by any rational decision maker – hopefully before they have drawn any real costs. It is impossible to make a reasonable person believe in, or freely act towards, obviously unrealistic goals.

We might therefore retain reasonable doubt whether unrealistic goals are intended for implementation. Civil servants are handed two kinds of goals, those that are to be implemented and those that cannot be and probably are not even intended for implementation. Should civil servants focus on the realistic goals only, or are they also responsible for some symbolic manifestations of the unrealistic goals as well? At best, we land with an open, rhetorical agenda and a hidden, real agenda. At worst, rhetorical heroism can paralyze the mechanisms for decision-making and implementation, and commit the machinery to pay lip service to a symbolic manifest nobody believes in. False heroism on the political level gets embedded in double-thinking or in cynicism at the implementation level where real effects of real resources matter.

Uncertainties about priorities and conflicts

The interpretation of the notion “sustainability” is open to conceptual uncertainty due to lack of relative weights and priorities. In its normal use, the notion of sustainability contains three aspects: ecological, social, and economic aspects. When the notion is translated into legally binding regulations on a national level, uncertainty might arise from absence of priorities. (*Ingen övergödning*, 2003).

For instance, the Swedish law and legal processes are open to various interpretations about these three components. Is, for instance, the ecological aspect an absolute restriction on plans and projects, only permitting yes/no, or is it an aspect that can be traded off so that some ecological infringement can be compensated by high economic or social benefits?

The laws themselves are open to both interpretations. As a consequence, different parts of the national administration take different stances on the application of the law. While the environmental bureaucracy opts for a maximal interpretation of the ecological restrictions, the planning bureaucracy opts for milder interpretations trying to frame decision-making processes circumventing the environmental bureaucracy (Emmelin & Lerman, in press).

Uncertainty about framing

Framing uncertainty occurs where deductively equivalent descriptions give rise to different preferences or different epistemic foci. A well-known example is the “Asian disease” example, presented by Tversky and Kahneman (1981):

Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimate of the consequences of the programs are as follows:

- If Program A is adopted, 200 people will be saved.
- If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved.

Which of the two programs would you favor?

Here, a majority (72%) preferred to save 200 lives for certain, rather than gamble on saving a larger number. But a different framing of the consequences gave another result:

- If Program C is adopted, 400 people will die.
- If Program D is adopted, there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die.

Which of the two programs would you favor?

In this frame, a majority (78%) preferred to gamble, rather than accept a sure loss. However, the two frames are logically equivalent. By framing consequences in different ways, it has been proved possible to lead subjects into inconsistency. Even when the persons are made aware of their inconsistency, and offered to remove it by settling on one of the frames, many of them found it impossible to make up their minds.

We might expect framing effects in environmental decision-making as well. If decision-makers formulate regulations, prohibiting a certain substance in higher doses or levels than X, it logically follows that they allow it in lower doses or levels than X. We might suspect that deductive inconsistency will arise in such cases.

Reasoning models and two kinds of procedures

Reasoning models involve two types of procedures

Reasoning is about inferences. I will here use “reasoning” to cover two types of procedures related to inferential activities. One is to interpret, formulate, or symbolize the informational stuff providing the input to inferences and to reinterpret, reformulate, or symbolize the information coming out from the inferences. The other type covers the handling of the complexes of inferences linking input with output.

In idealized cases, these two types of procedures can occur as separable activities. For instance, in lower school grades, children are presented with artificial problems like: “Eight men can dig 40 meters of ditches in five days. How much can 14 men dig in twelve days?” To solve such a problem, one first translates it into a suitable representation, e.g. in the form of equations, putting the x’s in the proper places. This is the *interpretation process*, taking us into a suitable symbolism. The *inferential process* applies algorithms to that symbolism, teasing out an identification of the unknown x. The latter is an inferential process, purified. Finally, one reinterprets the symbol x into an ordinary language answer to the teacher.

This idealized reasoning model enables us to illustrate two separable types of reasoning procedures and distinguish interpretational procedures from inferential procedures. As soon as we move beyond the simplest models and beyond schoolbooks, reasoning processes tend to merge interpretational and inferential procedures. The standard scientific answer to the lay folks is “It all depends on what you mean by so and so”. If the layperson meant A, then the answer is such but if she meant B, then the answer is otherwise.

In normal reasoning, interpretation and inference blend. To keep track of reasoning procedures, we have to pay attention to two dimensions: that we do not distort content and that we move in the right inferential direction without stepping too far beyond what the previous steps permit.

Inferential procedures, their theories and practice

We all recognize openly inferential activities, for instance when other persons say “hence”, “therefore”, or “firstly, secondly, and thirdly”. These phrases typically signal that a conclusion is inferred from something else. An “inference” is a structure, containing a conclusion and some premises, intended to underpin that conclusion. Both input and output of an inference are symbolic, e.g. the content of a decision, a proposal, a hypothesis, an explanation, a prediction, a diagnosis, or a statement of fact, or declarations of aims, values, norms, and principles. Often, the symbols are clad in verbal forms, but we admit maps, diagrams, and other conventional representations as well.

Inferences can take place in the minds of persons, in publications, or in social arenas. There are no limitations to the content of inferences, other than that it be symbolic representations. By a “symbol” we here mean a representation, by convention or similarity connected to whatever it purports to stand for. Abstract pieces of mathematics and concrete events and processes may be the object of inferences. We can make inferences about past, present, and future, about good and bad courses of action, and about right or wrong policies, as long as they are symbolized.

Inferences can go very wrong and they often do. We need to distinguish good inferences from bad, or at the least, better from worse. Such distinctions will introduce standards of evaluation into the study of inferences. Such standards are, in a certain sense, normative or evaluative.

The normative element of reasoning skills does not imply that such norms are culturally or socially arbitrary, like table manners, or manners of greeting one another. As Bertrand Russell reminded us, if chickens had had access to more sophisticated inductive reasoning procedures, they would have played a less prominent role in human cooking.

Bad inductivists will tend to issue wrong predictions, wrong diagnoses, and mess things up more often than good inductivists, other things being equal. Reality, not primarily social sanctions, punishes bad reasoning. If social sanctions are directed against instances of bad reasoning, this has a justification beyond mere social conventions.

One distinguishes between deductive and inductive procedures and standards for constructing and evaluating inferences. In deductively valid reasoning, true premises force the truth of the conclusion. With true premises in a deductively valid inference, we can exclude the falsity of the conclusion. Even in inductively strong reasoning, falsity might slip into our conclusion, in spite of our true premises. In good inductive inferences, true premises improve on the probability or likelihood of the conclusion but are no full guarantee.

Standards of good inferences have, to some extent, been codified in the form of reasoning principles or reasoning paradigms. In deductive inferences, the syllogistic of Aristotle presented a set of principles for good syllogistic inferential schemata. Euclid’s elements provided an exemplary paradigm for the structure of scientific inference for schoolboys of two millennia. The formalization of predicate logic and the theorems of mathematical logic in the 20th century provided deep understanding of the nature of deductive inferences.

Human understanding of induction is far less advanced than that of deduction. Inductive methods for statistical testing were initially developed in the 1920’s and onwards. Then, a desire for scientific objectivism and purity severely restricted the interpretation of likelihoods. But, since the 1990’s, a revival of Bayesianism has moved inductive procedures beyond the limits of strict objectivism. The interpretation of the key concept of probability is still controversial among theoreticians of inductive inference. Discussions about confirmation,

natural kinds, projectible predicates, and causality show that, at present, there is not a unique, well-defined collection of science-based principles of inductive inference.

There is a stark contrast between the well established metathory of deduction and the shifting or hazy metatheories of other forms of reasoning: induction, abduction, causal reasoning, legal reasoning, or moral reasoning. Underlying decision-making, there is a plethora of reasoning models. A basic difference extrapolates from the Weberian distinction between consequential rationality (Zweckrationalität) and deontological rationality (Wertrationalität). Consequential rationality is more prominent in models of economic decision-making; deontological rationality is based on the extension, articulation, and application of principles or prejudices, typical of legal reasoning. The role of cases and examples versus principles is still in the making. Deduction, and our thorough understanding of its principles, is very untypical for the knowledge we have of reasoning.

A manifold of interpretational procedures

The intellectual arsenal proper for reasoning includes manoeuvres of interpretation. The legal professions have long found it necessary to develop conceptual techniques for pinning down the human limits of responsibility and public tolerance for deviant behaviour.

The toolbox of interpretation includes definitions and delimitations. Definitions replace highly ambiguous terms with terms that are made less ambiguous where ambiguity can do damage to overall reasoning. Take, for instance, notions like “risk”. Expertise need to be careful in keeping their various risk concepts apart in order to answer the right question and base it on the proper arguments.

Before one enters into reasoning processes, one has to tidy up some of the vocabulary. Take, for instance, the vicious question: “Can you guarantee that it is absolutely safe”. It is often fired at experts from self-appointed spokespersons for laypeople. If “safe” in that context means “probability of damage equals 0”, it is unsafe to sit in one’s backyard where meteors might fall. If a process of reasoning involves the undefined term “safe”, this process might go very wrong very soon in the sense that participants know less and feel more antagonistic at the end of the debate than when they started. One needs to settle some interesting upper level of probability as the bound of “safety”. But which level to choose can only be settled by further reasoning about tolerance and values.

Delimitation has to do with drawing spatial, temporal, and causal boundaries. Before deciding or drawing any conclusion, we may need to know where the spatial boundaries begin and end, which time frame is used and how far the effects are traced. The outcome of our scrutiny of a project or plan may depend on such delimitation. As we saw, the debate about the Baltic depends essentially on such delimitations.

Distinctions, i.e. making it explicit what one does not mean, is one way of eliminating confusion. In discussing responsibility, for instance, it may be a constructive move to exclude either moral or legal responsibility, depending on the concluding destination we wish to arrive at. Distinctions between facts and values might clarify reasoning about the Baltic.

Examples can often also be used to tie down the concepts we employ in our thought. For instance, in Anglo-Saxon common law, large parts of the intellectual edifice are carried by cases, rather than by explicitly defined principles. Principles and similarities come to surface only via the particular cases where they are brought to bear.

Indications of relative weight or priorities are needed for handling conflicts of goals or of principles. Executives can find themselves uncertain in a situation with conflicts between

goals or between principles. A conflict of goals occurs when a decision-maker sets goals A and B and the executive finds herself in a situation where every action that leads towards A leads away from B. A conflict of principles P1 and P2 occurs in a situation where the executive finds that one and the same action is commanded by P1 but prohibited by P2.

Definitions, delimitations, distinctions, elaborative examples, and indications of relative weight or priorities demand conceptual labour. They consume time and effort, both to construct and to absorb. All our concepts are provisos – it is always possible to invest more labour into them. Normally, concepts and delimitations are chained to one another. In order to clarify one single point under discussion, we often need to clarify a number of related terms and issues. In order to clarify the term “murder”, one needs to clarify the notion “intention” and the premises for inferring the presence of intention behind an act. Even if definitions and delimitations seem to concern only an isolated building block, a wise reasoner will be cautious not to tie down any single item so hard that she loses the elasticity of the whole edifice of reasoning.

Decision-making needs to elaborate both dimensions of uncertainty

Normally, a decision-maker will be uncertain in both dimensions. Not being an expert, the decision-maker cannot be expected to frame an exact question in a terminology that best suits her interest. It is almost never sufficient for the expert to provide tools for reducing epistemic uncertainty, unless such reduction is coupled to tools for reducing conceptual uncertainty as well. As we saw in relation to the MARE-project and the example of the planet Pluto, a scientific reduction of epistemic uncertainty might even increase conceptual uncertainty.

Normally, decision-makers want to know whether facts and science are “favourable” for a plan, project, or course of action. Only under the most ideal conditions can a decision-maker provide an exhaustive definition of a goal or a set of preferences. The aims of decision-makers are often complex and involve negative, tacit aspects. In setting the Goal G, the decision-maker implicitly assumes that G can be obtained without considerable detrimental effects on A, B, C... where the negative goals have the form of an undefined, open-ended set that could not be specified by a decision-maker beforehand.

The decision-maker cannot always frame the proper questions in relations to her plans and projects. Decision-makers would often like to know about “facts and causes of relevance to my enterprise, plan, or project”, but expert knowledge normally cannot be classified that way. The facts, laws, and models, stored in scientific knowledge, only exceptionally carry tags: “relevant for the project X”.

Wise and helpful expertise will try to help conceptualize unexpressed intentions of their decision-making clients. A classical example of helpful expertise stems from the development of radar in the U.K., when Europe headed for the Second World War. Military experts of the 1920's and 1930's focused on the immense damage expected from bombing raids targeting civilians. Was there any way of preventing such attacks? For logistical reasons air patrols were not feasible. In Britain, the committee for Scientific Survey of Air Defence passed a question to scientific expertise about the possibility of a death ray. A short calculation showed the impossibility of generating sufficient amounts of energy to have any effects on incoming bombers. “Not possible”, was the scientists' answer. But wisely, the scientists added the counter question: “But perhaps you would be interested in detection technology instead?” That wise counter question started a rapid, directed development of radar as part of a large-scale air defence system. It provided the narrow margin needed for the nation to prevail in the Battle of Britain during the critical months of 1940.

The role of conceptual uncertainty for modelling

Sensitivity and fuzziness overlook the depth of conceptual uncertainty

There are some commonly known ways of capturing conceptual uncertainty: sensitivity analysis, interval representations, and fuzzy logic. As we will see, none of them captures all aspects of conceptual uncertainty.

Sensitivity analysis and interval analysis are related. Instead of having a decision-maker settle for a point estimate of a probability or a preference, one can try to capture her uncertainty with an interval. Sensitivity analysis studies the effect on an outcome value by varying the input value over the interval of uncertainty. Interval analysis assigns to the outcome value an interval, depending on the input intervals.

While certain aspects of conceptual uncertainty can be handled in this manner, these methods carry a cost. There is a considerable risk of *dilution* in the sense that the more conceptually uncertain factors we add, the larger the outcome interval and the uncertainty indicated by it (Smithson, 2004). The more items of vague knowledge we add as input to our reasoning, the more we would lose in precision of the output. This is unintuitive – adding new knowledge, although vague, should not automatically eradicate precision.

More gravely, intervals and sensitivity are limited to representing only one kind of conceptual uncertainty, pertaining to intervals. When we consider the uncertainties relating to fact vs. value, conflicts, and framing effects, it seems that intervals and sensitivity bear no relation to such uncertainty.

Fuzzy logic and fuzzy set theory are methods for representing the absence of a definite point value. Instead of insisting on a yes/no classification, into true/false, or member/non-member, fuzzy methods assign degrees of truth or degrees of membership. Instead of assigning a line between Sweden and Norway where each single point in the landscape belongs to Sweden or belongs to Norway, it might be that a point sometimes belongs to Sweden to 50% and to Norway to 50%. Again, this method cannot handle conceptual uncertainties relating to fact vs. value, conflicts, and framing effects.

Conceptual uncertainty is a deeper phenomenon than these three analyses assume. They all assume that *the model itself is determinate*. Therefore, they try to locate all uncertainty in the variables and parameters of the model. But conceptual uncertainty can concern the very choice of a unique model.

Conceptual uncertainty, malign (“wicked”) problems and essentially contested concepts

In the design sciences, one often draws a distinction between two types of problems. On the one hand, there are benign or “tame” problems, on the other malign or wicked problems. Benign problems can, in principle, be solved using known methods, and there are known principles for evaluating possible solutions. Benign problems can be highly complex and forbiddingly difficult, but there are ways of solving them, drawing on a rough consensus about relevant methods, if not always the results.

Malign or “wicked” problems do not have that character. The stakeholders might not agree about the conceptualization of the problem. Expertise cannot settle on what level of abstraction the problems are to be described or dealt with. There is no path to establish consensus behind a proposed solution, i.e. there are no “stopping rules” for deciding when a

solution has been reached. The solutions tend to generate new problems of a similar kind, or the problems change when they are dealt with (Rittel, 1973).

At first, it might seem that the classification into benign or malign problems depends on the state of scientific or expert knowledge. If, and when, this is the case, research and expertise might transform malign problems into benign.

While it is true that research can lay bare some of the mechanisms underlying malign problems, often it cannot completely settle which model to choose. Different parties to the conflict conceptualize different aspects of a problem. The choice of one model or conceptualization over another will make the expert side with one party of a conflict. To Western specialists in epidemics, it may seem that HIV is to be modelled as an epidemic disease. To African politicians, it may seem that HIV is to be modelled as the aftermath of colonial exploitations of Black Africa. The choice of model is not always a purely cognitive choice.

Deep conflicts over wicked problems often involve conceptual uncertainty. Often attention and problem focus are fought over. Key terms of discourse function as strategic landmarks that attract intensive struggles between adversaries. Models and conceptualizations can become strategic assets in a conflict, a phenomenon described by Gallie as the use of “essentially contested concepts”. The proper use of such concepts, he claimed, “inevitably involves endless disputes about their proper uses on the part of their users.” (Gallie, 1956; Connolly, 1983).

Malign problems always involves some conceptual uncertainty. Conceptual uncertainty is a necessary condition for malign problems. When two stakeholders in a malign problem conceptualize aspects of their conflicts by the same words, expressing different conceptualizations and the conceptualizations are strategic assets for the parties in conducting their conflict, an essentially contested concept arises. War, crime, religious conflicts, economic development, political failures, or growing environmental disasters include verbal phases with cognitive and strategic verbal elaborations. Different parties exploit conceptual uncertainty for gaining the upper hand in the conceptualizations of malign problems.

Reduction of conceptual uncertainty is more art than science

There are a number of procedures for reducing conceptual uncertainty, first articulated in Aristotle’s *Organon* (“Tool”) about 340 B.C. Such procedures have been taught in courses of informal reasoning for centuries, sometimes integrated with techniques of formalization, sometimes with techniques of concept formation in sciences and in law.

While the inferential procedures of deduction are largely open to formalization by algorithms, the interpretational procedures are far less so. First, interpretational procedures depend on real world knowledge. This becomes obvious where the real world knowledge or technology has been largely lost. Take, for instance, books drawing on the terminology of sailing technology of the 19th century, e.g. a novel by Joseph Conrad or the Hornblower books by C.S. Forester. It is impossible to understand the full content of the terms without having some knowledge about the structure and processes of handling large sailing ships.

Second, interpretation depends on knowing the intentions of the decision-maker, openly expressed or tacitly understood. To clarify the intentions, we need to settle spatial boundaries, temporal aspects and strength, and likelihood of causal effects on an indefinite range of

objects. Often, several decision-makers are involved and they may be acting strategically, concealing their aims.

Third, good interpretation, as exemplified by the radar case mentioned above, presupposes that the experts try to match solutions that can be glanced within their epistemic horizon, with goals that can be glanced from within the decision-maker's horizon.

It does not seem possible to supply an effectively decidable, mechanical procedure for enumerating and testing relevance of real world knowledge; to inspect tacitly presupposed negative goals of decision-makers; or to survey valuable knowledge within reach. There is no software package that by itself can deliver solutions to known and common types of interpretation problems.

Reduction of conceptual uncertainty interacts with epistemic uncertainty. It is largely a matter of tact, related to the case at hand that determines which techniques reasoning would profit from, and which real world knowledge might be relevant.

Modelling wicked problems, or essentially contested concepts, is far beyond what can be accomplished by scientific methods designed to eliminate epistemic uncertainty. Customary applications of science based models and methods will not by themselves provide complete solutions, or management, of malign problems or conflicts, conducted with essentially contested concepts. They also need to be coupled with methods of another kind. Examples of such methods are dialectics and negotiations.

Decision support for conceptual uncertainty: dialectics and negotiation

Dialectical Inquiry and Athena Standard

In a non-Hegelian, non-Marxian sense, dialectics has its root in the Socratic methods for conducting a dialogue. The Socratic dialogues relied on methods of definition and conceptual elaboration in order to test implications of definitions. The name "dialectics" was transferred to the medieval university to cover the use of logic. In the hands of Pierre Abelard, dialectics was connected to pro-et-contra argumentation. It has been part of the university curriculum for centuries, often connected to courses in elementary reasoning.

Recent attempts to stabilize a core competence of dialectics have been done by the philosophers Arne Naess (1966) and Michael Scriven (1976). The art of reasoning pro and contra is connected to arts of interpretation and conceptual elaborations. In the 1960's a large number of argument analysis in political science arose from R. A. Levine *The Arms Debate* (1963). The application to environmental problems of a similar framework, based on Stephen Toulmin's argument theory, has been proposed by Parkin (1996; 2000). Argument graphs have been proposed for legal reasoning by Wigmore in the 1920's. The applicability of argumentation software to wicked problems has been proposed by Buckingham Shum (2003).

In the modern version of dialectics, two or several parties to a conflict may argue pro or con certain simple or complex issues. A clash of intellectual standpoints is divided into a number of main theses. Each of these is supported or undermined by set of nested premises, constituting a tree. Each premise can be evaluated as more or less *acceptable*. A subordinate premise can be evaluated as more or less *relevant* to a superior conclusion.

While ordinary spoken or written language is linear in time or in space, the structure of each argument is hierarchical and recursive. For instance, a state attorney may try to prove that J.D.

committed the burglary by using testimonies from eyewitnesses as premises pro the guilt of J.D. The defence may argue against the reliability of the eyewitnesses and so forth.

The reconstruction and evaluation of argumentation is facilitated by tree graphs. There are a half a dozen internationally known software packages, suitable for constructing, representing, and elaborating on argument trees. Our package Athena Standard is one of these packages:

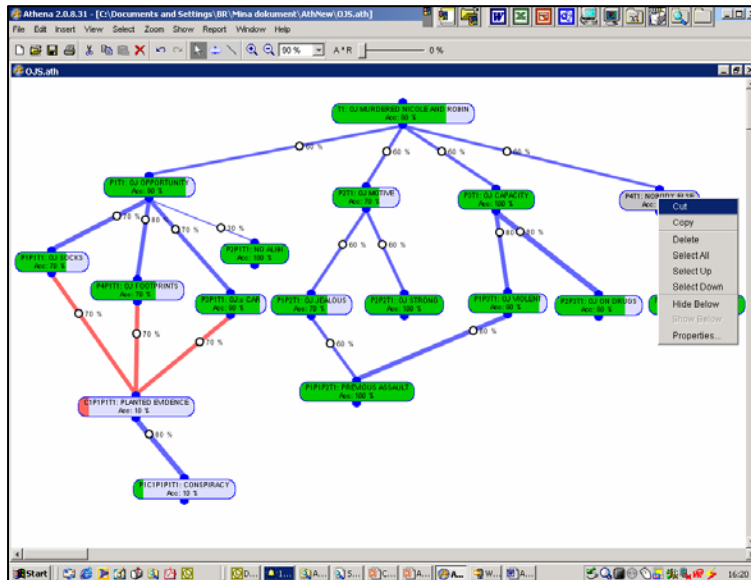


Fig. 2. Athena Standard, showing an argument tree with arguments pro (green) and con (red). Acceptability of premises and their relevance shown in tree.

Negotiation and Athena Negotiator

Negotiations have always been an option for coordinating interests between two or several parties. Negotiations may end with a settlement between parties involved where they agree on a common solution. If the parties interpret the solution in the same manner and stick to the agreement, they may succeed in benefiting from coordinated interests and putting aside conflicts of interest.

Negotiations involve a set of skills, partly drawing on science, partly on art. Analysis of negotiations rely on two different models that issue different recommendations. There is a more legalistic model, based on Fisher & Ury's model (1983). According to this legalistic perspective, negotiations are seen as comprising two agreements. First the parties agree on principles for the settlement (*quid juris*), then they agree on facts determining the application of principles (*quid facti*).

Another, optimizing model for negotiations, is a natural extension of Howard Raiffa's opus on negotiation: *The Art and Science of Negotiation* (1982). It is based on Multicriteria Decision Analysis for multi-party actors. According to this theory, each issue can be evaluated on a number of dimensions, weighed by a linear function combining weights and values of negotiation outcomes. Linear models are general in application, well understood, and insensitive to small user errors in the selection of weights or values.

Multicriteria decision analysis has been used in planning and environmental decision-making (Dodgson et al., 2001). In a single user version, the theory lends itself to optimization. In multi-party negotiations, there is not a unique best solution but a spectrum of negotiation

outcomes along an “efficient frontier”, beyond which it is impossible for all parties to improve their lot. Our package for supporting negotiations is seen below:

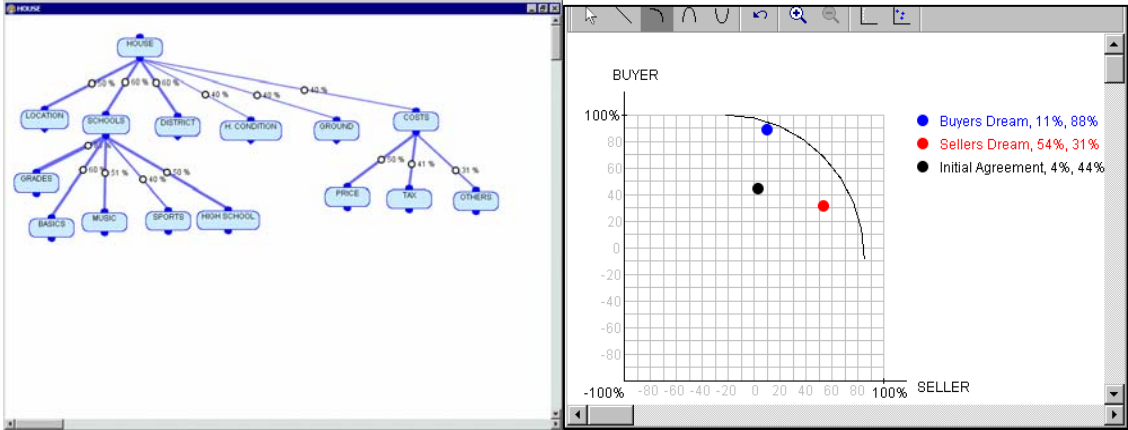


Fig. 3. Athena Negotiator, showing value analysis for one party (left) and outcome window for two parties (right), showing three possible negotiation outcomes and the efficient frontier.

While the evaluation of negotiation outcomes for each of the parties can be assessed with a rational model, the joint outcome cannot. Nor is there any known scientific way of optimizing the very process towards an agreement for any of the two parties. Furthermore, given the fact that there are two distinct models of negotiation, there are not unique models of best negotiation processes.

Some common features of Dialectic and Negotiation

Dialectic inquiry and negotiations share a number of features. First, in both kinds of reasoning, one employs procedures for managing conceptual uncertainty. It is common both in dialectic disputes and in negotiations that opponents do not share the same conceptualizations. Interpretations and delimitations are used to reduce the number of interpretations, or to coordinate the way they are handled.

Dialectics and negotiations cannot single out “the best solution”, even if given all data. The quality of solutions depends on choice of conceptualization. One might hope for the elimination of some solutions, which are bad in all respects, or for all parties concerned. Reasoning may weed out the really bad alternatives without singling out any uniquely best solution.

In dialectics and negotiations, it is therefore necessary to deal with classes of models and solutions rather than single models or solutions. A class of models might be generated by a multiplicity of conceptualizations. For instance, in dialectics, the opponent and proponent might not frame their standpoint using exactly the same concepts. Prosecutor and defence attorney might present deviating conceptualizations. In negotiations, the parties might differ about the boundaries of the object negotiated about.

Dialectics and negotiations are typically conducted between multi-party actors and representatives. Their interaction is regulated through assignment of social roles. Often, these

roles are asymmetric and carry different epistemic obligations, for instance in the form of “burden of proof” (Eemeren et al., 1996).

Reasoning in dialectics and negotiations involve activities between actors. Hence, communication is essential for success. Such communication can, to some extent, be evaluated from a logical point of view, judging it from the stance of an idealized logical standpoint. To some extent, a strategic element enters, making it partly a power contest, measuring the communicative force and shrewdness of the actors.

Dialectics as well as negotiations are often conducted in multiple arenas, separated by time and space. The dialectician frames her standpoint against a background of standpoints by other dialecticians, presented elsewhere orally or in writing, but known to the recipients. The negotiating parties are often representatives with limited mandates, who have to secure their concessions elsewhere, in other negotiations.

Skills in reasoning in dialectics or negotiations, therefore, involve a blend of cognitive skills, pertaining to the reduction of both kinds of uncertainty, and social skills in handling the social interaction, making the best of the social role they have been assigned. Often this role is immersed in institutional frameworks, professional culture or ethos, and organizational procedures. The cognitive and social skills are interdependent: an argument of a scientist has some, but not all, features in common with a state attorney or a used-car dealer.

The cognitive skills of dialectics and negotiations are, at least partly, representable by an analysis of a complex cognitive issue into subcomponents, and relations among subcomponents. The only humanly feasible way of handling large complexities is via analysis and synthesis. Procedures of analysis and synthesis can be improved by software tools.

Software support for dialectics and negotiations

Why would software support improve on reasoning in dialectics and negotiations? First, there are some features of software that have potential for improvement on reasoning, and reasoning skills, over and above traditional methods.

First, software enables standardized and flexible visualization. Without a computer facilitates and constrains the use of symbolism, a multitude of actors will not be able to coordinate their representations. For group discussions in preplanning, or in post mortem analysis, there is hardly any other feasible way of presenting and comparing different conceptualizations.

Second, software enables more flexible interaction with the representations. Elementary operations like cut and paste, select and copy, save or undo, enable actors to experiment with intermediate conceptualizations before proceeding to the final one.

Third, input and output of complex computations can be tested and overviewed with no delay. By manipulating a graphical input and reading off its consequences on the output, users can gain insight into the dependencies of various factors for various parties.

Fourth, standard operations can be routinized. For instance, the software can eliminate one’s worst arguments before a presentation. It can produce output reports of various formats, based on the same reasoning structure.

Fifth, storage and retrieval of previous work are much simplified. In a computer, one might store templates, representing very general features of arguments, in classical argument theory called *topoi* or *loci*.

These features are common to any skilfully built Graphical User Interface. They largely extend the capacities of reasoners before, after, and, to some extent, also during argumentation and reasoning.

Why would Athena software help improve environmental decision-making?

The decision support models from the 1960's focused on epistemic uncertainty, showing little or no concern for conceptual uncertainty. Our two Athena software models are designed to support reasoning also where both types of uncertainty occur. Methods for reducing conceptual uncertainty presuppose a mutual exchange between expert analysts and decision-makers. The reduction of conceptual uncertainty is like making up one's mind rather than finding out what is the case. The methods need be correspondingly different.

This is not to say that the reduction of epistemic uncertainty has a minor place in decision-making. Often, however, the issues for decision-making suffer from both kinds of uncertainty. Elaborate software tools aimed at a one-sided reduction of uncertainty will fail in such cases.

In reducing epistemic uncertainty, there are indications that very simple modelling might go far towards improving decision-making. Linear models with unit weights can improve decision-making beyond human expertise (Dawes, 1988). Heuristics based decisions, drawing on a single, dominating factor can, in many cases, produce better decisions than more sophisticated experts (Gigerenzer et al., 1999).

This is so, not because of the immense precision of simple and rough decision models, but because of their consistency, robustness, and the stochastic behaviour of the system whose behaviour we predict. The dependencies in the very systems themselves are so weak that we cannot reduce much of the epistemic uncertainty by increasing the precision of models or by collecting large sets of data.

There is room for a particular kind of decision support tools in situations where both kinds of uncertainty are vicious. In such situations, decision support tools need to promote consistency, robustness of analysis, flexibility of use, and a low user threshold to enable decision-makers to understand just enough for avoiding the worst.

Athena software tools deliver exactly that. They will not replace or compete with decision support tools for high precision modelling of complex causal interaction about which much is, or can be, known. But where data are rough, the underlying non-deterministic systems are largely unknown, or decision-makers are confused, Athena software tools need not lie idle.

How and what should decision aides serve?

The key idea in software support for decision analysis is to reduce uncertainty for decision-makers. The uncertainty can concern past, present, and future. It can be either epistemic, conceptual, or some mix of the two. The two kinds of uncertainty reductions can be interdependent. If we reduce uncertainty in one dimension, we might increase it in the other dimension. If we increase the sharpness of our conceptual system, our questions will be more precise, but we may lack sufficient knowledge to answer those questions. A reduction of conceptual uncertainty may increase epistemic uncertainty. On the other hand, we might increase conceptual uncertainties in ways that make our knowledge sufficient to answer our questions.

The Grand Rationalist ideals of the 1960's lay behind large scale planning and decision-making. Very little was known about conceptual uncertainty (Rolf, 1981). If there is considerable conceptual uncertainty involved in a matter for decision-making, a one-sided reduction of epistemic uncertainty may not help much. In such cases, it will help little if we cast models for decision support in software in order to reduce epistemic uncertainty, unless we also provide some means for reducing conceptual uncertainty.

Much effort in decision support has an unbalanced focus towards the reduction of epistemic uncertainty. From a theoretical point of view, there is a lot of science-based knowledge, ready for formalization and programming. Even though many such models were discovered to be almost useless for real life decision-making 30 years ago, it can still be an exciting and challenging task to develop PC software and textbooks, supporting and explaining the inferential procedures without help about interpretational procedures.

Unless we cling to a falsified epistemology of practical decision-making, we had better admit that there is not one type of decision support tools, but several. Which kind of tool is needed, depends on the type of uncertainty present, and on the types of known procedures to help reduce it. The design of decision support tools and user procedures needs to match needs of support with capacities for the right kind of uncertainty reduction. The tools will include both software-based methods and procedures for using them in attacking uncertainty problems.

In the construction of tools for decision aid, one should bear in mind relations between the decision-maker and her decision analyst expert. That relation bears similarity to that between the patron of a restaurant and the *maitre d'hôtel*.

During the days of Grand Rationalism in the 1960's, the relation between decision analyst and decision-maker was modelled on an Italian luxury restaurant of those days. The patron enters, and finds that there is no selection possible but for the wine – the whole menu is fixed. To the surprise of the patron, a large number of wonderful dishes will be served in due course. Per se, this is impressive, but perhaps not the way a tourist, trying to get a bite on her way between the Coliseum and the Forum, would want to spend a whole afternoon.

A pretentious grandeur accompanied Grand Rationalism. All the decision-maker would have to do was to throw in her preferences into the grand rationalist complete menu. The rest was prepared for her by the kitchen and served under fanciful names. However delicious under other circumstances, the meal was prepared in complete disregard of every other demand for attention by the hurried patron.

Another relation between decision-maker and decision expert might be analogous to that of an à la carte meal in an American diner. The patron is presented with a full and free choice, guided by a bewildering battery of questions about salads, dressings, kinds of meat, and preparation, plus a lot of bonus features at extra low prices. The confused patron selects at random and receives a gigantic portion of some non-descript food combination, everything formally in accordance with her expressed wishes.

An overly laissez-faire stance on tools for decision aid might land patrons in confused choices between options and combinations of which they are ignorant. The combinations might be ill suited for one another or for the problems at hand. The American diner model leaves the patron too ignorant of the best ways to fit her decision needs with the tools available.

A third relation can be illustrated by the Scandinavian Smorgasbord. The dishes are grouped partly depending on function, partly depending on similarity. Ham and roast beef at the one end, fish dishes at another end of the table. Cheese and sweets are found at separate tables.

The patron can see for herself, get a general idea through sight and smell and pick minor nibbles for experimentation.

This is the kind of relation between decision-makers and decision experts that I would advocate. There are a large number of tools for decision support, and the choice of tools can neither completely lie on the decision analysis expert, nor on the decision-maker.

In a good choice of decision tools, one needs to know something about the tools and something about the kinds of problems and what aid the tools can bring. Decision experts often have deep knowledge about a few decision models but can be quite ignorant of a larger spectrum of decision support tools – not to mention the overall client situation.

While decision-makers generally recognize their decision problems when asked, they do not carry along lists of their needs of decision support tools. To elicit their needs is essential for good counselling. Decision-makers are often ignorant about decision tools.

Without good reasoning, there can be no decision-making, having better long-term effects on the environment, over and above decisions, drawn at random from a tombola. The failures of Grand Rationalist planning in the 1960's obscure that, today, it is possible to improve a lot on decisions with far less stultified means. The failure of the Grand Rationalist modelling of the 1960's depended on a too optimistic positivistic epistemology, dealing with epistemic uncertainty while ignoring a more pressing conceptual uncertainty. A sophisticated epistemology, with a firm basis in empirical research about environmental decision problems, can do better. This involves paying respect to both types of uncertainty, and forming decision support tools and procedures, suitable also for malign problems.

An updated, realistic epistemology, applied to tool making, stands a good chance of contributing to making decision processes and decision outcomes more reasonable.

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EFFICIENCY AND EFFECTIVENESS IN THE MANAGEMENT OF LAND-USE PLANNING CONFLICTS

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Abstract: According to one stance of planning theory, asymmetrical power relations and communication difficulties imply unfavourable odds for rational resolution of planning conflicts. But if institutional arrangements permit actors to apply calculating and communicative rationalities, the odds may change. In a study of planning cases in three Swedish towns, applications of such rationalities were associated with resolution of land-use conflicts. Unsuccessful resolution was associated with irrational behaviour. Effectiveness, in the sense of goal fulfillment; conflict resolution and plan implementation, seemed to be supported by rational behaviour. The cases indicate the need for institutional arrangements, reducing short-term risks, however. The risks are not only failing to reach a main goal and wasting resources, but also the risk for planners of being blamed for the failure. This can induce planners to play safer than the actual odds of achieving effectiveness in the long-term may justify. When risk-reducing procedures exist, however, it would be rational to enter negotiations, develop decision alternatives and support organisational learning, even when power relations appear asymmetrical and the odds for short-term efficiency unfavourable.

Key words: Land-use planning conflicts, rationality, institutions, effectiveness, efficiency

Project: MiSt 13 – Tools for reasonable deliberation.

The aims of the project are to improve understanding and to develop fruitful applications of intellectual tools for reasonable deliberation in the field of environmental assessment in strategic decision making. We aim to match normative theory about reasonable deliberation and rational judgment with actual cases and processes of deliberation and decision making. We will design combined packages of user heuristics, user methods and software techniques to increase the chances of reasonable deliberation and rational decisions.

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EFFICIENCY AND EFFECTIVENESS IN THE MANAGEMENT OF LAND-USE PLANNING CONFLICTS

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Introduction

According to one stance of planning theory, asymmetrical power relations and communication difficulties imply unfavourable odds for rational resolution of planning conflicts. Various reasons for this are given. Forester (1989:34) illustrates that *distortions of information*, preventing rational resolution of conflicts, may be due to four combinations of individual and structural factors on one hand, unavoidable and avoidable/illegitimate factors on the other. Flyvbjerg (1998) concludes from an exhaustive study of one planning case that rationality is always subservient to power. Richardson (1996) contends that Habermasian criteria of communicative rationality are insufficient to counteract distortion due to power asymmetries. Communicative rationality, according to this view, is over-emphasising consensus and process over outcomes, as well as lacking prescriptive potential and contact with everyday planning practice. The reading of Foucault has given theorists perspectives and incentives to go more deeply into the micro-processes of power that are shaping and sustaining accepted discourses, thereby questioning the discourse of rational deliberation.

There are arguments against this stance. Lapintie (1998) argues against Flyvbjerg that there is always room for rationality standing up against power through argumentation, which adheres to proposed rules of sound argument. Latour (1986) and Foucault himself (1980, 1984) point out, that power asymmetries may be difficult to identify *ex ante* and use as explanatory factors *ex post*. Power balances may shift as a result of many interacting factors, which can include rational argumentation and social mobilization, as well as the exertion of established political and economical power. Studies of big, controversial infrastructure projects, where it is politically expedient to hide goal conflicts, for example, do seem to confirm the dominance of political and economical power over rational argumentation (Richardsson, 1996, Falkemark, 1999). There are few studies, however, of the role of rationality versus power in smaller, everyday planning cases.

There are other difficulties, than those mentioned above, in applying different modes of rationality to the management of planning conflicts. Sager (1994) points out that an approach, striving for innovative solutions in trying to resolve conflict, may not be rationally justified, in the short-term, in spite of chances of succeeding in the long-term. Sager (1994:189) quotes Hirschman (1967:13) to this effect: "*Creativity always comes as a surprise to us; therefore we can never count on it and we dare not believe in it until it has happened.*" According to this view, one cannot always rationally plan for, in a sense, greater rationality, only hope for it to be achieved, sometimes against the odds.

Elster (1987) brings up another risk, relevant for planners considering the potential benefits of entering into conflict resolution efforts with uncertain outcomes. The risk is not only wasting resources without any results to show for it, but also the risk of being *blamed* for the failure. This can lead to playing safer than the actual odds of succeeding may justify (Elster, 1987:32). Professional reputation is a precious asset and more easily hurt than improved. Both bold risk-taking and prudent conservatism may lack rational justification in the short term and entail risks of professional blame.

To summarise, in trying to rationally resolve planning conflicts, there are risks of not achieving a high-priority goal, because of power asymmetries and communication difficulties. There are also risks of unnecessarily wasting resources, even when goals are clearly stated and means to reach them are available. Finally, there are risks for individual actors of being blamed for failure, for either reason.

Another stance, maintaining the usefulness and applicability of rationality in trying to resolve planning conflicts, is presented in this paper. The difficulties in rationally managing uncertainty and risk will be discussed, using:

1. A distinction between *epistemic* and *conceptual uncertainties* (Rolf, 2006).
2. A distinction between *effectiveness* and *efficiency* (Emmelin, 1998).
3. The role of *institutions* (March & Olsen, 1988, North, 1990, Healey, 1997).

These conceptual tools are brought to bear on a study of nine planning cases in three Swedish towns (Törnqvist, 2001). The outline of the paper is as follows. Various criteria of rationality, as well as outcomes of conflict management are defined and operationalized. Institutional conditions present in the cases are identified. The cases are classified and sorted. Tentative assessments of effectiveness and efficiency are made. The interaction of various rationality criteria with institutional conditions and other risk-reducing and uncertainty-reducing factors in the cases is discussed.

Rationality

Goal-directed and consistent action

Alexander (1998) takes the dictionary definition of rationality as a common basis for different rationality types. Rationality is *reason* employed in thought or action to some end. One important aspect of rationality, therefore, is related to having a *purpose* with your action. Another element is the relation to *accountability*. Rationality in planning is giving reasons to justify a proposed course of action. Rationality demands a logical and substantiated relationship between beliefs and action. The relationship can be both *instrumental*; this action leads to the desired goal, and *value-based* or *substantial*; this is the right thing to do in a situation like this.

To elucidate these relationships, Rolf (2006) introduces the distinction between *epistemic* and *conceptual uncertainty*. Epistemic uncertainty is due to incompleteness of knowledge. Conceptual uncertainty is due to incompleteness of meaning or intention, ignorance of the preferences and abilities of actors. Rolf argues that reduction of one kind of uncertainty does not automatically reduce that of the other. Even with sufficient knowledge of causes and effects, boundaries of the decision-making domain may remain vague; the priorities between goals may be unclear.

Effectiveness in the sense of achieving a main goal may seem to be in reach from an epistemic point of view, but whether the means available are also *cost-efficient* is not always clear. The relationship between effectiveness and efficiency seems dependant on the goal structure established, or not established. If there is a main goal established, *effectiveness* may be defined as reaching that goal. *Efficiency* may be defined as reaching this goal, without wasting resources, estimated on the basis of what is socially and technically possible. Usually, reaching a main goal is dependant on achieving a number of subordinate goals. Estimating efficiency is often only possible for these subordinate goals. The reason for this is that there is usually less basis for comparing means to reach a main goal, like ‘sustainable development’,

than means to reach subordinate goals, like ‘improving energy conservation in housing’. As Emmelin (1998) points out, “effectiveness studies” often turn out to be, in fact, efficiency evaluations.

Faludi (1987) concedes that rationality is always *bounded*, but underlines that rationality refers to the quality of *decisions* and not primarily of *information*, which may be insufficient (due to epistemic, as well as conceptual uncertainty). Difficulties to reduce uncertainty and attain fully rational decisions are not reasons to abstain from trying. Flyvbjerg & Richardson (2002) seem to agree, when they develop more in detail the philosophical differences between Habermas and Foucault, but also list a number of concerns and precepts they have in common. According to Flyvbjerg & Richardson (op.cit:50) both Habermas and Foucault agree that in politics one must ‘side with reason’.

Operational definitions of rationality

Decision-making rationality

Faludi (1987, 1998) refers to the classical definition by Meyerson & Banfield (1959) in his exposition of a decision-centred view of planning. According to this definition of rational decision-making, the decision-maker should consider all the alternatives open to her in a certain decision situation. She evaluates the consequences following from each alternative and selects that alternative, the probable consequences of which would be preferable in terms of her most valued ends.

Rationality in this sense, as Faludi points out, is always related to the actual decision situation, which is the result of subjective and temporary opinions and power relations.

That conflicts are resolved and some sort of consensus is reached seems not enough, therefore, as a criterion of successful conflict management. The opinion of the parties that their most valued ends are served by a planning decision could turn out to be sub-optimal or even illusory in a longer perspective. Faludi’s requirement, that an assessment should take place of how many alternatives could reasonably have been evaluated in a certain situation, seems justified and will strengthen rationality.

When analysing the nine planning cases in this study *decision-making rationality* was considered to be present if at least *three* decision alternatives were considered, including the zero-alternative of taking no action. This is admittedly a crude criterion. It succeeded, nevertheless, in discriminating between cases.

Efficiency

Efficiency is clearly a criterion when evaluating decision alternatives. All other things equal, the alternative attaining the established goal, using the least amount of scarce resources, should be chosen. Choosing this alternative is then rational.

In this study, efficiency was measured using two negative criteria. Cases where *appeals* of local authority decisions to higher courts were made, were considered to have had a less efficient process. This is a contestable criterion, since it must be considered a main goal in planning cases to protect individual legal rights. Relative to cases, however, where the parties have in fact succeeded to avoid time-consuming appeals, one could reasonably regard the processes of appeal cases to be less efficient. The issue will be discussed more in detail, however, in the context of one appeal case.

To evaluate the relative efficiency of individual planners and other actors in the cases, is, of course, nearly impossible. There were cases, however, where obvious incompetence, mainly in the sense of ignorance of relevant norms and procedures seemed to entail unnecessary work and delays.

Operationalized in this way, the criterion succeeded in discriminating between cases, identifying three of the nine as having had a clearly less efficient process than the other six.

Communicative rationality

In this study, *communicative rationality* was considered to be present in the cases, if a *dialogue* was opened between the parties, in which minimum levels of *comprehensibility*, *truth*, *sincerity* and *legitimacy* could be verified (Forester, 1989, Sager, 1994).

In view of the discussion of whether these prerequisites of an “ideal speech” situation could ever be met, this approach is perhaps naive. In the actual cases it seemed not to be impossible, however, to apply low-key versions of these criteria of communicative rationality to discriminate between the cases. See the comments to the cases below.

Technical indicators

As mentioned, neither criteria of decision-making rationality or communicative rationality, guarantee the quality of information as a basis for decisions. Goals may be clarified, alternatives developed and evaluated, consensus may be reached. Still, the decision may be misguided and ineffective. One indication of information quality is the existence of technical and legally established norms. Assumedly based on up-to-date scientific research these norms restrict decisions by setting limits, for example, to acceptable hazards and health risks, generated by planning decisions. Technical indicators are an important part of the *criteria driven approach*, described by Healey (1997:232) as using the legislative framework flexibly, but relying on technical norms to protect stakeholders.

Argumentation theory

Irrationality in the form of self-contradictory actions and arguments and of failure to consider other alternatives is usually easy to detect. The general validity of arguments put forth in planning discourses is more difficult to evaluate. Lapintie (1998) argues that argumentation theory in any case is a necessary tool in communicative planning, referring to the rules of valid argumentation presented by van Eemeren & Grootendurst, (1992). An ideal speech situation, where consensus without exclusion or coercion is reached is in practice unattainable, according to many critics. Lapintie argues against Healey (1997) and others, who therefore find a practical need for a *court*, which authoritatively can settle cases, in which voluntary agreement is not reached. He means that many planning cases involve scientific and social issues, which must be rationally *resolved*, rather than *settled*. “A dispute is resolved only if somebody retracts their doubt because they have been convinced by the other party’s argumentation.” (Lapintie, 1998:191).⁴¹

Rules of valid argumentation, therefore, seems to be a valuable additional criterion, useful primarily, where other criteria of rationality are not fulfilled.

⁴¹ Elster argues, however, that even if value conflicts theoretically would be possible to resolve by rational arguments, time constraints for one thing would normally force decisions to be made even if strong differences of opinion remain. (Elster, op.cit.:38)

Definitions of outcomes

In order to evaluate the relationship of rationality to the outcomes of conflict management, relevant outcomes must be distinguished. Successful outcomes are here defined as *effective* outcomes, meaning that main goals have to some extent been attained when the case is closed. Since different parties have different main goals, which is a cause of the conflict in focus, three (or four) main outcomes may be identified.

- (1) All parties have, to a reasonable degree, attained their main goals by successful negotiation and development of mutually satisfactory alternatives.
- (2) Only one party has attained her goal, at the cost of the other party(s).
- (3) No party has attained his/her main goals.

Only the first outcome is here defined as a successful, overall effective outcome. It may be called a *solution*, whereas the other outcomes may be termed *settlements*.⁴²

The successful outcomes in the cases have been identified on a contextual basis, which will become clear, as they are presented more in detail in the following discussion.

The role of institutions in conflict management

In this study, the existing framework of institutions, planning law, professional standards etc, is not under scrutiny as such. Rather the focus is on how, within these restrictions, actors use their resources to find ways to pursue their interests.

The general role of institutions

North (1990) sees institutions as reducing uncertainty by establishing a stable structure for social interaction. According to March & Olsen (1988) institutions are rules for appropriate behaviour, which are based on learning from past experiences. *Anticipatory action*, based on instrumental rationality, seeks the best means to achieve a stated goal. *Obligatory action*, based on value rationality seeks to answer the question: What is the proper thing to do, with regard to both uncertainties and the institutional setting? Playing a role assigned by institutional procedures is sometimes the only remaining rational thing to do.

There is obviously a risk that institutions may serve to conserve ignorance and outdated, counterproductive behaviour. As March & Olsen point out, the important thing about institutions is that they embody and transmit experience from past decision situations. Another concept to describe this is *organisational learning* (Argyris & Schön, 1978, Senge, 1990, Argyris, 1995). Organisational learning is a process of discovering and correcting mistakes, codifying history into routines that guide behaviour.

Putnam (1993) describes how competence and trust, achieved through a long-lasting development of informal institutions, build social capital, which supports stability and efficiency in collective action. Ostrom (1990) describes how face-to-face contact in public meetings enables a development and adjustment of individual preferences in order to support collective, long-term rationality in decision-making.

In planning theory, *the institutional approach* (Healey 1997) is a well-known view of how consensus is being worked out in spatial planning. Healey makes a distinction between formal organisations and legal rules (hard infrastructure) on one hand, and informal rules and

⁴² Cf Sager (1994:52) who also identifies a third type of outcome, termed *pacification*.

networks (soft infrastructure) on the other. She uses the concept *governance* to cover the various types of interaction between these factors and describes forms like *entrepreneurial consensus*, *a criteria driven approach* and *inclusionary argumentation*

To summarise: institutions are self-limiting social structures, limiting both the size and agenda of a certain social group.

Institutions are often regarded as conservative, risk-avoiding entities, but they can also be seen as supporting initiative and change, as well as protecting equal treatment and a fair process. Whether a particular institution supports the one or the other will be discussed specifically in relation to the studied cases.

The Swedish Planning Law

The Swedish Planning Law, enacted in 1987, is a major institution, affecting conflict management in planning. It states that in planning decisions both public and private interests must be considered (1:5§). It also articulates the public interests, which should be considered in all plans, such as efficient use of natural resources, requirements concerning public health and safety, good and equal living conditions etc (2:1-4§§). Through its *constitutive rules* it recognises a range of actors, which have a right to be heard in planning cases. It includes developers, landowners, public agencies, but also tenants' organisations and other associations, such as the local chapters of the National association for the protection of the environment (*Naturskyddsföreningen*). Through its *processual rules* it structures the planning process, establishing mandatory consultations with involved actors and interests at several stages. *Material rules* in the form of technical norms and regulations have again recently achieved increased importance. As a part of a new comprehensive Environmental Code in Sweden, enacted in 1998 (*Miljöbalken*), national environmental indicators have been set up, and the process of operationalising acceptable levels of air and water quality etc has begun.

Policies and professional standards

There is no formally established body of professional standards for planners in Sweden. Planners are trained in architectural schools, civil engineering schools and schools of spatial planning. There is no professional organisation of planners certifying who is qualified to work as a planner. There are informal standards and planning policies, which can be regarded as local institutions. These will be described and evaluated on a contextual basis in the cases studied.

The planning cases

The design of the study

Three middle-size towns in the Southeast of Sweden were chosen. The planning cases were found simply by asking the local authorities about recent cases, where conflicts between central interest and local initiatives had occurred. A limitation was to cases involving *workplaces*. One reason for this was to limit the scope of the study and facilitate comparisons. Another reason was that planning for workplaces was assumed to offer typical examples of conflicts between central and local interests, as well as between strong and legitimate interests. The local initiatives originated from business entrepreneurs, property owners and community activists. They included application for zoning changes, changed uses

of buildings and environmental improvement schemes. The central interests involved applying equal treatment, following established planning principles, protecting health and safety and other public interests.

The empirical data were collected through taped interviews with the actors, local authority planners, private entrepreneurs, neighbours and other persons involved. Planning documents, construction drawings and the relevant legislative rules and regulations were studied according to need.⁴³ In some cases experts in the application of planning law were consulted in order to check the validity of the local interpretations and applications of the law.

A table briefly describing the cases can be found in the Appendix. Below an overview of approaches and outcomes of conflict management are presented, using the criteria described in the previous sections.

Table 1. Identifying solutions and settlements

Effectiveness	Goal attainment: Planners	Goal attainment: 1st party	Goal attainment: 2nd party	Outcome
(1) <i>Risängen</i> <i>industrial estate</i>	Yes	Yes	-	Solution
(2) V. Mark industrial estate	Yes	Yes	-	Solution
(3) I11 business park	Yes	Yes	-	Solution
(4) Navestad Youth hostel	Yes	Yes	-	Solution
(5) Bankeryd industrial estate	Yes	No	-	Settlement
(6) Araby shops	-	Yes	No	Settlement
(7) Växjö Bakery	No	Yes	No	Settlement
(8) Araby Catering	-	Yes	No	Settlement
(9) Navestad workshop	Yes	No	Yes	Settlement

Note: Some cases involved only planners and a business applicant; others included active neighbours and other stakeholders. Other cases involved no planners but only landlords and tenants.

⁴³ The cases are documented in the following reports: Erlandsson & Henriksson, 1998, and Andersson, 1999.

Table 2. Overview of analysed cases.

Rationalities Outcomes	Decision-making rationality	Technical indicators	Communica- tive. rationality	Valid argumentation	Efficiency
Solutions					
(1) <i>Risängen</i> <i>industrial estate</i>	Yes	Yes	Yes	Yes	Yes
(2) V. Mark industrial estate	Yes	Yes	Yes	Yes	Yes
(3) I11 business park	Yes	Yes	Yes	Yes	Yes
(4) Navestad Youth hostel	Yes	Yes	Yes	Yes	Yes
Settlements					
(5) Bankeryd industrial estate	No	No	No	No	No
(6) Araby shops	No	No	No	Yes	Yes
(7) Växjö Bakery	Yes	Yes	Yes	Yes	No
(8) Araby Catering	No	Yes	No	Yes	Yes
(9) Navestad workshop	No	Yes	No	Yes	No

* Valid argumentation of the “winning” party only is evaluated.

Comments

The Table shows that in general, successful outcomes (here defined as *solutions*) are associated with the fulfilment of several rationality criteria. There are exceptions to this pattern, which will be discussed below. First some comments will be made as to how the criteria of rationality have been applied in the cases.

Communicative rationality

Cases (1) and (2) have been considered good examples of a dialogue fulfilling the Habermasian criteria of communicative rationality. In many cases, this led to new decision alternatives, thereby strengthening decision-making rationality, as well.

Instead of arguing who should pay for needed environmental improvements in the Risängen case (1) the two parties involved, a local authority planner and the chairman of the local business association successfully developed a new alternative. Local authority planners developed landscaping designs, the businesses invested in trees and other vegetation on their properties and the local authority included these private green areas in their maintenance routines.

In the Västra Mark case (2) a new type of flexible, zoning regulation was developed, allowing a wider range of service industries, integrating small scale manufacturing, repairs and retailing. The regulation was combined with detailed performance requirements concerning noise, air pollution, traffic generation etc. In addition, the local plan required substantial visual improvements of the site. A zone lining the access street must be planted with grass and shrubbery. Parking would not be allowed in this part of the site.

Cases (6) and (8) to some extent serve as negative examples.

In the Araby residential estate, the local tenants' organisation had suggested to the housing company, that a number of ground-floor flats should be converted to premises for small shops and other businesses, in order to increase employment opportunities, particularly for immigrants in the estate. (Case 6). The housing company did not enter into a dialogue, but dismissed the proposal with arguments, which could be evaluated with the norms of argumentation theory (van Eemeren and Grootendurst (1992)). See further comment below concerning the criterion Rational decision.

When a Växjö housing company told an immigrant Somalian woman that adapting a vacant space for her catering business would involve such and such costs, causing a prohibitively high rent, there was no reason to suspect they did not tell the *truth*. (Case 8) They had a *legitimate* goal to protect other tenants from nuisance in the form of cooking smells and fumes.⁴⁴ There may have been reason to doubt their *sincerity*, however, in the sense that they could have made more of an effort to solve her problem in another way.

Decision-making rationality

In five cases the criterion of decision-making rationality were fulfilled, in the sense that in a mostly trustful and constructive dialogue, different decision alternatives were developed and evaluated against main goals of the involved parties.

In the conversion of a military establishment, I11, (Case 3) planners looked for alternatives to the normal planning instrument, the legally binding local plan (*detaljplan*). One reason was the chief planner's perception of the strategic issues in the case. It was how to balance architectural preservation requirements against business needs of efficient premises, which were difficult to predict and must be processed quickly when they were presented. The establishment had a relatively isolated location, so consideration of the interests of neighbours was not a serious issue. Development rights were not a great issue either, since there was a surplus of space, and the task was to fill it with commercially viable uses in order to safeguard the long-term preservation of the building complex as a whole.

Co-operating with the developer and with building preservation expertise, the chief planner worked out an informal, but politically sanctioned development programme; a strategic plan. On this basis he could grant flexible building permits, which were formally granted afterward, when the contract with the new tenant was definite. There was a risk with this procedure, but in retrospect it seemed to have worked, with no protests from preservation interests, businesses or neighbours. When the commercial future of the conversion seemed secure, the decisions were formally codified in a proper local plan.

The type of governance involved in this case as well as the V. Mark case (2) seems to be *entrepreneurial consensus*, using Healey's term. Within a limited group of politicians, developers, businessmen and professionals, a co-ordinating and marketing 'vision' is produced. (Healey op.cit: 235f, 249). The Risängen case (1), of course, is another example.

Risk of failure with this type of governance is reduced through developing trust within a carefully selected group of important actors. Risk of blame for the chief planner was reduced through securing support from principals and developing professional competence that was respected by his peers.

Case (9), on the other hand, serves as an example of the lack of alternatives and failure to fulfil other criteria of rationality.

⁴⁴ Living in the same estate a Thai immigrant woman also looked around for restaurant and food retail premises. When meeting the same response from the housing company, she went outside the area and on her own found suitable accommodation in a more central location. The Somalian woman, with five children, seems to have had stronger reasons, however, to insist on premises on the estate.

When a local job creation group independently converted a basement flat into a workshop for unemployed young people on the housing estate, it was clearly an opportunistic action intending to gain short-term benefits, but breaking the law, which required a building permit.

Technical indicators

A criteria driven approach (Healey, op.cit: 232), relying on technical indicators, was used in a majority of the cases.

In the Navestad Youth Hostel case (4) the planners used the legislative framework flexibly, granting a temporary planning permission, allowing the hostel to be housed in converted dwelling flats. Technical requirements concerning fire safety were rigorously applied, leading to construction improvements. But insufficient noise insulation between rooms was considered a question of customer comfort, and could be temporarily tolerated by the planning authorities.

Using the legislative framework flexibly, but relying on explicit technical norms and clear decision criteria, the planners reduced risks of failure and of blame in this type of governance.

The negative example is case (5), which in addition failed to fulfil criteria of decision-making rationality and the rules of valid argumentation.

In the Bankeryd case (5) the local authority agreed to sell off and re-plan a strip of land to an industrial company needing to expand. The land was part of a large wooded area set aside for natural preservation in a newly adopted green-structure plan. The councillors argued that the valuable parts of the preservation area were actually situated 'quite far' from the bordering industrial estate, but could not specify or show support for this assessment. A planner tried to argue that the green-structure plan should not, in fact, be considered binding in questions like this, but only as a document, describing and ranking the green qualities of the land, to be used as a guideline. Consultation with experts on the Swedish Planning Law made clear, however, that this argument does not hold. If a green-structure plan is formally adopted by the local Board of Planning, this must mean that the Board has assessed the various interests involved and decided that in the areas set aside for preservation, this has priority over other uses. In spite of the difficulties for the Council to be consequent in its planning decisions, no other alternatives to accommodate the industrial company were explored. The councillors and planners, may have been *sincere* in their views, but they turned out not to be *truthful* but in error. Their actions and the arguments put forth in the planning documents in support for the decisions were in fact contradictory, and failed to fulfil elementary requirements of valid argumentation.

Rules of valid argumentation

Case (6) was previously mentioned as one example, where rules of argumentation were applied, supporting the evaluation that this could be considered an example of rational decision, although other rationality criteria were not fulfilled. No dialogue was opened, trying to widen the range of alternatives and consequences.

When arguing against the proposal to convert basement flats into shops, the arguments of the housing company fulfilled the norms of van Eemeren and Grootendurst (1992). Of the eight rules proposed, rules No.2, 3 and 4 refer to the obligation to defend or attack a standpoint with arguments related to that standpoint. Rule No. 8 states that the arguments must be possible to validate.

What the housing company said, was that these low quality flats were actually in demand from young people preferring low rents to high standard. Shops and small businesses were in their experience more uncertain tenants. In addition, suitable premises for small businesses were available in other parts of the estate. A change in business structure was also taking place. IT-firms were replacing engineering consultants and accountancy firms. The housing company was in the process of adapting the existing premises for these new firms and wanted to await the outcome, before starting on new, uncertain projects. This strategy was also relevant considering the goal that both the housing company and the tenants' organisation shared, of providing employment opportunities for immigrants. The IT-business seems to be less discriminatory than other firms in Swedish business life. Competent immigrants could more easily find jobs there. In conclusion, therefore, the assessment was that although the criteria of communicative and decision-making rationality were not fulfilled, on the basis of argumentation theory, the decision could be considered rational.

The Växjö Bakery case (7) is the most complex case, where practically all the selected rationality criteria apparently were fulfilled, but no satisfactory conflict resolution was found. Several attempts were made toward inclusionary argumentation in Healey's sense (op.cit: 237f, 249) but they failed.

The neighbouring homeowners vigorously opposed the plans to extend a 50-year old industrial establishment and appealed the revised local plan all the way to the Swedish Supreme Court. The councillors and planners found it hard to refuse the technically and commercially motivated expansion plans, partly since the company had been there first and partly in a desire to preserve or increase industrial employment in the town. The company argued that if the proposed expansion was not permitted, the whole plant would be closed, and production moved to another town, where the company also had operations. The homeowners in their turn saw no compromise alternative either. The Bakery, in their view, did not belong in the neighbourhood and should close down altogether.

The councillors naturally wanted to accommodate both business and residential interests in their town. The planners got the thankless task to try to make it possible. The planners tried to involve the company and the homeowners in a dialogue about how the extension and protective barriers could be designed in order to minimise impact on their domestic environment. But the homeowners refused to enter into a discussion. The company was more responsive, as the planners suggested design changes and underlined that legally established norms for maximum noise emission must be rigorously observed and verified through technical measurements. The homeowners' legitimate, long-term interests were accommodated to some extent, in that the revised plan limited industrial use of the property to the type of bread production currently taking place. No other type of industrial production would be allowed, if the bakery closed down and the property was sold.

Discussion

As mentioned, the schematic display of strategies and outcomes in Table 2 seems to indicate that in general, successful outcomes (here defined as *solutions*) are associated with the fulfilment of several rationality criteria.⁴⁵

One can also identify instances where the support of institutions helped overcome dilemmas of risk-taking, leading to an ultimately successful solution. Where institutional support was lacking, solutions were more difficult to reach. The Växjö Bakery case is one example. The company, as well as the planners had institutional support to enter negotiations. The homeowners had no corresponding institutional support, which raises the issue of whether this case, after all, confirms that power inequalities and biased discourses threaten the application and success of rationality.

The local authority had legitimate reasons to point out the primacy of the business interests in the location. The company was there first and planners and homeowners in one sense knew what the conditions for later housing development were. Efforts by the local authority to support employment opportunities also seemed politically legitimate. On the other hand, one can argue that it was difficult for the homeowners to foresee all the consequences of continued industrial operations on the site: the continued expansion and the introduction of new, polluting technology, changing logistical patterns leading to greatly increased frequency of truck traffic etc.

In view of the lack of institutional support, the homeowners were clearly in a weaker position against the combined forces of the company and the planners. But were these asymmetries actually leading to distorted information in the Forester sense? "Willful

⁴⁵ This in turn, seems to justify the research strategy to start studying conflicts by analysing the rationalities involved. One could paraphrase Foucault, quoted in Rajchman, (1988:170) and claim that "to distrust rationalism as an ideal should never constitute a blackmail to prevent the analysis of rationalities really at work." (Original wording: "to respect rationalism as an ideal should never constitute a blackmail to prevent the analysis of rationalities really at work.")

unresponsiveness”, “interpersonal deception”, “monopolistic distortions of exchange” “bluffing” and “ideological rationalization of power structures” (Forester, op.cit:34ff), did not seem present, considering the planners’ willingness to accommodate legitimate needs of both parties. In addition, technical indicators, providing impact measurements on visual and acoustic environment were set up, validating a certain quality of information, as a basis for decisions.

First, one should ask: How important is this exceptional case? If only one out of nine cases breaks the pattern of successfully applied rationality, the study would still provide support for rationality in planning. The matter is complicated, however, by the dilemma pointed out by Elster, above. One exceptional case could further weigh the odds against applying rationality in efforts with uncertain outcomes.

It seems justified, therefore, to make a closer examination of the rationalities of this case. A first question is: Did the case actually fulfil the rationality criteria proposed? In particular, can one say that *communicative rationality* was fulfilled, when the homeowners actually refused to enter into negotiations? There is reason to examine more closely if they in fact could have had rational reasons for doing so? If so, were planners in their turn justified to negotiate on their behalf?

A second question is: If a closer examination shows that several rationality criteria actually were fulfilled in the Växjö Bakery case, is the unsuccessful outcome to be considered a failure of rationality? Epistemic uncertainty was reduced. The impacts of the proposed extension were clearly spelled out and could be measured. But conceptual uncertainty remained (Rolf, op.cit) concerning the parties’ values, preferences and intentions. This raises the issue of whether the definition of *effectiveness* is sufficient. How is goal attainment for the respective parties to be defined? The answer cannot be a clear yes or no, of course. Rather one must try to find a way to understand what kind of rationalities and definitions of success could be relevant in a case like this.

A third question then is: Were the simplistic criteria of rationality used in the study insufficient?

To start, were criteria of communicative rationality fulfilled? From the homeowners’ point of view, there was nothing to negotiate about. The company should shut down production or move. That was their basic position, and that is one obvious reason for refusing to negotiate. But they took the risk to misjudge their chances of winning their case, and the risk that the company would be allowed to expand without providing protection measures, which could have been agreed on in negotiations. On the other hand, there were also risks in entering negotiation:

1. There would be transaction costs in time and worry about how to conduct the negotiations.
2. The homeowners would perhaps not be able to agree among themselves, thereby weakening their position.
3. They would risk revealing other weaknesses in their position, which would make the company and the planners downgrade the damage they claimed they would suffer.
4. Not being experienced negotiators, they would risk being pressed and persuaded to accept unfavourable agreements.
5. By helping the company to find measures to reduce somewhat environmental impact, they would perhaps facilitate higher level approval of the plan.

What was their BATNA – their Best-Alternative-To-a-Negotiated Agreement?⁴⁶ By appealing the plan, they could hope for an impartial, competent assessment of the damage to

⁴⁶ Fisher & Ury (1981, Ch 6)

their interests, which in the best case would stop the plan completely. In the worst case, the authorities would probably prescribe measures to reduce the environmental impact, but they would perhaps not be as effective as any that could have been reached by negotiation.

If the homeowners actually thought that the improvement in environmental protection would be only marginal if they entered into negotiation instead of letting experts decide, they had reasons to reject negotiations, even regardless of how they evaluated the chances for the plan to be approved.

The risks of losing more than they gained through negotiations were also tangible. No institution helped to reduce them. They had had no opportunity to develop trust in the company. On the contrary, their experience over the years had been that disturbing effects from production had only increased, with no serious effort from the company to consider the homeowners' interests. They had no formal obligation to negotiate, no organisation, no professional assistance, since the local authority planners were by them seen as partial to the company.

The conclusion is that the homeowners did have primarily instrumentally rational reasons for refusing to negotiate.

Was it rational, therefore, for planners to negotiate on the homeowners' behalf? Yes, it seems that they had both instrumentally and value-based rational reasons to do this:

1. They probably had a better assessment than the homeowners did of the chance for the plan to be accepted. The company had a strong case, with their long usage of the property. Swedish local authorities have a great autonomy to decide what is in the public interest, in this case to promote employment. In an impartial view, it was probable that the company would win.

2. Negotiation was in this case a dominant strategy. The Planning and building law requires that a plan should consider both public and private interests. An assessment of costs and benefits in negotiating would show there was much to gain in at least trying to reach a voluntary agreement and avoid time-consuming appeals. Although the company had a fair chance to win eventually, even if the plan was appealed, strict environmental requirements had to be fulfilled and a careful design of the plan was motivated to avoid critique and delays. Transaction costs could be considered acceptable, since consultations were legally required in any case, and further negotiations would entail marginal work.

3. When considering the homeowners' interests, the professional planners had advantages, negotiating on their behalf. They were less vulnerable to risks of compromising their positions, since in this respect they were not arguing their own case. They were more efficient, not having to negotiate possible differences of opinion within their own team. They also had professional knowledge of environmental and health matters, norms and regulations. Competently and quickly they could evaluate possible solutions to reduce noise and other disturbances.

Institutions in the form of the Planning and building law, professional standards and the support of principals helped reduce the risk of failure and blame for planners and supported negotiation efforts.

Is the settlement of the kind that was achieved in the Våxjö Bakery case to be regarded as a failure of rationality? Arguing against this, it can be claimed, that there are things to be said in favour even of a settlement outcome. It reduces uncertainty, sets limits on freedom, your own and others'. In addition, the reduction of uncertainty does not mean that change for the better is impossible. In a settlement case for example, the argumentation of your own appeal may appear as a failure and the court's verdict as a dominating, successful discourse. But in line with Foucault's (1980:98 ff) methodological rule of observing the tactical polyvalence of discourse, this may be seen to be only temporary. Concessions in the verdict to your own cause may over time grow more important, setbacks less so.

In the Våxjö Bakery case, for example, disturbances to the neighbours from the industrial plant must with the settlement now be seen as becoming limited in magnitude and in time,

considering the fact that the plan does not allow any other type of production. A diffuse threat of having the peace and quiet of your home indefinitely damaged has been replaced by a much more definite condition. Epistemic uncertainty has been reduced. The situation may still be unsatisfactory. Reduction of conceptual uncertainty does not necessarily follow, as Rolf (op.cit) points out. The issue here is whether one can say that there is some rationality even for the homeowners and the planners in having the conflict settled.

There is no empirical material at the moment supporting speculations about how the homeowners regard the new situation. What is clear, however, is that the Bakery in fact did not make use of all the development rights in the plan. For one thing, a proposed flour silo was not built, which improved both the visual and acoustic environment. The Växjö planners, questioned about this, believed that the reasons were both financial and related to a wish to keep peace with the neighbours. Furthermore, the neighbours have not called for the noise-measurements that were prescribed in the plan, which may be an indication that the noise level is in fact acceptable, compared to previous conditions. By assessing what noise levels the homeowners were in fact willing to tolerate, conceptual uncertainty could possibly be seen as having been reduced.

Likewise, for the Bakery, the process clarified many things, which should be useful, when planning their future business strategy in Växjö and other towns, where they have operations. They have new information concerning the time perspective and the cost and benefits involved in extending an old plant in a difficult location.

For the planners, finally, their efforts in conflict management in this particular case may have seemed relatively *inefficient*. From a strategic, *effectiveness* viewpoint, the evaluation could be different. The Bakery is situated at the border of a large, fairly central industrial district, Västra Mark, which is in a process of change.⁴⁷ In the future, the planners want to integrate it better into the central parts of Växjö, as the users gradually change from heavy, manufacturing industry to service and retail businesses. In that perspective, one can assume, the case should have some value in providing experience of the potential severity of conflicts between industrial production and other, sensitive uses. The legal and technical possibilities in conflicts of this nature have been clarified, as help in strategic planning, reducing uncertainties and promoting *effectiveness* in a long-term sense.

To the extent that this learning is not only personal but also organisational, it illustrates an important aspect of the risk-reducing and rationality-supporting role of institutions. Past experience should be reflected upon and codified and transmitted into routines that reduce uncertainty and support effectiveness. The local authority planners now and in the future may learn how to evaluate the risks in trying for better conflict resolutions in future situations.

In summary, the three questions asked at the beginning of the Discussion have found the following, tentative answers. The Växjö Bakery case, after closer examination, did fulfil the rationality criteria set up for the process. But the criteria of successful outcomes may nevertheless be viewed as insufficient. In view of the conceptual uncertainty remaining, both effectiveness and efficiency could possibly be defined in a broader sense. It depends on the definition of goal attainment for either party, and consequently on the definition of *effectiveness*, whether this case could be placed in the group of successful outcomes, or considered a failure of rationality.

⁴⁷ See the Västra Mark case (2).

Conclusion

The studied set of nine planning cases in middle size Swedish towns is characterised by conflicts between a few local actors. Conflicts are nevertheless substantial, which is shown by the fact that they are successfully resolved only in about half of the cases. In these successful cases, however, the application of communicative, decision-making rationality and other forms of rationality can be identified, whereas in less successful outcomes, rationality is significantly weakened or absent.

The Swedish Planning and Building Law emerges as an important institution to support both communicative and decision-making rationality, requiring broad consultations and a balancing between articulated public interests and private ones. Further studies are needed, however, of how the law balances the need of flexible approaches on the one hand and the need of protecting stakeholders' rights and system stability on the other.

It seems that the studied cases do justice to a number of major paradigms in planning theory. Successful outcomes of the planning conflicts are associated with a flexible planning approach and *communicative rationality*. These factors also strengthen *decision-making rationality*, by sometimes developing new decision alternatives through a problem-solving dialogue with the involved actors.⁴⁸ The cases further show that *argumentation analysis* can be used to uphold a measure of rationality, when other rationality criteria are not fulfilled. The paper has tried to make a contribution to the *institutionalist approach* by viewing institutions as risk-reducing mechanisms in a specific context, *viz.* when risking costs and uncertainties does not seem rationally justified in trying to develop new understanding of a problem, new goals and new means to reach them.

It is proposed then that legally established procedures, local policy, trust developed through local networks, professional standards and other forms of institutional capacity can all contribute toward reducing the risk of failure and blame, and support rational conflict management.

One important conclusion seems to be that these paradigms are not exclusive, competing ones, but should be seen as complementing each other. *Communicative rationality*, concentrating on consensus-making, risks failure to consider strategically important goals and more effective decision alternatives. *Decision-making rationality*, focusing mainly on the logical coherence of goals and means, risks failure to develop new alternatives and reach broader, effective goal fulfilment. *Institutions* preoccupied with risk-reduction in general may fail in rationally pursuing their primary goals.

It is suggested in this paper that one criterion of institutional risk reduction should be *rationality*: supporting the clear structuring of goals and the development of alternatives, while avoiding individual exposure to risk, wishful thinking and opportunism. Efficiency may be low in the short-term, but if main goals are formulated in terms of long-term organisational learning and strategic gains, to promote future tactical ability to resolve conflicts, both epistemic and conceptual uncertainty may be reduced and effectiveness and efficiency promoted.

In summary, does the application of various rationality criteria help to understand the outcomes of conflict management in the studied cases? Yes, so it seems, considering that the criteria discriminate among the cases and that there is a general pattern of rationality being

⁴⁸ The cases also throw some light on Etzioni's (1968) thesis that in small scale, short-term planning cases, an incremental, pragmatic mode of decision-making can be accepted, but that in larger, long-term 'contextuating' decisions, decision-making rationality should be rigorously applied. According to this study, the call for rationality seems just as strong in smaller cases.

associated with successful outcomes. But not completely, since some cases also clearly show the limits of rationality and practical difficulties to actually determine the type and degree of rationality applied.⁴⁹

Does this mean that an examination of power asymmetries is always recommended, even when studying local planning cases, decided within existing legal and institutional frameworks? Not necessarily, if one maintains that power asymmetries are not illegitimate as such. Other criteria, such as various forms of rationality, ought to be applied, which this study has made an attempt to do. On the other hand, the results must always be regarded as temporary and subject to revision, as power balances continue to shift and further information of the consequences of historic decisions emerge.

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⁴⁹ The temporary character of institutionalised rationality in planning has recently been highlighted by a decision by the Swedish government to consider a revision of the Planning Law, partly because numerous, time-consuming ("inefficient") appeals of local planning decisions obstruct planning and building, mainly in expanding cities.

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Appendix.

The Cases – renewal projects and job creation schemes in industrial and residential estates

1. Risängen industrial estate Planners and local business association co-operate in a renewal scheme, sharing costs for planting of trees and street improvements
2. V. Mark industrial estate A new, flexible type of land use regulation was combined with stricter demands for off-street parking and landscaping.
3. I11 business park A former military establishment is being converted into a business park by means of an informal strategic plan and flexible building permits.
4. Navestad Youth hostel Flats in a problematic housing estate are converted into a Youth Hostel, thanks to flexible application of some building regulations and run as co-operative by unemployed residents.
5. Bankeryd industrial estate Small industry enterprises are allowed to expand slightly into a public nature conservation area. In spite of strategic goals to preserve both nature and employment rational argumentation and decisions are not upheld.
6. Araby shops The local tenants' organisation wants basement flats converted to premises for small businesses. The housing company argues that suitable premises are available elsewhere and that the unattractive basement flats are in fact in demand from young people, seeking inexpensive dwellings.
7. Växjö Bakery A plan for extension of a since long established industrial bakery is appealed by neighbouring residents but confirmed by National Government. Only present industrial use is allowed and strict demands on noise abatement and visual screening are incorporated in the plan, which is considered in line with strategic goals to preserve employment.
8. Araby Catering A Somali woman has difficulties in finding premises for her catering business in the housing estate where she lives. Costs to convert basement space in compliance with safety and hygienic requirements would make the rent impossible. The housing company is unwilling to explore alternatives, keeping to a general policy of avoiding nuisances related to public health.
9. Navestad Workshop A basement flat was converted into a workshop for small repairs, run as co-operative by a local job creation initiative in a problematic housing estate. A required building permit was not applied for, however, and the workshop had to close because of complaints from neighbours.

TOWARDS A FRAMEWORK FOR EX POST SEA: THEORETICAL ISSUES AND LESSONS FROM POLICY EVALUATION

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Abstract: Most SEA practice has focused on the pre-decision stages, rather than post-decision follow-up stages such as monitoring, evaluation, and management. These stages, also referred to as *ex post SEA*, are integral to making SEA effective and learning-oriented. This paper takes the first step towards an *ex post SEA* framework, by analysing the requirements for *ex post* activities according to the European SEA Directive, reviewing existing experiences and literature on how to perform *ex post SEA*, and exploring lessons to be learnt from the adjacent fields of EIA follow-up and policy evaluation. The paper argues that the SEA Directive is seriously constrained and that a more ambitious interpretation of *ex post SEA* is necessary to enable strategic decision making and learning.

Key words: SEA, tools, strategic environmental assessment, evaluation, follow-up, monitoring, EU, *ex post*

Project: MiSt 9 – *Ex post* tools.

This project addresses an important gap in the research and practice of strategic tools, namely the application of appropriate tools for the follow-up and evaluation stage of strategic environmental assessment, i.e. *ex post SEA*. The purpose is to develop a framework for *ex post SEA* including a procedure and recommendations on application of appropriate analytical tools. The project focuses on the regional planning level with case studies in two regions in Sweden.

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TOWARDS A FRAMEWORK FOR EX POST SEA: THEORETICAL ISSUES AND LESSONS FROM POLICY EVALUATION

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Introduction

Most recipes for Strategic Environmental Assessment (SEA) end with *monitoring* and *evaluation* (see e.g. Therivel et al., 1992; Therivel, 1996). Sometimes, *management* and *communication* are identified as the very last steps (Partidario and Fischer, 2004) (see Figure 1). These steps of the process are usually referred to as ‘post-decision’ stages, ‘follow-up activities’, or, as in this paper, *ex post* SEA. Undertaking *ex post* SEA is widely recognized as important to increase the effectiveness and credibility of SEA as a tool to integrate environmental sustainability into key decisions, also in the *ex ante* phase. Despite this, it is arguably a neglected part of the SEA process. While *ex ante* SEA is becoming an institutionalised procedure with best practice developing rapidly, there is little guidance on how to best carry out *ex post* SEA in various settings. For instance, Swedish SEA guidance merely describes follow-up as the last step in the SEA process (see Naturvårdsverket, 2000; Boverket and Naturvårdsverket, 2000; Naturvårdsverket, 2001). The examples of “working methods” are often neither elaborate nor helpful; merely indicating “monitoring plan, EIAs of subsequent decisions, environmental monitoring, and use of indicators” (Naturvårdsverket, 2000: 25). Furthermore, there are few reports on practice to learn from and (Therivel, 1996; Cherp, 2005). A questionnaire sent out to twelve EU Member States showed that there was very little experience with *ex post* SEA (Öko Institut, 2002).

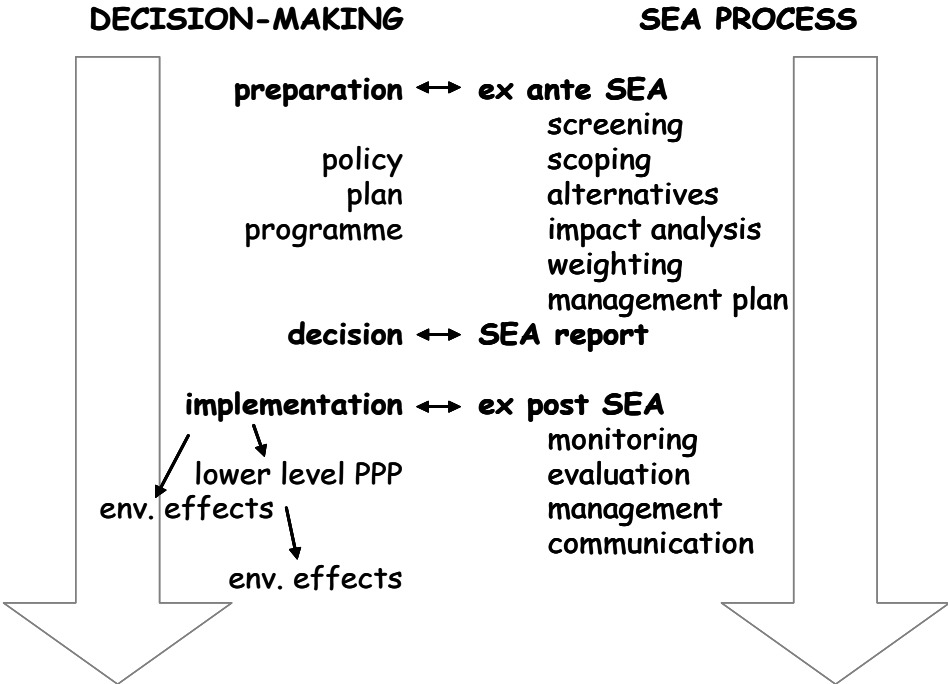


Figure 1. Ex post SEA in context

In addition to a general lack of knowledge around *ex post* SEA, literature has identified a range of potential conceptual and practical problems. Most current *ex post* SEA thinking is based on experiences from project-level EIA follow-up (Cherp, 2005). In the context of EIA, known barriers to effective follow-up include: vague and outdated predicted impacts, difficulties in establishing cause-effect relationships, inadequate data, lack of time and resources, unclear division of responsibility, disincentives to undertake and respond to *ex post* assessment among key stakeholders, and uncertainty about the cost-effectiveness and benefits of engaging in follow-up (Noble and Storey, 2005; Morrison-Saunders and Arts, 2004; Partidario and Arts, 2005). These are likely to be valid concerns also for SEA. However, due to SEA's higher level of uncertainty, greater scope in time and space, and level of political contention many of these difficulties are likely to amplify in *ex post* SEA. The current knowledge gaps and problems with *ex post* SEA appear as particularly critical to address given the regulatory requirements of the EU SEA Directive⁵⁰. Article 10 on "Monitoring" states that:

" 1. Member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, *inter alia*, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action.

2. In order to comply with paragraph 1, existing monitoring arrangements may be used if appropriate, with a view to avoiding duplication of monitoring."

This requirement poses significant challenges for competent authorities in the EU Member States, in relation to, e.g., data collection or coordination functions, increased analytical capacity and resources, and revised planning and programming procedures and cycles.

The purpose of this chapter is to review what is known about *ex post* SEA, and identify what kind of analytical and organisational issues need to be addressed in order to improve practice, especially considering the requirements in the SEA Directive. The aims of this paper are threefold: first, to analyse the *ex post* activities required by the Directive; second, to review recent literature on how to carry out *ex post* SEA, drawing also on EIA literature; and third, to draw potential lessons from the policy evaluation literature to explore whether important lessons can be learnt concerning for example tools and procedures. Policy evaluation has been applied more in social science fields such as education and health than for environmental policy suggesting a potential for learning across these fields. Exploring such opportunities for learning is important also considering the recent calls for more *ex post* evaluation of environmental policy at the EU level in general (EEA, 2001). The need for more *ex post* evaluation-based policy learning can also be linked to the trends of "evidence-based policy making" and performance measurement in public administration (see e.g. Sanderson 2001, 2002). For instance, Herrick and Sarewitz (2000) argue that predictive (or *ex ante*) scientific assessments of policy proposals are so inherently limited in terms of the level of uncertainty and the assumption of rational and receptive decision-makers, that rigorous *ex post* policy evaluations can be much more valuable. We therefore argue that strengthening *ex post* SEA procedures is presently one of if not the most important task within SEA research and methods development.⁵¹

The next section clarifies terminology and discusses purposes and objectives of *ex post* SEA. An analysis of the EU regulatory framework then follows, setting the scene for the review of existing *ex post* SEA guidance regarding methods and approaches. Subsequent sections highlight key challenges and problems, including a discussion of relevant lessons

⁵⁰ By "SEA directive" we refer to the *Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment*

⁵¹ This chapter represents the first step of a "MiSt" research project on *ex post* SEA at the regional level in Sweden, aiming towards constructing a framework of potential analytical and participative tools for *ex post* SEA.

from the policy evaluation literature. In the final part, we outline key issues for the further advancement and development of *ex post* SEA.

Ex post SEA: definitions and objectives

Within the four aspects of *ex post* SEA (Figure 1), our entry point is the monitoring and evaluation nexus, rather than management and communication, although the latter will be treated as important components of the former. Monitoring and evaluation are generic terms and can be undertaken at different levels, focused on different objects, and with different objectives. Therefore, it is useful to clarify the terminology in this field. First, evaluation is sometimes used as a synonym for *ex ante* assessment, i.e. “*ex ante* evaluation”. This should not be confused with *ex post* evaluation using empirical data. Second, to *review* the environmental report or Environmental Impact Statement (EIS) according to some criteria is sometimes included as a SEA/EIA process step. This is a kind of a retrospective activity, but it does not consider actual post-decision stages that is the concern here. Third, there is an established literature on evaluation of SEA/EIA as a tool, i.e. how effective an SEA/EIA process and document is according to some criteria, including the extent to which it influences the policy, plan, programme or project decision (see e.g. Thissen 2000; Marsden, 1998; Baker and McLelland 2003). However, such work is evaluation *of* SEA rather than *within* SEA. In other words, their object is the SEA process (e.g. inputs, techniques, participation) or document, rather than the environmental parameters it identifies as important. To further understand what *ex post* SEA is, including how it compares with *ex post* EIA, it can be helpful to consider three different questions.

First, what is the *purpose* and what kind of *analytic outputs* can be expected from *ex post* activities? *Ex post* SEA can consist of a range of different analytic activities. These activities range from information gathering (in monitoring) to making explicit value judgements (in evaluation). This suggests that their respective use in planning and policy making may similarly range from simply noting an environmental effect, to proposing an adjustment to a plan or programme, and to questioning fundamental strategic choices made. However, it is unhelpful to view monitoring and evaluation as very distinct and mutually exclusive activities, since some monitoring systems provide highly processed information of an evaluative kind whereas some evaluations may add little value to raw data. For example, Verheem and Tonk (2000: 179) suggest that the principle for monitoring in SEA should be that “sufficient information on the actual impacts of implementing the decision is gained to judge whether the decision should be amended”, clearly a more ambitious role than just tracking a set of parameters. Instead, monitoring and evaluation can be viewed along a continuum of activities involving less or more judgement against criteria and less or more assessment of underlying assumptions and rationale of a plan or programme. In practical terms, the two activities may also be separated by their periodicity (monitoring takes place on a regular basis and evaluation is more infrequent) and scope (evaluation considering a wider scope of aspects).

The different outputs of monitoring vs. evaluation can also be seen in light of purposes identified from a more practical perspective (Arts et al. 2001):

- Provide information about consequences and check compliance with the decisions based on the EIS
- Enhance scientific knowledge on environmental issues, cause-effect relationships and effective mitigation measures
- Improve the quality of methods and techniques in EIA

- Improve public awareness about actual effects
- Afford explicit opportunities to intervene in, revise, or terminate a project.

It has also been suggested that if SEA is to set directions upstream then “the focus of SEA follow-up is more on tracking subsequent decision-making (i.e. tiering) about locations and/or operational projects....” (Arts and Morrison-Saunders, 2004: 296). A purpose of *ex post* SEA would thus be to ensure that downstream plans and projects are designed in accordance with the conditions and objectives set in an SEA. However, one cannot assume a priori that a clear hierarchical relationship between PPPs exist (Arts et al., 2005). Partidario and Arts (2005: 252) argue that strategic initiatives and SEA can have ‘splash effects’ in all directions; to operational projects, lower-order initiatives, same-order initiatives, and even higher-order initiatives.

Conspicuously missing from most of the SEI/EIA follow-up literature, is holding responsible decision makers accountable for plans and programmes and their possible environmental effects. In the policy-evaluation literature, on the other hand, accountability is a key issue. For example, Rossi et al. (2004) identify four different purposes of evaluations; programme improvement, accountability, knowledge generation, and political / public relations use. In *ex post* SEA to date, the main focus has been on the first and third. However, as policies, plans and programmes are commonly perceived to be more politically contentious than projects, democratic accountability should, in addition to more instrumental purposes, also figure in *ex post* SEA.

Second, what kind of *parameters* should be monitored and evaluated? Of course, several objects can be monitored and evaluated together, but the choice of primary focus is likely to have implications for the design of the *ex post* SEA system and process; should it focus on impact assessment or “ticking off” policy measures? Were objectives for various parameters set *ex ante* or do reference values or criteria need to be specified *ex post*? Below are listed possible parameter types together with examples from a transport plan context. This list also suggests that some flexibility is needed when designing *ex post* SEA procedures, to accommodate for different kinds of SEAs:

- Predicted significant environmental impacts of the PP – e.g. increased CO2 emissions from car transports due to higher accessibility
- Unanticipated environmental impacts of the PP – e.g. more out-of-town shopping centres leading to further increased transports
- Performance on environmental objectives set in the PP – e.g. an increase in the use of public transports in a city region by 20%.
- Environmental prevention and mitigation actions included in the PP – e.g. no new road projects located in protected areas
- Design and implementation of subsequent/downstream PPs – e.g. if EIAs are conducted for road projects
- Environmental baseline/state of the environment – e.g. level of particulate matter in a given area

Third, in what way do the *decision levels* (policies, plans and programmes) matter for *ex post* SEA? In SEA, the decision levels are normally defined as policies, plans or programmes (PPP). The main differences between the PPP levels are normally seen as (from policy to programme): decreasing level of abstraction with regards to the activities/development/project plans; increasing site-specificity; and responsibility moving from central to local/lower

administrative or political levels. The impacts monitored and evaluated are therefore, likely to be less site-specific, played out on a longer timescale, broader in terms of environmental, economic and social aspects covered, and have greater uncertainty margins. These differences mean that an *ex post* programme-level SEA may have more in common with *ex post* EIA, than with *ex post* policy-level SEA. Consequently, this makes it difficult to generalise approaches and methods appropriate for *ex post* SEA. However, in reality these levels are not necessarily clear-cut or mutually exclusive. Furthermore, sometimes a policy instrument can be more concrete and therefore easier to assess and evaluate for environmental effects (although perhaps not site-dependent impacts), than a vague plan or programme setting out broader intentions for an area. Therefore, the *formal* PPP level may not be an important determinant when choosing approaches and methods for *ex post* SEA.

In summary, it is important to be clear on what kind of analytical activity is referred to when discussing *ex post* SEA, i.e. providing ‘objective’ information on some operational aspects of a PP, or measuring the performance of a PP against some criteria and questioning strategic choices made. Furthermore, there is a range of different ‘objects’ to monitor and evaluate in SEA, besides the predicted significant environmental effects. Finally, differences between the decision-making levels are relevant to consider in the *ex post* context. A key issue is whether to evaluate the tiering aspects or the operational decisions.

Ex post requirements in the EU Directive

The EU “SEA Directive” (European Council, 2001) represents an important milestone, in terms of harmonising the procedure and introducing a legal requirement, for SEA in European Member States. If we wish to make methodological development of *ex post* SEA practically relevant and useful, it is important to understand the Directive’s monitoring and evaluation requirements. Apart from the actual monitoring activities required by Article 10 (see section 1), the pre-decision environmental report required under Article 5 of the Directive shall describe both prevention and mitigation measures envisaged, and planned monitoring measures⁵². When the PP has been adopted, information on the monitoring measures decided shall also be made available, according to Article 9. In summary, the Directive’s requirements relevant to *ex post* SEA are thus to:

- make plans for monitoring during the *ex ante* assessment and include these plans in the environmental report;
- provide information on the monitoring measures decided after the PP has been adopted; and
- monitor the significant environmental effects identified in the environmental assessment.⁵³

In line with the subsidiarity principle, the SEA Directive thus leaves considerable flexibility for the Member States to implement the provision for monitoring. In the case of Sweden, the legislators have chosen to pass this flexibility on to the authorities conducting SEAs (Box 1). However, the European Commission has issued guidance on monitoring within SEA to complement the “minimalist” approach of the Directive (European Commission, 2003). In this guidance, the “implementation” of the PP, i.e. the object of monitoring, is interpreted as

⁵² See points (g) and (i) in Annex I to the Directive.

⁵³ The SEA Protocol under the UNECE Espoo Convention makes a similar requirement to undertake monitoring (Article 12), but also that the monitoring results should be made publicly available (UNECE, 2003).

not only subsequent projects but also “behavioural measures” and “management schemes” that may be part of the PP (p. 45). Monitoring is defined as “an activity following the development of the parameters of concern in magnitude, time and space” (p. 43). Since the Directive does not specify bodies responsible, time and frequency and methods of monitoring, it is recommended that Member States consider whether legal or administrative measures be taken to regulate this. The purposes of monitoring are identified as determining whether unforeseen adverse effects have taken place, to take appropriate remedial action, and to verify information and assumptions in the *ex ante* environmental report.

Box 1. The regulatory framework for *ex post* SEA in Sweden

In Sweden, the EU SEA Directive was transposed through changes in chapter 6 of the Environment Code, on Environmental Impact Assessment (11-18 §§ and 22 §), as well as minor changes of the Planning and Building Act (1987:10) and the law on municipal energy planning (1977:439). The SEA requirements are further elaborated in the Regulation on Environmental Impact Assessment (1998:905). These revisions entered into force on 21 July 2004.

The PPs subject to the SEA requirements are those that have significant environmental effect, are adopted by a government authority or a municipality, and are required by law or regulation. Furthermore, they apply to plans and programmes that comprise activities that (i) require a permit or (ii) give premises for subsequent permitting, and are a land use plan (*översiktsplan*), municipal energy plan, waste plan, environmental action program, regional transport infrastructure plan, or another type of plan or programme in a number of specified sectors. Exempted PPs are those for defence and civil emergency, financial or budget plans, and plans and programmes cofinanced through the EU Structural Funds or Rural Development Programme. In comparison with other countries, there are therefore relatively few plans and programmes that are subject to SEA requirements.

Post-decision aspects are addressed at three different places in the SEA legislation (ch. 6, Environment Code):

- planned prevention and mitigation measures shall be described in the (pre-decision) SEA report (12 §);
- planned measures for follow-up and monitoring of the significant environmental effects identified shall be described in the post-decision report (*särskild sammanställning*) (16 §); and
- when a PP has been adopted the deciding authority or municipality shall ‘gain knowledge’ (*skaffa sig kunskap*) of the significant environmental effect that the implementation actually result in (18 §).

The follow-up activities required by 18 § are not further elaborated upon, neither in terms of reporting and responses nor appropriate methods and organisation. The Government Bill (2003/04:116, p. 68) preceding the SEA legislation merely stated that it can be appropriate to integrate this follow-up in existing monitoring programmes and planning cycles. The purpose of follow-up stated in 18 § is that the authority or municipality shall *gain knowledge* of significant environmental effects *previously not identified* so that appropriate mitigation measures can be taken. The level of knowledge and how it should be gained is not specified, suggesting that rather minimalistic interpretations of this requirement are possible. However, to gain knowledge about previously unidentified effects requires follow-up that is relatively broad and deep in its scope, thus requiring a considerable planning and organisation effort by the responsible authority or municipality. In contrast, the existing guidance on SEA available today in Sweden is very weak on how to plan and conduct follow-up (see Naturvårdsverket, 2000; Boverket and Naturvårdsverket, 2000).

Although the inclusion of a monitoring requirement in the SEA Directive is an important contribution towards institutionalising *ex post* SEA, its “minimalist” formulation and limited guidance raises several issues:

First, Article 10 does not require an evaluation to be made, in addition to monitoring. Although the guidance states that “monitoring does not end with the collection of environmental information but includes also their evaluation” (European Commission, 2003: 60), this is not a binding task and it is not elaborated upon. As described above, a comprehensive evaluation produces complementary information to a monitoring system, by allowing underlying assumptions to be questioned and broader criteria to be used. Furthermore, effects of a cumulative or synergistic character may be easier to identify and analyse in a comprehensive evaluation than in a narrower monitoring scheme.

Second, it leaves open the question of how best to organise *ex post* activities and who should be responsible for them. Should the plan-making authority undertake the work itself or should an independent body be responsible? To what extent should stakeholders be involved?

The issue of responsibility and roles is important in terms of awareness of possible bias, ownership of the results and incentives to take action, and communication of the results.

Third, requirements and guidance regarding the scope of the monitoring are ambiguous. The previously significant environmental effects should be monitored, but also ‘unforeseen adverse effects’. The latter seem to necessitate a rather broad arrangement. On the other hand, it is proposed that existing monitoring should be used as far as possible and that the level of detail should be adapted to the level of detail in the PP.

Fourth, the guidance suggests that monitoring of environmental effects could be integrated into regular revisions of the PP, where the focus may primarily be on economic and/or social objectives and effects. However, as experiences with the EC’s Impact Assessment procedure there is a real a risk that environmental effects and issues lose out when environmental, economic and social results are dealt with in an integrated fashion.

Fifth, the guidance recognises that since plans and programmes involve many indirect effects, causality chains are likely to be more complicated at the SEA level than EIA level. However, guidance on how to go about establishing causality is poor. This is an issue where established evaluation know-how can contribute with more sophisticated advice and tools.

Sixth, a useful working process is proposed in the Commission’s guidance but no practical methods, indicators, checklists, analytical tools, or existing datasets are referred to or described. An important question is what general guidance could be provided centrally to support authorities and municipalities undertaking *ex post* SEA.

Seventh, taking remedial action is not mandatory. While a general rule for remedial action may be difficult to formulate, the lack of such a requirement severely limits the purpose and rationale of monitoring – i.e. ensuring that environmental effects do not deviate significantly from the intended effects. Article 10 risks resulting in just a paper exercise. In fact, the Directive and the guidance do not even require reporting of the monitoring results. This means that mechanisms for accountability, positive and negative sanctions for the responsible authority, and opportunities for learning are constrained.

Towards an *ex post* SEA framework: principles

This section will address the above-mentioned seven issues in turn. It draws out lessons from literature and experience within the adjacent fields of EIA follow up and policy evaluation, and discusses implications for how to resolve the issues within *ex post* SEA.

Monitoring vs. evaluation

Should both monitoring and evaluation take place, or just the former (as specified in the SEA Directive)? As described earlier, the main differences between these two activities are: a) evaluations are undertaken less frequently, but are broader and deeper in scope, b) evaluations involve measuring performance against criteria and making a value judgement, rather than just measuring; and c) evaluation may question underlying intervention rationales and strategies to deal with a problem, rather than focusing on operational aspects.

The first point is not controversial, and a monitoring scheme can also be ambitious in scope and depth. The second point, on the other hand, highlights the value judgement aspect. In the *ex post* SEA literature, it has been argued that evaluation involves assessing performance on stated objectives in the PP (as opposed to merely checking conformance with provisions and conditions typical to EIA follow up). However, the evaluation literature entails more criteria

than just goal-achievement to determine the success of a policy or plan. It shows how it can be relevant to evaluate not just *if* the objectives were achieved, but *how well* they were achieved. The set of generic evaluation criteria identified by Mickwitz (2003) is a useful inspiration (Table 1). The third point relates to the key difference between EIA and SEA alluded to before. An SEA is about strategic decisions, and therefore *ex post* SEA is concerned with the result of a strategic decision. Again the evaluation literature provides a useful tool. For example, a monitoring scheme for a transport plan may examine whether the environmental guidelines for locating and designing roads are followed. An evaluation can revisit the assumptions regarding the need and demand for mobility as well as the choice of road transport as the best option to meet this demand.

Table 1. General evaluation criteria (Mickwitz, 2003)

General criteria	<ul style="list-style-type: none"> • Relevance • Impact • Effectiveness • Persistence • Flexibility • Predictability
Economic criteria	<ul style="list-style-type: none"> • Efficiency (cost-benefit) • Efficiency (cost-effectiveness)
Democracy-related criteria	<ul style="list-style-type: none"> • Legitimacy • Transparency • Equity

While there are many benefits of evaluating in addition to monitoring a PP, it should of course be asked if an evaluation is really needed, or if it would be too ambitious, too difficult or too costly in a given situation. It could be argued it is better to spend scarce resources on a rigorous and comprehensive monitoring system, rather than revisiting a PP idea, through analysis of the need and alternatives selection. Nonetheless, questioning strategic considerations *ex post* is very much in line with questioning them *ex ante*, which is widely recognized as a core purpose of SEA.

Organisation and ownership

How should *ex post* SEA be organised? The standard recommendation is to prepare the plan for this during the *ex ante* process. This plan should set out what should be monitored and evaluated, through what indicators and data, with what frequency, how, when and to whom reporting should take place, and who should be consulted. If *ex post* SEA also involves monitoring of downstream activities (tiering) the plan also needs to identify which those downstream PPs are and make explicit the limits or conditions set for them. A similar approach is proposed also in the evaluation literature, but the information required is slightly different. Rossi et al. (1999) identified three basic issues to be included in an evaluation plan: the questions the evaluation should answer, the methods and procedures used to answer the questions, and the nature of the evaluator-stakeholder relationship.

However, the key organisational issue for implementing *ex post* SEA is who should do it? This involves both the formal responsibility and accountability, and who is best suited to carry out the work. Important in this regard is the configuration of interests in relation to the follow up. In the context of *ex post* EIA, Morrison-Saunders et al. (2001) identified different driving forces for undertaking follow-up of three key actors respectively:

- Proponent – better project management, protection from liability, green profile
- Regulator – controlling compliance, reducing uncertainty, better predictions, better decisions, improvement of EIA process
- Community – communication about concerns, enhancement of local knowledge.

In SEA, however, the roles of the actors involved may not be this clear. The “proponents” are often public bodies with probably few commercial gains. Furthermore, the regulator and proponent roles are typically held within the same organisation. Finally, although the community’s interest may be large considering that strategic decisions are at stake, direct impacts may also be less tangible and visible than those arising from a project. The discussion of actor roles in the EIA/SEA follow-up literature focuses largely on the problem of ensuring that follow-up is undertaken at all. Regarding implications for quality and use of evaluations, further lessons can be learned from the evaluation literature. A key issue is whether the evaluation is done internally or externally, regardless of stakeholder consultation and participation. Vedung (1997: 115ff) argues that this must depend on the purpose; internal is usually better for improving a programme and general learning within an organisation, while external is better for accountability and improving basic knowledge around a problem. The SEA Directive does not explicitly specify a purpose in this way, but could be interpreted as emphasising programme improvement, thus suggesting internal evaluation.

Therefore, the organisation responsible for adopting the PPP is the natural choice for who should be formally responsible for *ex post* activities. At the same time, a PPP may address a wide range of stakeholders (public bodies, private sector, communities) and this has led to calls for ‘multi-stakeholder approaches’ to *ex post* SEA (Partidario and Fischer, 2004; Partidario and Arts, 2005). In EIA/SEA practice, a few models have been documented. In the follow-up of a Viennese waste plan, the SEA team and politicians were responsible for the plan’s operation but an external monitoring team was set up (Öko-Institut, 2002). In a controversial Australian mining project, an independent monitoring and evaluation organisation was set up by, and was accountable to, seven major stakeholders (Arts et al., 2001).

Scope of activities

The definition of monitoring in the EU guidance was to follow parameters in magnitude, time and space (European Commission, 2003). Thus, the scoping must consider how many and what kind of parameters to follow, over what time period and with what frequency, and over what geographical space. Unsurprisingly, principles for EIA follow-up stress that the scope needs to be adapted after the project, and that general rules are difficult to formulate (see Marshall et al., 2005). Providing a standard model at the SEA level is even more difficult, given the diversity of PPs and SEAs (Partidario and Arts, 2005).

Regarding the temporal scope, follow-up should be sustained over the entire life of the intervention (Marshall et al., 2005: 180). Appropriate frequency depends on the kind of

parameter. If the follow-up is concerned with the design of lower-level PPs, data could be collected quite frequently. Some environmental outcome parameters, on the other hand, may change very slowly (e.g. biodiversity impacts), justifying less frequent monitoring. Regarding the geographical scope, this too may depend on the parameter in question. For example, landscape impacts arising from a new municipal energy plan may be local (e.g. grid extension) while air pollution impacts may be transboundary (e.g. import of electricity from foreign coal-based production). Alternatively, an area-oriented approach could be taken. Then, the area subject to the PP is delimited and a range of environmental parameters within this area are monitored, using existing or new data.

Evaluation literature helps us address the question of which parameters to include. For example, Vedung (1997) identifies six different effectiveness models⁵⁴. First, the goal-attainment model defines the scope based on the predefined goals. In the *ex post* SEA context, this would correspond with the significant environmental effects⁵⁵ or environmental objectives listed in the SEA report and/or included in the final PP. Predefined indicators are often used. In some SEA applications, a great effort is put on defining indicators already in the *ex ante* phase and they effectively become environmental objectives for the PP. Second, the side-effects model extends the scope to include anticipated and unanticipated positive and negative effects. This is in line with the need to address unanticipated environmental effects in the EU guidance on the SEA Directive. However, how to limit the scope of side-effects remains an issue, as there could potentially be a large number (although of a primary, secondary and tertiary kind). In a way, this problem is both aggravated and mitigated in the third model, goal-free evaluation. This model challenged the view that predefined goals or indicators of an intervention are interesting. Instead, the evaluation should be organised after results, whether planned or unplanned (Weiss, 1998). This bears some resemblance to the area-oriented approach suggested by Partidario and Arts (see above), where the scope of parameters is in effect data-driven. However, there are likely to be significant problems of causal attribution (see further discussion in section 9) with this model.

Third, the comprehensive evaluation model, examines not only the fit between intentions and results but also the input and conversion phase. In the SEA context, this means evaluating the inputs to the PP, how it was prepared and implemented, and its outcomes. Considering the tiering aspect in SEA and the fact that most of the ‘outcomes’ of a PP may be new PPs rather than direct environmental impacts, this seems to be a relevant model to describe *ex post* SEA. Fifth, the client-oriented model is concerned with the satisfaction, concerns and needs of the program’s target groups. The scope of parameters thus consists of measures of client attitudes. This model is clearly more tailored to social policy programs than environmental policy programs. Finally, the stakeholder model specifies that the scope should be defined by stakeholders, regardless of pre-defined program goals. Stakeholders could include citizens, the private sector, decision-makers, program managers, implementing staff, neighbouring agencies, and the research community. Such a multi-stakeholder approach has been suggested for EIA follow-up (Arts and Morrison-Saunders, 2004). While there is broad agreement on the benefits of involving stakeholders, the current literature has not outlined in detail how such a monitoring and evaluation process should be conducted.

⁵⁴ Note that the two models ‘stakholder model’ and ‘policy commissions’ have been collapsed into one here.

⁵⁵ Annex I (f) of the SEA Directive states that possible significant environmental effects should be considered on “issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors”. In the absence of identified significant environmental effects listed in the SEA report to based the follow-up on, this list could be used as an initial, crude checklist.

To sum up, factors influencing the scope and depth of follow up in practice include the type of plan, sensitivity of the area, human and financial resources, and whether the SEA and/or PP is tiered to lower-level planning processes (Öko-Institut, 2002). Developing lists of relevant parameters for different types of PPs (e.g. a municipal energy plan, a regional transport plan) could be useful as guidance, but it remains important to recognise that *ex post* SEA is context-specific. Perhaps more helpful is guidance on how the scope can be arrived at, and for this it was shown above that standard evaluation models could inform such principles and processes.

Integration with other processes

An issue related to scoping is whether economic and social effects should be considered, jointly with environmental effects. The key question is whether *ex post* SEA should be integrated with any other monitoring and evaluation activities that go on in relation to the PP. According to Therivel (2004: 180), “[w]here it makes sense to do so, SEA monitoring can be linked to monitoring of the strategic action or other monitoring systems, but such monitoring often focuses on inputs, not outcomes, and could thus be inappropriate for SEA”. In most other literature, however, integration is seen positively. Considering that SEA has evolved from a narrow focus on environmental impacts to more proactive and holistic sustainability inputs, this seems to be a natural development. ‘Sustainability assurance’, whereby economic, social and environmental effects are followed-up jointly, is the final new direction for *ex post* EIA identified by Arts and Morrison-Saunders (2004) in addition to area- and sector-oriented follow-up. Recent EIA follow-up studies have emphasised the need to consider also socio-economic effects in addition to biophysical (Morrison-Saunders and Arts, 2005: 172). Integrated *ex post* activities also make sense considering that an SEA may not identify specific environmental effects or define specific environmental objectives but instead introduce environmental conditions or limits on economic and social objectives and activities set out in subsequent activities (tiering).

An important issue related to integrated follow-up is the need to clarify and discuss possible goal conflicts inherent in the PP. These may be intra-environmental or between environmental and economic or social objectives. If conflicting goals were set in a PP, a realistic and transparent *ex post* SEA process should recognise them and examine how they have been dealt with during implementation.

Establishing causal relationships

Perhaps the most difficult issue with *ex post* SEA as indeed in evaluation in general is to establish causality. This involves both mapping out the causal chain and measuring its strength. In an ideal world, this should be done both to ensure that intended (positive) effects were achieved, with satisfactory efficiency, and to examine if the PP was the cause of unintended or negative effects. Common sources of causal complexity are: vague objectives, non-PP driving forces on the relevant environmental parameters, changes and revisions to the PP, overlapping PPs, and, of course, long and complicated environmental impact chains. It may often be the case that causal chains are more tractable at the policy level than at PP level, since policy measures may more directly and in a more binding and predictable way target and influence the behaviour of individuals, e.g. economic instruments for pollution reduction.

One approach is to simply not aim for establishing causality in the first place. Cherp (2005: 3) argues “[i]t is reasonable to suggest that finding such causal links in most cases is both unfeasible and unnecessary. Moreover, looking for such causal links is somewhat at odds with the increasingly widespread notion of SEA as focusing on objectives rather than impacts”.

However, this is arguably counter to the whole purpose of follow-up, if it is to be something more than just a paper exercise of checking downstream documents for inclusion of environmental objectives. Even if the role of an *ex ante* SEA is primarily to set objectives rather than predict impacts, it is still relevant and desirable to examine whether measures in line with the objectives have been implemented and if they have had the desired effects.

An alternative approach to establishing cause-effect relationships is the two-track strategy (Arts and Morrison-Saunders, 2004). This involves measuring parameters early in the causal chain (e.g. emissions) and changes in the state of the environment (e.g. area-wide monitoring or complaint registration). If significant changes are observed, they could trigger more careful causal analysis. This suggestion was made for EIA follow-up, but the same principle could apply to SEA follow-up, i.e. starting in the two ends of the causal chains, working towards the middle and looking for associations in parameter development. Partidario and Fischer (2004) suggest that a key task is to decide on the boundaries of accepted evidence beforehand. Possibly, this could range from mapping out the relationship and judging its strength, to measuring association in changes of the PP-related intervention variable (e.g. number of roads) and the impact variable (e.g. ground-level ozone damage on vegetation), to establishing and measuring the strength of causality (i.e. quantifying the partial effect of the PP-variable and extraneous confounding factors) (see Rossi et al., 1999; Riksrevisionsverket, 1996; Gysen et al., 2002). As suggested above, for many PPs one may only reach the first of these levels, i.e. establish a 'reasonable causal chain' in an analytical-narrative way while for some policy measures it may be possible to quantify the causal effect.

Recognising these difficulties, what tools can assist in mapping out causal relationships? A useful tool extensively used in the environmental context is the DPSIR model. This model shows how a causal chain can be logically divided into elements and also implies that one DPSIR category can be used as a proxy for impacts (Maltais et al, 2002). Unsurprisingly, in practice, most often P and R indicators are monitored in environmental follow-up (Öko-Institut, 2002). In the policy evaluation literature, the 'intervention theory' (or 'programme theory', 'programme logic') is used for the same purpose. A comprehensive theory should include an outcomes hierarchy, and for each output, impact and outcome in this hierarchy there should be (Funnell 1997, in Rossi et al., 1999):

- Success criteria and definitions of terms
- Factors that are within the control or influence of the program and are likely to affect the extent to which the outcome is achieved
 - Factors that are outside the control or influence of the program and are likely to affect the extent to which the outcome is achieved
- Program activities and resources used to control or influence both types of factors
- Performance information required to measure the success of the program in achieving desired outcomes
- Comparisons required to judge and interpret performance indicators.

A simpler version can be found in Vedung (1997: 140). Another useful guide to the logics of analysis in evaluation is the set of fourteen questions formulated by Weiss (1998: 273, figure 12.1), or the model of the causal chain by the EEA (2001: 20, figure 6).

Evaluation designs and statistical methods for establishing causal inference is of course an important part of the evaluation literature, but will not be summarised here. It has been noted

that within environmental policy, experimental designs are not feasible (Benneer and Coglianesse, 2005). Still, even quasi-experimental approaches will probably be difficult or unfeasible in the PP context due to small populations (low n) and many variables. At policy level, though, the impact of the electricity tax on household electricity consumption could be more readily statistically analysed.

Data collection

Whether formal statistical analysis of causality is conducted or not, all *ex post* activities need to consider how to collect data matching the scope and what existing datasets can be used. The most straightforward case is when the monitoring and evaluation is limited to checking conformance of lower-level PPs with environmental provisions and objectives, when the data then consist of documents. However, in most cases data should be collected on parameters further down the chain of outcomes.

Existing data should be made use of, as emphasised both in the SEA Directive, EIA/SEA follow-up literature and in the few empirical case studies that exist. The area-oriented approach (see Arts and Morrison-Saunders, 2004) even suggests that existing data at a given scale should be the organising principle and determine the scope. Generally, preparing an inventory of appropriate existing national, regional and local datasets to assist evaluators would be a helpful first step. In the UK, the Environment Agency has in regards to the SEA Directive produced a list of existing national datasets relevant to the topics specified in Annex I (f) of the SEA Directive (e.g. biodiversity, population, water quality, landscape) (Environment Agency, 2005). The EEA has argued that environmental policy evaluation in Europe should also make use of the mandatory reporting to certain environmental Directives, and has compiled a list of these reporting mechanisms (EEA, 2001: 17). In relation to data collection for *ex post* SEA, it can also be valuable to consider relationships with various analytical tools that are used in SEA more widely. Can those tools (or rather their applications) provide data? Can they aid the analysis within *ex post* SEA, through suggesting techniques or approaches?

Primary data are also likely to be required or useful in some monitoring and evaluation processes. Again, the evaluation literature is rich on advice for such data collection. Generic methods include document review, interviewing, focus groups, questionnaires, direct observation, participant observation (Vedung, 1997, Weiss, 1998; Swedish National Audit Office, 1999). In the *ex post* SEA context, longitudinal datasets are very valuable. The evaluation literature also shows that use of several data sources is beneficial, by increasing the coverage of the outcomes hierarchy and possibly contributing to triangulation. For example, in their evaluation of policy instruments for pollution control in the Finnish pulp and paper industry, Hildén et al. (2002) used quantitative monitoring data on water quality, quantitative emissions data from permit records, qualitative interviews with policy-makers and industry representatives, and qualitative document analysis of historical emissions permits records for a sample of plants. However, evaluation practice is different from the literature: reviewing 21 policy evaluations, the Swedish EPA found that most of them used interview data, and only to a lesser extent were quantitative statistics used (Naturvårdsverket, 2004).

Reporting, responding to and learning from ex post SEA results

A major weakness of the follow up aspects of the Directive is that it does not require any reporting. Revisiting the intended purposes and benefits of *ex post* SEA, it is obvious that they are not limited to simply collecting and presenting data and conclusions on the environmental

effects of PPs. It also needs to be effectively reported to relevant target groups and decision makers for some kind of reaction: continuation, modification, or termination of the PP.

There is extensive guidance in the evaluation literature on how evaluation reports can be prepared and formatted. Weiss (1998: 298) explains that it is important to shape the report after the main target group's needs, but this needs to be compromised when there are different target groups involved and resources limited. Other lessons about effective reporting are that confidence levels of results should be communicated, generalisability should be addressed, and views of different stakeholders (not part of the evaluating team) can be included. There are also valuable lessons on dissemination of results. Different strategies can be used; intensive interpersonal interaction with practitioners, presentations to conferences, or use of intermediaries (e.g. the media, consultants and trainers, interest groups) (Weiss, 1998). The need for, and benefits of, dissemination within *ex post* SEA depend on the character of the PP; community interest, potential for new knowledge and insight, and its scale, comprehensiveness and status. However, dissemination will typically be more effective the more stakeholders are involved in the follow up activities.

The EU guidance on SEA specified taking 'remedial action', while there is not corresponding requirement in the Directive. Such a rule would probably be difficult to define, but mandatory reporting in a more or less standardised format should increase the pressure and incentives for acting upon the results. However, taking remedial action is only one aspect of utilisation of evaluation results. Other forms of utilisation include various learning uses. reconfirming existing beliefs, mobilising support, enlightenment (conceptual utilisation), and interaction utilisation (Vedung, 1997; Weiss, 1998). In an *ex post* transport SEA context, one could imagine remedial action as re-routing a planned road project due to changed landscape features and enlightenment as learning about general mobility patterns in the region.

According to Weiss (1998: 310-314) there are two reasons why evaluation results may not be used or stimulate learning. First, organisational resistance can stem from the organisation's survival imperative overriding program objectives, hostility towards new practices that do not fit with prevailing values, and a non-instrumental commitment to the program. Second, political constraints to giving attention to (in particular negative) evaluations can result from a competitive climate with other agencies, re-election motives of higher-level decision-makers, and the support of status quo of the establishment. These non-utilisation and -learning factors are deeply embedded in political and organisational structures, are unlikely to be removed (Nilsson, 2006). In the *ex post* SEA context, it is possible that the political sensitivity depends much on the PPP decision level and associated scrutiny, tangibility and visibility of impacts. A few general 'remedies' have been suggested; presenting more cogent studies, increasing dissemination, and changing the expectations for utilisation (from instrumental use to enlightenment) (Weiss, 1998). Rossi et al. (1999: 436) suggest five guidelines for maximising utilisation;

- Evaluators must understand the cognitive style of decision makers
- Evaluation results must be timely and available when needed
- Evaluations must respect stakeholders' program commitments
- Utilisation and dissemination plans should be part of the evaluation design
- Evaluations should include an assessment of utilisation.

In addition, stakeholder involvement throughout the process will increase transparency and decrease opportunities to ignore results.

Conclusions

There is an “*ex post* impasse” in the world of environmental assessment. However, the practice of *ex post* SEA has great potential to improve and spread in the near future, in particular given the general benefits of monitoring and evaluation, including opportunities for knowledge generation and learning, higher public awareness, accountability, and closure of implementation gaps. The main challenges in comparison with EIA follow-up are the level of abstraction and long impact chains. However, these are inherent features of strategic decision making. Another problem is that strategic decisions are (sometimes) less binding and may be symbolic rather than instrumental in nature, implying that follow-up may be perceived as less relevant and worthwhile. This might be a chicken-and-egg issue, though, as institutionalised *ex post* procedures could be an incentive to apply the PP to a greater extent and in a better way. Furthermore, for various political and normative reasons actors may have little interest in following up and prefer to move on to new issues.

Given these and other potential barriers to *ex post* SEA, an important way to enhance practice is to develop more guidance and learning-from-doing. The SEA Directive is a starting point by introducing a requirement to monitor (Article 10) and providing some guidance on how it can be organised (European Commission, 2003), but it leaves several issues unresolved. It should also be noted that the Directive applies only to plans and programmes, whereas SEA in principle also covers the policy level. An important difference between these level for *ex post* work is that policy instruments may involve a less complex causal chain than plans, with implications for appropriate evaluation methods and approaches.

A significant weakness of the SEA Directive is that it does not stipulate any remedial action to be taken in response to monitoring, and even reporting of the results is not required. A standardised format and procedure for reporting could thus be a key element to add in national guidance on *ex post* SEA. Related to reporting, valuable lessons can be learnt from evaluation research on dissemination and utilisation of results. Rather than solving problems of organisational resistance and political constraints to learning from evaluation, however, increasing awareness about them could help achieving appropriate and effective *ex post* designs.

Based on a theoretical exploration, a number of principal conclusions could be drawn. First, national competent authorities need to resolve which organisations should be responsible for monitoring and evaluation. There are benefits of both internal and external evaluation, and the approach should be selected with the purpose of the evaluation in mind. Second, there is an important difference between monitoring and evaluation, in that the latter may call into question assumptions of an intervention and can more freely choose criteria for judging the outcomes. On this point, evaluation practice can add a lot of value, such as generic evaluation criteria and questions that help reveal assumptions regarding the need of the PP and its objectives. Third, the appropriate scope for monitoring and evaluation activities cannot be generally determined, given the diversity of interventions subject to SEA. However, the evaluation literature provides useful models for how decisions on scope, or evaluation questions, can be made, such as the goal-achievement model, stakeholder model, etc. Fourth, and related to the scope of the evaluation, integration with evaluations of economic and social aspects of a PP is probably useful, and goal conflicts need to be elucidated. Fifth, establishing causality is a particular problem in *ex post* SEA. This is also a core concern in evaluation research, from which the concept of intervention theory is particularly useful for mapping out the causal chain. Using statistical analysis to determine the strength of causal relationships is however likely to be difficult. Sixth, an important piece of guidance on data to use in *ex post*

SEA would be to compile inventories of existing environmental monitoring and other relevant datasets at the national level. When collection of primary data is needed, there is ample guidance in the evaluation literature on methods, at least on qualitative data. The potential for using data generated by other environmental decision-making tools, such as LCA and MCA, should be considered, as well as how such tools can contribute in other ways to *ex post* SEA than providing data.

As noted by several authors, the next step in *ex post* SEA is now to learn from practice. The infeasibility of a one-size-fits-all approach, in terms of purpose, procedure and methodology, has been clearly established. An important contribution would be to find out which monitoring and evaluation approaches and tools are useful in which settings, for instance with respect to the nature of the PP, the institutional context, and resources available.

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STRATEGIC ENVIRONMENTAL ASSESSMENT AND MANAGEMENT IN LOCAL AUTHORITIES IN SWEDEN

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Abstract and project description: MiSt 12 – SEAMLESS Strategic Environmental Assessment and Management in Local authorities in Sweden.

This paper describes and explains the *SEAMLESS* project and its rationale. The *SEAMLESS* project addresses practical and knowledge gaps related to integrated use of Strategic Environmental Assessment (SEA) and Environmental Management Systems (EMSs) in local authorities. The *SEAMLESS* project aims to explore conceptual foundations as well as feasibility of establishing better operational and methodological linkages between these tools for strategic environmental planning, assessment and management in the context of Sustainable Development Strategies (SDSs).

The *SEAMLESS* project is motivated, on the one hand, by the need to enhance the ‘strategic’ and participatory character of EMS in local authorities, particularly their ability to deal with environmental impacts of their plans and programs. On the other hand, the *SEAMLESS* project seeks to improve the effectiveness of SEA by linking its follow-up elements to management systems. Finally, the *SEAMLESS* project aspires to ensure more effective formulation and implementation of Sustainable Development Strategies (SDSs) at the local level.

The specific objectives of *SEAMLESS* include: 1) Formulation of a conceptual framework for the integrated use of SEA and EMS. 2) Benchmarking the good practice of such integrated use of strategic tools. 3) Evaluation of the existing practice of the integrated tools use in selected Swedish local authorities. 4) Identifying and piloting options for enhancing tools interaction. 5) Formulating recommendations for policy and capacity building in this area.

Key words: Strategic Environmental Assessment (SEA), SEA follow-up, Environmental management system (EMS), Sustainable development Strategies (SDS), Public authorities

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STRATEGIC ENVIRONMENTAL ASSESSMENT AND MANAGEMENT IN LOCAL AUTHORITIES IN SWEDEN

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Introduction.

Recent research notes the proliferation of various environmental assessment and management tools and points to the confusion and 'tool fatigue' that such proliferation may result in. Researchers also indicate various benefits of integrated use of different tools (Emilsson et al., 2004; Eccleston and Smythe, 2002; Nitz and Brown, 2001).

The researchers of the SEAMLESS team and other scholars have analyzed conceptual, procedural and methodological aspects of tools interaction, including, for example, utilization of environmental management systems (EMS) as a follow up tool for Environmental Impact Assessment (EIA) (Arts et al 1998; 2004), using the quality management systems principles in evaluating strategies for sustainable development (Cherp et al., 2004), and using Strategic Environmental Assessments (SEAs) as a tool for environmental management in private corporations (Marshall, 2001). An emerging consensus has been that various tools should be used in a complementary fashion to ensure the integrity of the environmental planning and management cycle.

The SEAMLESS project focuses on SEA, EMS in local authorities and, to a lesser extent, on sustainable development strategies (SDS). Though it has been suggested that SEA, EMS and SDS can interact more effectively (e.g. Emilsson et al., 2004), a recent review (Cherp, 2004a) produced within the MiSt programme identified the following significant gaps in the current knowledge in this area (see also Emilsson and Hjelm, 2002a; 2002b; 2004):

1. There is only a limited understanding of the management elements of the SEA follow-up and the lack of conceptualization of its possible interaction with EMS systems;
2. The current research on EMS in public authorities has not answered the two overarching and interrelated questions:
 - a. What are the effective approaches to increase the strategic use of EMS in public organizations for proactive environmental management integrated into their core activities?
 - b. How should an effective EMS in public authorities interact with the stakeholders? In particular, what are the specifics of such interaction as compared to EMS in the private sector with regard to different accountability and public involvement standards in public authorities?
3. Though it has been recognized that sustainable development strategies should be based on systematic assessments and incorporate monitoring, feedback and continual improvement mechanisms, their potential linkages with SEA and EMS in public authorities have not been researched except on a very general level (Cherp et al., 2004; Cherp 2004b).

SEAMLESS aims to contribute to addressing these gaps in knowledge. Its **primary purpose is to explore conceptual foundations as well as feasibility of establishing better operational and methodological linkages between tools for strategic environmental planning, assessment and management, especially between SEA and EMS in local authorities.**

This paper provides background to the current thinking on SEA follow up and EMS in public authorities. It then explains the rationale for the SEAMLESS project, its main objectives and research methods. At the time of writing, the SEAMLESS project was in the stage of collecting and analyzing empirical data but no results were ready for publishing.

SEA follow-up

Rationale

SEA follow-up includes the activities undertaken after the adoption of the strategic initiative which has been subject to SEA. The rationale for SEA follow-up is largely similar to that of EIA follow-up. It stems from the fact that Impact Assessment predictions are uncertain, that unexpected circumstances may emerge during implementation, and that execution may deviate from original plans. EIA follow-up aims to reduce such uncertainties, account for such new circumstances, and keep the project in line with the EIA recommendations. The need for SEA follow-up is dictated by similar considerations, which, however, assume larger importance at the strategic level:

1. **Uncertainties** in determining environmental implications of a strategic initiative are typically more profound than those found in relation to environmental impacts of an individual project.
2. **New circumstances** are more likely to emerge in relation to a strategic initiative whose implementation arena is much less controlled by the proponent than a project operation is controlled by the developer.
3. Whereas significant **deviations** from the original plan are ‘abnormal’ at the project level, these are typical features of strategic processes.

This last observation underlies one potential qualitative difference between EIA and SEA providing for an additional rationale for SEA follow-up. If SEA is to deliver on its promise to promote strategic change towards environmental sustainability, it should be able to shape not only *formulation* of strategic initiatives, but also their *implementation*. This is particularly important, because the link between formulation and implementation of strategic initiatives is often much weaker than at the project level. Thus, follow-up is needed to expand the focus of SEA from merely ensuring ‘green rhetoric’ in policies, plans and programmes (PPPs) to enforcing environmentally sound patterns of activities arising from these PPPs.

Given these convincing rationale for SEA follow-up, it is surprising that the discussion of this topic has been so far rather limited. Though the need for SEA follow-up was noted already in early SEA publications (e.g. Lee and Walsh (1992), there has been only a handful of research papers on this topic in the last 15 years⁵⁶, most notably Partidario and Fischer (2004); Partidario and Arts (2005). In practical guidance, SEA follow-up has been less emphasised

⁵⁶ See a review in Partidario and Fischer (2004)

than other SEA elements. For example, the IAIA's SEA Performance Criteria (2002) mention SEA follow-up only briefly: "[SEA should] *provide[s] sufficient information on the actual impacts of implementing a strategic decision to judge whether this decision should be amended*".

There are two reasons for this relative neglect of SEA follow-up. First of all, the SEA discourse has been strongly influenced by Impact Assessment (IA) thinking, historically shaped by the conviction that decision precedes and guides action. The centrality of this view is reflected in IA's motto '*Think first – act second!*'. Operationally this meant the focus of IA and SEA on attaining environmental ends through shaping environmentally significant *decisions*. SEA has been based on the assumption that once the 'strategic decision' is made it is then implemented until superseded by another strategic decision. By influencing 'strategic decisions', SEA has aimed to affect the whole range of lower-level decisions and 'implementation' activities without focusing on details. Thus, in the SEA discourse, shaping decisions 'as early as possible' is traditionally given more importance than examining what happens to these decisions (and the environment) after they have been made.

The second reason for neglecting SEA follow-up has had less to do with SEA and more with the nature of strategic initiatives themselves. Many such initiatives do not presume any implementation activities to speak of. They may be more about articulating and communicating commitments or principles or simply rhetoric than about action. If there are little or no implementation activities and if the institutional frameworks created for formulation of strategic initiatives cease to exist after the initiative has been endorsed, then SEA follow-up loses its 'organizational anchoring'. Even when this is not the case, the links between formulation and implementation of strategic initiatives are much more complex than, for example, the links between design and implementation of projects. Understanding the nature of these links is a necessary step in conceiving effective SEA follow-up and it can also be helpful in explaining why the currently prevailing SEA focus on 'strategic decisions' may not be sufficient for promoting environmentally sustainable strategies.

Conceptually, the relationship between formulation and implementation of strategic initiatives has been extensively scrutinized by corporate 'strategy formation' theories, policy and organizational studies. All these disciplines clearly point that the connection between the two is not linear, straightforward and one-way as often depicted by 'strategic planning' theories (e.g. see Mintzberg (1994)). In particular, there is evidence that, even in successful strategies, actual implementation often dramatically differs from formally conceived plans. Moreover, in so-called 'emergent' strategies, action does not follow formal decisions, but instead decisions articulate learning gained from action. 'Implementation' here is as important (if not more important) as 'formulation'. In other words action may precede and guide thinking as much as the other way around. This reasoning is reflected in the on-going debate on strategies for sustainable development which are now pictured as such 'emergent' strategies, i.e. processes for learning, capacity-building, debate, etc. rather than 'new plans' (OECD (2001)).

The EA discourse has partially reflected these developments, often connecting them to the fact that environmental impacts of proposed activities can rarely be predicted or managed with certainty. EIA follow-up recognizes certain flexibility needed in managing environmental impacts of individual projects. Adaptive Environmental Assessment and Management (AEAM) aims to overcome key weaknesses of EIA by suggesting a focus on creating interactive management systems instead of attempting to formulate 'environmentally sound decisions' (Holling (1978)). Though AEAM approach may be applied to strategic initiatives as well as to individual projects, it has not been extensively reflected upon in the

SEA discourse (also it is mentioned by, e.g. Partidario and Arts (2005)), possibly because of its inherent scepticism regarding viability of strategic initiatives.

The SEA thinking has also evolved to become more receptive to the concept of ‘emergent’ strategies Cherp et al. (forthcoming). If at the early stages of the IA evolution the focus was on getting one key decision “right”, more recent SEA thinking recognized that strategic initiatives are shaped not by one single decision, but by series of connected decisions. That is why SEA guidance stresses integration of SEA with planning or policy making processes rather than simply producing a one-point ‘assessment’ of a proposed decision. However, the decision-making sequence does not stop with the adoption of a PPP. Indeed, in some cases it is becoming more complex and strategically significant. The PPP itself undergoes a formal cycle of revision and adjustment; in parallel, there is a less formal process of interpretation and application of the PPP. In order to support sustainable development, any strategic initiative in principle needs to integrate sustainability considerations into all of these post-adoption decisions.

SEA scholars increasingly recognize that ‘*decision-making processes [are] neither linear nor phase-wise*’ (Noteboom and Teisman (2003)) and thus, revisiting once adopted decisions may become necessary not only during formulation of strategies, but also during their implementation. These theories both within and outside the SEA field argue for shifting the weight from shaping strategy formulation to integrating environmental considerations into strategy implementation, in other words, for SEA follow-up. As this thinking strengthens and disseminates, SEA follow-up will inevitably become a more important element of the SEA discourse. The question will then become: how can it be practically implemented?

From EIA to SEA follow-up

The emerging theories and practice of SEA follow-up are largely shaped by those of project-level EIA follow-up defined by Morrison-Saunders and Arts (2004) as:

The monitoring and evaluation of the impacts of a project or plan (that has been subject to EIA) for management of, and communication about, the environmental performance of that project or plan.

EIA follow-up is a relatively well established field covered in at least two dedicated books (Arts (1998), Morrison-Saunders and Arts (2004)) and several special issues of Impact Assessment and Project Appraisal (the latest in September 2005). Most of the principles for EIA follow-up (e.g. such as those formulated by Marshall et al. (2004)) are relevant to SEA follow-up. There is also a general consensus that similarly to EIA follow-up, SEA follow-up should include the following key elements Morrison-Saunders and Arts (2004):

- **monitoring;**
- **evaluation;**
- **management;** and
- **communication.**

However, not all approaches to EIA follow-up will be universally applicable or effective for SEA. We shall illustrate this statement in relation to the four follow-up elements listed above, but first we shall make two general observations on the differences between EIA and SEA follow-up.

The first concerns the focus on impacts within EIA follow-up. The SEA focus has been shifting environmental impacts of strategic initiatives to sustainability implications of their

goals, objectives, agendas and implementation measures. This means that SEA follow-up should also address all these aspects rather than merely environmental impacts. For example, a ‘multi-track approach’ proposed by Partidario and Arts (2005) shifts the emphasis away from impacts as shown in Box 1.

Box 1. Proposed multi-track approach to SEA follow-up

Track 1. Monitoring actual changes in the state of the environment, socio-economical situation, institutional structures etc.

Track 2. Evaluating achievement of stated objectives of the strategic initiative by monitoring and evaluating ‘indicators of success’ or goal achievement.

Track 3. Evaluation of the performance of the strategic initiative focuses on ‘implementation’ activities as well as related decisions and actions. Partidario and Fischer (2004) refer to this as ‘performance follow-up’.

Track 4. Checking conformance of subsequent decision-making with the strategic initiative and the SEA. The focus here is on consistency in decision-making, especially relevant for hierarchical planning systems.

Track 5. Monitoring and evaluation of the actual impacts of the strategic initiative on the environment and sustainability.

Source: Partidario and Arts (2005)

The second difference between EIA and SEA follow-up concerns implementation mechanisms to which they are linked. EIA follow-up as well as project implementation are often undertaken by the same project proponent who has been responsible for EIA. As we already mentioned, the relationship between formulation and implementation of strategic initiatives is much more complex. The type of implementation activities depends upon the nature of a particular strategic initiative. Implementation activities may not envision specific actions leading to the declared goals of strategic activities. The actors in implementation may be not the same as proponents of the strategic initiative.

For example, a programme may prescribe specific actions which are funded and controlled by the programme proponent. Programme implementation in this case is not significantly different from operation of a project. Land-use plans may set up conditions for developments. ‘Implementation’ of a land-use plan may not presume any proactive actions by planning authorities. At the same time, regular revision and updating of such plans, as well as issuing planning permits may be viewed as implementation activities. Policies may envision only periodic evaluations. Many strategies are adopted because they articulate commitments, set debate arenas or promote certain principles. Their implementation occurs through information, communication and learning rather than through any specific activities. Some of these are more political rhetoric than action-inducing mechanisms. Often, the more ‘strategic’ is the initiative (e.g. policy) the less specifically defined is its implementation. Thus, SEA follow-up will always need to face the need to integrate into these sometimes complex, sometimes unclear and often rudimentary implementation mechanisms, what we will call the ‘implementation riddle’.

Expanding the focus beyond impacts and untangling complex links between formulation and implementation are at heart of developing all four elements of SEA follow-up as described in the next section.

Elements of SEA follow-up

Monitoring

The IAIA SEA Performance Criteria (International Association for Impact Assessment (2002)) prescribe that good SEA should provide information on the ‘actual impacts of implementing a strategic decision’. Likewise, the EU ‘SEA’ Directive requires

to monitor the significant environmental effects of the implementation of plans and programmes in order, inter alia, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action (Art. 10 (1)). ((2001), emphasis ours)

This focus on impacts (effects) has faced both practical and conceptual challenges. From the practical angle, impacts of strategic initiatives are difficult to both trace and attribute. On the one hand, strategic initiatives may have complex and indirect effects through their influence on other initiatives of different levels. Partidario and Arts (2005) refer to this as the ‘splash effect’. Consequently, impacts may become difficult to trace through complex chains of causality. On the other hand, when changes in environmental conditions are observed their attribution to a specific strategic initiative may be problematic, as they will usually be impacted by a variety of other factors.

From the conceptual angle, the very focus of SEA on impacts, originally inherited from Impact Assessment, has been consistently questioned in the SEA literature. It has been argued that SEA should concentrate not only on the impacts, but on the validity of the objectives, soundness of the underlying analysis and various other features of strategic initiatives. All such information obtained during SEA is characterized by the same uncertainty and dynamism as prediction of environmental impacts and therefore should be in the focus of SEA follow-up to the same (if not larger) degree as environmental impacts.

In this respect, the ‘multi-track’ approach (Box 1) provides for a wider and more flexible focus of SEA follow-up monitoring which may include the following:

- monitoring of actual environmental, socio-economic and institutional changes relevant to the strategic initiative (Track 1);
- monitoring of ‘indicators of success’ as defined by the strategic initiative or SEA (Track 2);
- monitoring of actual implementation activities and related actions (Track 3);
- monitoring of the actual impacts of the strategic initiative (Track 5).

SEA monitoring is required by the EU ‘SEA’ Directive and some national legislation in Europe (e.g. in Finland and the Netherlands). Such monitoring focuses both on impacts and objective-related indicators. For example, Table 2 lists selected parameters proposed for monitoring environmental aspects of transport infrastructure in Nordthüringen regional plan in Germany.

Table 2. Selected monitoring parameters for environmental aspects of transport infrastructure in the Nordthüringen regional plan, Germany

Environmental objective		Monitoring parameter
The road and railway network should be developed in a way that		
1.1	reduces traffic-related noise and pollutants incl. CO ²	Trends in traffic-related noise and pollution
1.2	Preserves large unfragmented areas	Trends in fragmentation in the region
1.3	the continuity of biotope networks is maintained or recovered	Length of selected roads in particularly sensitive areas / in areas with high env./ techn. risks (e.g. flooding areas)
1.4	the traffic density in ecologically sensitive areas is reduced	Development of species particular sensitive for fragmentation
1.5	it sustains a high stability against environmental and technical risks	
1.6	it results in a lower increase of traffic areas including the share of sealing	Development of the share of traffic areas in the region

Source: Hanush (2005)

As with the other elements of SEA follow-up, assigning responsibilities for monitoring may be challenging. The proponent of the strategic initiative will rarely have adequate capacities and mandate for necessary monitoring. Thus, existing monitoring systems may need to be utilized. For example, in Germany, the authority responsible for SEA is also responsible for monitoring, whereas other authorities are obliged to provide relevant information and the existing monitoring systems should be utilized as much as possible (Hanush (2005)). However, reliance on external monitoring systems may create a challenge in linking the monitoring component of the SEA follow-up to evaluation, management and communication. There should be a special mechanism for transferring monitoring data collected by an external agency to those actors who can evaluate and act upon them in the context of SEA follow-up.

Evaluation

The IAIA SEA Principles state that a good SEA ‘*provides sufficient information ... to judge whether this decision should be amended*’. The verb ‘judge’ here denotes the evaluation component of SEA follow-up which links ‘information’ (i.e. monitoring data) to ‘amending decisions’ (i.e. management).

In EIA follow-up, evaluation mainly focuses on two sets of questions:

- 1) Are the actual impacts of development in line with EIA predictions? Do they conform to environmental quality standard, functional thresholds, permits or other reference values? Are there significant impacts unforeseen in the EIA?
- 2) Is the project, especially its environmental mitigation components, implemented in accordance with the original design, EIA recommendations and permit conditions?

In case of non-conformance or undesirable impacts the EIA follow-up evaluation may result in management recommendations, for example, on changing operation conditions.

In principle, the evaluation element of the SEA follow-up should pursue the same function of triggering corrective actions within the strategic initiative. The multi-track approach implies a wider focus for evaluation within SEA follow-up:

- 1) Evaluating actual environmental changes to detect and assess new trends with implications for the strategic initiative in question (Track 1);
- 2) Evaluating whether the stated objectives of the strategic initiative have been achieved (Track 2);
- 3) Evaluating whether the strategic initiative is implemented as originally planned (Track 3);
- 4) Evaluating whether relevant decisions conform to the strategic initiative (Track 4);
- 5) Evaluating the actual effects of impacts of the strategic initiative (Track 5).

The relative importance of these various tracks depends upon the nature of strategic initiative in question. For example, policies and development strategies may derive most benefits from evaluation according to tracks 1 and 2. New legislation would require evaluation according to tracks 4 and 5. Many programmes may particularly benefit from evaluation according to tracks 2, 3 and 5.

Whatever track is pursued, SEA follow-up evaluation is likely to deal with vast arrays of data (often collected for different purposes), complex issues, new phenomena and emerging factors. Compared with EIA follow-up it is much more likely to deal with unexpected and unforeseen circumstances and the need for a strategic response. Consequently, whereas EIA follow-up evaluation may be a relatively simple task as compared to the original EIA, SEA follow-up evaluation may potentially become almost as complex as the original SEA.

If monitoring may often rely on external systems for data collection, evaluation should be directly connected to the strategic initiative in question. Ideally, it should be conducted within the same organizational and procedural framework as the strategic initiatives themselves. For example, formal regular evaluations of policies or reviews and revisions of plans may provide convenient time-points for SEA follow-up evaluation. Due to potential complexity of SEA follow-up evaluation, there may be merits for assembling 'SEA follow-up evaluation teams' to prepare evaluation reports much in the same way as SEA reports are prepared.

There is not much legislation on or practical experience of evaluation in the context of SEA follow-up. In one example, the Integrated Assessment of the Tomsk Regional Development Strategy recommended creating a 'strategic radar' mechanism. This mechanism would regularly test the validity of assumptions on which the Strategy has been based, particularly which of the scenarios is actually followed. It will also detect and assess new factors which may affect the implementation of the Strategy. The 'strategic radar' data would be fed into 'strategic conversations', a specific forum of Strategy's stakeholders who will be able to discuss these new trends and make decisions on potential changes to the strategy.

Management

Management is probably the most important and challenging yet least discussed component of SEA follow-up that ensures continuous integration of sustainability considerations into unfolding strategic initiatives. The management component should ensure that SEA and SEA follow-up recommendations are translated into decisions and actions implementing the strategic initiative.

The two questions arising here are (a) which ‘decisions and actions’ should be targeted; and (b) how can these be influenced? The first question relates to the already discussed ‘implementation riddle’. In general terms, the following types of actions and decisions may be relevant to implementation of strategic initiatives (Figure 2):

- I. Decisions on revising and amending the strategic initiative itself. For example, a city master plan may undergo periodic reviews and amendments.
- II. Actions directly prescribed in the strategic initiative. For example, a regional transport plan may prescribe construction of bicycle lanes.
- III. Decisions and actions for which the strategic initiative sets a formal framework. For example, a land-use plan may restrict certain types developments in particular zones.
- IV. All other decisions and actions which are relevant to implementation of strategic initiative. For example, a national energy policy may affect consumer and investor behaviour without directly controlling it.

The relevance of different types of actions and decisions depends upon the nature of the strategic initiative. Types II-III may be more relevant for plans and programmes, Type IV – for policies, whereas Type I – for all types of strategic initiatives undergoing revision cycles. It should also be noted that all four types to a certain degree overlap.

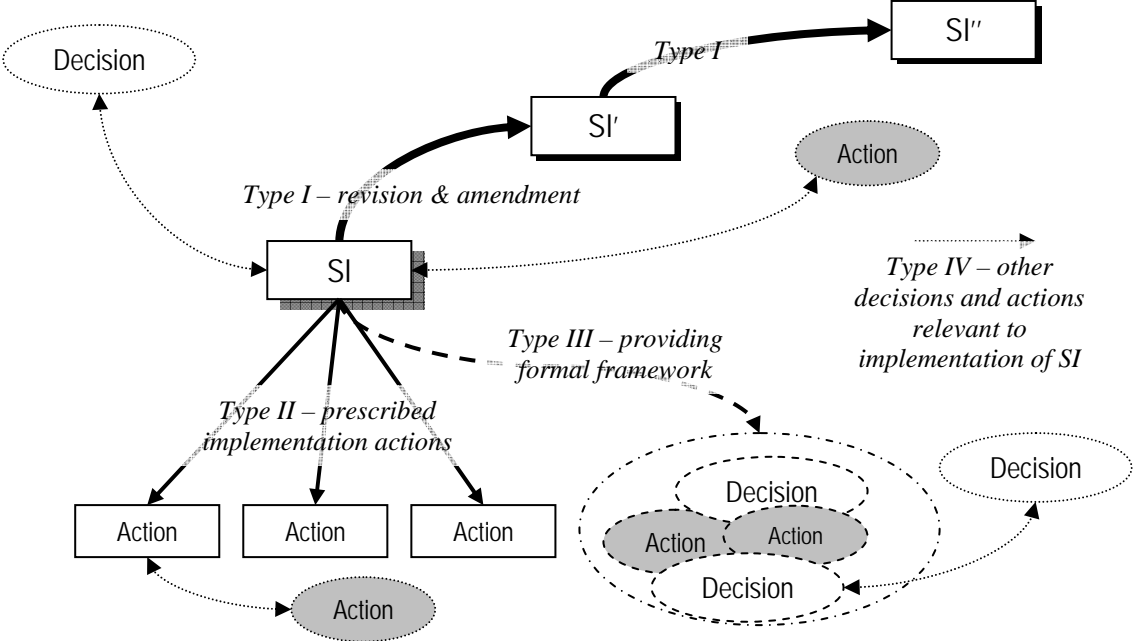


Figure 2. Types of ‘implementation activities’ for a strategic initiative (SI)

SEA follow-up may play a relatively straightforward role in Type I decisions (revision and amendment of the strategic initiative). The proponent of the strategic initiative will be most likely also responsible for its revision and amendment. The original SEA findings as well as the results of SEA evaluation (which should ideally be timed so as to correspond to the revisions cycle) may in principle be directly linked to the amendment decisions, in the same way as SEA is integrated into planning or decision-making process. However, Type I decisions and actions rarely play the key role in implementation of strategic initiatives.

The role of SEA follow-up in Type II and III actions is generally described by the concept of *tiering*. Tiering focuses on decisions that are ‘nested’ within or hierarchically linked to the

strategic initiative. The mechanism of tiering suggests that SEA follow-up should shape these decisions by linking their Environmental Assessments (SEAs or EIAs) to the original ('higher-level') SEA finding and recommendation. The concept of tiering features in most SEA texts and principles, but its empirical evidence on its practical implementation remains, so far, scarce. Tiering is naturally more effective in formal hierarchically organized planning systems, such as transport planning.

The SEA community has been increasingly coming to terms with the fact that many actions and decisions relevant to implementation strategic initiatives belong to Type IV, i.e. lack a priori known, formal and easily traceable links with the original initiative. This is very well described by the 'splash' metaphor introduced by Partidario and Arts (2005). 'Splash' means that strategic initiative may affect decisions and actions at the same, lower or higher levels across sectors and administrative jurisdictions. The question is: how can these decisions be possibly shaped by SEA follow-up of the original strategic initiative.

One approach is to focus on those Type IV decisions which are undertaken within the same organizational or administrative framework as the strategic initiative. It proceeds from the theory that environmental considerations may be integrated into management decisions and organizational behaviour through environmental management systems (EMS). The aim is to link SEA follow-up to EMS much in the same way as EIA follow-up is often linked with EMS or Environmental Management Plans (EMPs). If the project-level EIA links with EMS for a company-developer, the SEA for public sector strategic initiatives may in principle be linked to EMS in public authorities. This has been in the focus of the SEAMLESS project as described in detail in the next section.

Thus, even if effective approaches on linking SEA follow-up with EMS will be developed, it is likely that they will not encompass significant Type 4 decisions and actions. Due to a wide variety of such actions and decisions it is important that they are explicitly identified and focused upon within SEA follow-up:

- SEA follow-up should concentrate on those decisions and actions which are most significant for implementation of the strategic initiative (especially achievement of stated environmental goals and mitigation of negative environmental effects); and which can be reasonably influenced within SEA follow-up;
- During the SEA and SEA follow-up evaluation, continuous identification of such decisions and actions should be undertaken. This 'scoping' should involve institutional analysis of the arena in which the strategic initiative unfolds.
- This identification should concern:
 - (a) description of actions and decisions which are relevant;
 - (b) their relationship to the implementation of the strategic initiative;
 - (c) the key actors and stakeholders involved in these actions and decisions;
 - (d) the mechanisms by which they potentially can be influenced within the SEA follow-up.
- Identification should also cover those decisions and actions that are not formally articulated (e.g. behaviour patterns) but nevertheless strategically significant.

At this point, we should also address the second question: namely how can relevant decisions and actions be *influenced* within SEA follow-up. In certain cases (Types I-III), there may be legal, administrative or institutional conditions that directly support such an influence. For example, in case of tiering, it is presumed that lower-level initiatives should 'conform' to

higher-level ones which would also provide means for directly incorporating SEA recommendations into such initiatives. In other cases (especially Type IV decisions and actions) the main influence is likely to occur through communication and learning as explained in the next sub-section. This especially concerns those actions and decisions that cannot be directly affected by administrative or legal mechanisms.

Communication

At the project level, EIA follow-up communication is primarily designed to provide information about the actual impacts and conformance to those who is affected by or have a statutory responsibility to oversee the development. EIA follow-up can also be communicated much wider to ensure continuous improvement in EIA systems and capacities. Marshall et al. (2004) also emphasize the importance of learning as an outcome of effective communication within EIA follow-up. In general SEA follow-up should perform these tasks, although its audiences may be even wider and more diverse than at the project level.

As we mentioned in the previous section, communication and especially learning within SEA follow-up is closely linked to its management component, especially in relation to Type IV implementation activities. Many of the decisions and actions which are important will be carried out by actors not originally involved in the formulation of the strategic initiative or the SEA. In order to bring these actions in line with SEA recommendations, all these actors should be informed not only about SEA follow-up (as in case of EIA), but also about SEA findings. Moreover, this communication should be two-way, i.e. these actors may provide input to SEA follow-up. Thus, communication can be considered as both a separate element, but also as a component of monitoring, evaluation and management of SEA follow-up. Communication plays an important role in learning, formation of cultures, networks and institutions which are key components of societal change. Therefore, communication should be the central element of SEA follow-up if SEA aims to achieve strategic change for sustainable development.

Conclusions and outlook on SEA follow-up

The views on importance of SEA follow-up depend upon the perception of the overall purpose of SEA. If SEA primarily aims to influence the formal content of PPPs then SEA follow-up has relatively little importance. In this case it should be largely focused on integrating environmental considerations into formally prescribed 'implementation activities'. For many, if not most, strategic initiatives formal implementation activities are not at all prescribed and, thus, SEA follow-up has virtually no role to play. If, on the other hand, the purpose of SEA is to promote strategic change towards sustainable development then follow-up may be viewed as one of its central elements, because it is implementation of strategic initiatives, not their formal articulation which shapes such a change.

This dichotomy is a prologue for an important conceptual debate that is starting in the SEA community (for an overview see Cherp et al. (forthcoming)). Whatever its overall purpose, a number of practical points can be made about SEA follow-up. Some of these derive from the extensive experience of EIA follow-up. In particular:

- SEA follow-up should be undertaken after the formal adoption of the strategic document and throughout the life-cycle of the strategic initiative;
- it should have monitoring, evaluation, communication and management components;

At the same time SEA follow-up should extend beyond monitoring and managing impacts of a strategic initiative and its conformance to the original plan. It should be integrated with ‘implementation’ of strategic initiative and start by clarifying what is meant by implementation in a particular case. Table 3 can provide a template for planning SEA follow-up in connection with untangling implementation actions. It may be useful to start with recording the envisioned implementation activities for the strategic initiative, possibly dividing them into monitoring, evaluation, management and communication (which can also be an element of all of the above). SEA follow-up activities should be aligned, to the extent possible, with these implementation activities, but may also have additional elements. Responsibilities for SEA follow-up should be especially carefully identified, because in most cases the proponent of the strategic initiative will play only a minimal role in its implementation. Most importantly, SEA follow up should be prepared to deal with a wide variety of actors, actions and decisions beyond the organizational context of the original strategic initiative.

Table 3. Planning SEA follow-up

SEA follow-up element	Elements in implementation of the strategic initiative (SI)	SEA follow up		Issues to consider
		<i>Activities</i>	<i>Responsibilities</i>	
Monitoring	E.g. monitoring of defined indicators and of implementation activities ...	E.g. data collection, processing, storage, publication	E.g. existing monitoring systems	Environmental and related change, other indicators defined by the SEA
Evaluation	E.g. regular reviews, evaluations, performance assessments, audits ...	E.g. SEA follow-up evaluation report	E.g. proponent of SI; SEA team	New trends, underlying scenarios, conformance to the original plan, goal-achievement, effects of SI Focus on new and strategic issues.
Management	E.g. regular revisions or amendments of SI (Type I), directly prescribed implementation activities (Type II), hierarchically linked decisions (Type III), other decisions and actions (Type IV) ...	E.g. tiering systems, EMS, informing key actors and decision-makers	E.g. proponents of SI, relevant organizations, actors	Systematic identification of relevant action and decisions, including those that are not formally articulated

Communication

Though there is emerging legislation and practice (especially in relation to monitoring and ‘Type I’ management elements) of SEA follow-up, most of the discussed ideas and models are yet to be tested empirically. Empirical evidence and lessons on SEA follow-up should be systematically collected and related to emerging conceptual frameworks. Further work is needed for refining and disseminating SEA follow-up concepts, in particular linking these

with relevant SEA discourses such as tiering, ‘evolutionary’ public participation, adaptive management, integration with various environmental management tools. In relation to the latter, especially promising may be linking SEA follow-up with EMS in public authorities, strategies for sustainable development and various mechanisms for environmental policy integration.

Environmental Management Systems in Public Authorities

Environmental Management Systems (EMSs) have been increasingly used by public authorities. The academic literature on EMS in public authorities mainly focuses local authorities. A great deal of this literature relates to the United Kingdom and Sweden, as well as countries such as New Zealand, Japan, Norway, US, Canada and Australia (see e.g. Riglar, 1997; Emilsson and Hjelm 2002a and b; 2004; 2005; Cockrean, 2000; Ito, 2003; Aall; 1999; GETF, 2002; Bekkering and McCallum 1999; Swift and Broady, 1998 respectively). Netherwood and Shayler (1998) refer to the *Initial Statement by UK Local Government on Agenda 21* (1993) which identified the development of EMS within local authorities as one of the five tools of policy making for sustainable development. In the early 1990s, local governments in the UK used EMAS on a pilot basis in relation to their operational units such as housing, economic development, planning, and social services. For example, Lancashire County Council tested EMAS as part of a review of their greening strategy. Subsequently the Local Government Management Board in the UK published *A Guide to the Eco-Management and Audit Scheme for UK Local Government* (DoE (1994)).

Experiences from using EMS in local authorities in Sweden is comprehensively described by Emilsson and Hjelm (2002a and b; 2005) The EMS use in Swedish local authorities has also been studied by Burström (e.g. 2000) ; von Malmborg (e.g. 2003), Norén and von Malmborg, 2004). According to Emilsson and Hjelm (2002a), 46% of all Swedish local governments worked on introducing EMS in some or all of their departments in the fall of 2000. However, this study clearly shows that certification or registration according to ISO 14001 or EMAS is rare, the local authorities rather use the standards as templates and inspiration for designing their own EMSs (which often become simplified systems that do not fulfill all the requirement in ISO 14001 or EMAS). Much of the literature on EMS in local authorities focus on how the EMS tool has helped local authorities manage environmental impact originating from e.g. their energy use and waste management. Experiences from Swedish local authorities show that the EMSs tend to focus on this direct environmental impact and that environmental impact caused by the organizations’ exercise of authority (e.g. planning, decision-making, guidance) are seldom included because of their complexity (Emilsson and Hjelm, submitted). This means that many local authorities exclude the environmental impact from their core activities from their EMSs, which raises the question whether the EMSs are used strategically. The same potential problem has been found for the central government authorities in Sweden (Naturvårdsverket, 2004).

Sweden is one of the few countries where **central government authorities** extensively use EMS. According to the Swedish EPA (Naturvårdsverket (2004)) about 230 Swedish public authorities are in the process of implementing EMSs. In Emilsson and Hjelm (2002c) an overview of EMS in public authorities in Denmark, Belgium, the Netherlands, Italy, Portugal, the UK and Germany is provided. It is noted that EMS is obligatory in public authorities in the Netherlands according to the National Environmental Action Plan by the end of 2002. In the UK, several national authorities were in the process of introducing EMS while the policy

was to introduce environmental management in all state authorities by 2006. (see also www.environmental-management.gov.uk/envoy/). The German Bundestag (Parliament) issued a similar resolution requiring the use of “environmental controlling and management systems” in all federal authorities. The Federal Environmental Authority published a 340-page *Handbook on Environmental Controlling for the authorities*⁵⁷ to support the introduction of EMS in public authorities.

Thus, there is a great deal of research, experience and guidance on utilization of EMS in public authorities. This is an important base for defining the SEAMLESS research agenda which is summarized below:

1. **It is not clear to which extent EMS in public authorities has, so far, been “strategic”.** In particular, a frequent criticism is that local authorities employ EMS to deal with their own affairs, but not with their policies (which are often subject to SEA) or “indirect impacts”. This is a prominent observation from Sweden (Emilsson, 2005; Naturvårdsverket (2004)), New Zealand (Cockrean (2000)), Japan (Srinivas and Yashiro (1999))⁵⁸, the Netherlands (Emilsson and Hjelm (2002b)). A question may be asked if this lack of strategic focus can be usefully enhanced by establishing stronger linkages with SEA and EPI (Environmental Policy Integration).
2. (At the same time) **the connection to the EMS in public authorities and SEA is rarely, if at all, mentioned.** A recent exception can be found in Emilsson et al. (2004) who discuss potentially combined use of SEA, SFA (Substance Flow Analysis), EMS and other tools in local authorities. However, no studies so far addressed the specific question of whether EMS can play any role in SEA follow-up⁵⁹.
3. **It is not clear to which extent the public sector can or should use approaches from the corporate sector.** Netherwood and Shayler (1998) quote the size of local authorities, their varying functions, vertical management structures and fragmented financial management arrangements as obstacles. Successful registration to the EMAS standard has, however, been reported from e.g. Uddevalla (see Uddevalla, 2006) in Sweden and Leeds (see Leeds, 2006) in the UK. Whereas many authors emphasize the need for cities using EMS to focus on public dialogue, etc., the models of EMS employed (such as ISO 14001) very often do not have these participatory elements.

SEAMLESS project: rational, objectives and conceptual framework

The SEAMLESS project intends to answer the following overarching questions:

1. Can the effectiveness of EMSs in public authorities and their participatory aspects be enhanced through strengthening their linkages with SEA? What are the potential mechanisms of and pre-conditions for such integrated use?

⁵⁷ Published by Verlag Franz Vahlen (ISBN 3-8006-2727-2) Wilhelmstraße 9, 80801 Munich.

⁵⁸ For example, in the case of Gifu prefecture in Japan “*the [ISO 14001] certificate had not effected other policies of the prefectural government itself*”. ... EMS explicitly refers to “environmental policy” which is largely “given” – this imposes serious limits on how “strategic” EMS can be

⁵⁹ Netherwood and Shayler (1998) argue that one advantage of the EMAS process in local governments is that it can “provide basis for environmental policy, objective and targets and can also link the findings of other initiatives such as the environmental appraisals of development plans [i.e. SEA – AC] ... into the EMS process” (pp. 229-230). Thus, a direct suggestion of using EMAS in local governments in connection with SEA of land-use plans is provided, but no operational, procedural or methodological suggestions are elaborated.

2. Can the effectiveness and relevance of SEAs conducted by local authorities be improved through linking SEA follow-up to EMS in these authorities? What are the potential mechanisms of and pre-conditions for such integrated use?
3. In what way can local sustainable development strategies benefit from more systematic application of environmental assessment and management tools, especially SEA and EMS?

The research objectives of SEAMLESS are as follows:

- **Objective 1.** To formulate a conceptual framework for integrating the use of tools for strategic environmental planning, assessment and management, especially SEA and EMS.
- **Objective 2.** To benchmark the good practice of such integrated use of strategic tools.
- **Objective 3.** To evaluate the existing practice of integrated use of tools in selected Swedish public authorities. To identify the gaps between this practice and the benchmarks.
- **Objective 4.** To identify and pilot possible options for enhancing tools interaction in Swedish public authorities with a view of exploring obstacles to and preconditions for successful interaction.
- **Objective 5.** To formulate policy and capacity building recommendations for promoting an integrated use of strategic planning, assessment and management tools.

The analytical discourse especially important is based on several ideas of contemporary social and organizational theories. The ideas of “new public management” have shaped recent reforms of public sector organizations (see e.g. Hill, 1997) and defined the context of introduction and use of environmental planning, assessment and management tools. “New public management” means that public organizations adopted management structures and approaches from the private sector (Forsell and Jansson, 2000). Can this so called *businessification* of public organizations be effectively extended to their environmental management? If so, how are private sector’s approaches, such as EMS, “translated” into public sector? How can the ‘best practice’ be spread to a large number of public agencies? We will seek to relate the answers to “translation” and “policy networks” theories⁶⁰.

Achieving success in effective and integrated use of SEA and EMS would imply changes in the organisation’s routines and procedures. Hence, organisational learning and organisational change theories (e.g. introduced by Argyris (1982) and Kotter (1997)) are important for researching these processes.

The conceptual framework for linking EMS and SEA in public authorities was presented by the SEAMLESS research team at MiSt workshops and the IAIA’06 Conference in Prague. Figure shows a general model for linking SEA and EMS.

⁶⁰ The actor-network theory as well as related notions of ‘translation’ and ‘enrollment’ was introduced by Callon (1986) and Latour (1987). Its relevance to environmental policy networks is discussed, e.g. by Cherp and Antypas 2003.

Linking SEA and EMS cycles: a model

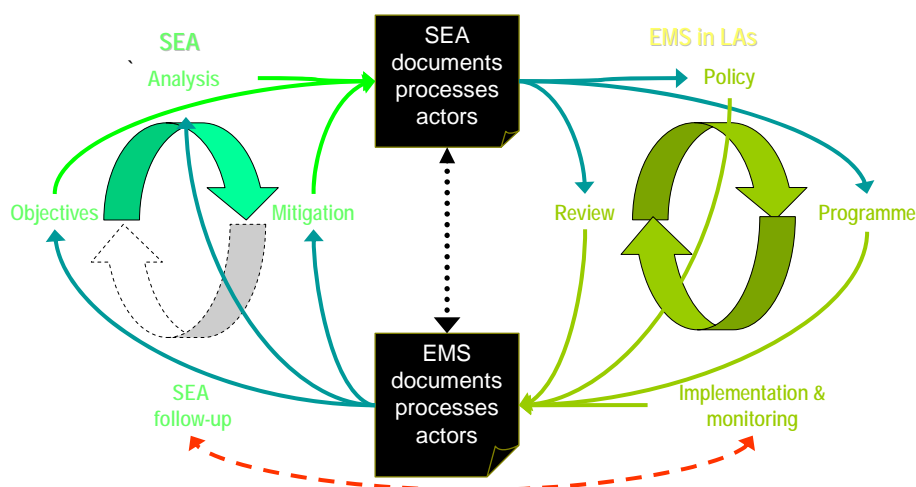


Figure 2: A model for linking SEA and EMS

The linkages between SEA and EMS may occur in relation to procedural issues, information and knowledge and interaction of actors and networks as summarized in Table 4.

Table 4. Potential types of linkages between SEA and EMS

	SEA	EMS	Linkage issue
Process	Screening, scoping, analysis, reporting, review, consultation, follow up	Review, planning, implementation, checking	Timing, coverage, scope
Documents information knowledge	SEA report, SEA follow-up plan	Policy, List of environmental aspects, Environmental program, Plan for auditing, etc.	Consistency in objectives, issues, indicators
Individual and collective actors	Planners, SEA team, consultees, public	Managers, Environmental managers, all employees, politicians, consultants	Interaction, learning, networking

In order to test this conceptual framework, the SEAMLESS team analyzes case studies of Swedish local authorities. These involve interviews, observations and studies of documentation in six local authorities with experience of EMS. Because self-standing SEAs are currently very rarely used in Swedish local authorities, the research focuses on the interaction between EMSs and the SEA elements in local planning processes. The case studies include interviews with EMS coordinators, planning officers and other actors in local SDSs as well as examination of relevant documents (plans and their environmental assessments, EMS

manuals, etc.). The interviews focus not only on the current utilization of tools but also on the potential opportunities for increasing their effectiveness through integrated use.

SEAMLESS will test and evaluate concepts and approaches for integrated use of SEA and EMS identified in the project in one or two selected local authorities. These authorities will test mechanisms for linking either environmental elements of local planning or the newly introduced SEA procedures with their EMSs. The experiences and opinions of the pilots will be gathered using questionnaires and/or interviews. Pilots can be chosen from authorities participating in the case studies or others and will involve the same functions as in the case studies.

Finally we will formulate and communicate policy and capacity building recommendations for promoting integrated use of environmental management tools.

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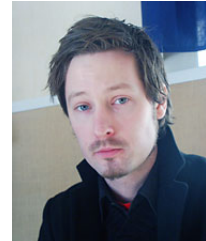
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3G OF SWEDEN – TECHNOLOGICAL GROWTH AND SUSTAINABILITY ISSUES

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Abstract: The article discusses the construction of 3G infrastructure under four themes from planning and sociology of law perspectives. This includes the design of the initial license procedure, the 3G-developments physical aspects in a different actors driving forces point of view and the practical sides of sustainability issues at both regional and local level. Public concern over electromagnetic radiation, and the question whether this is a legal concern or not is of interest, especially in relation to the *precautionary principle* of Swedish environmental law.

Key words: 3G infrastructure of Sweden, environmental administration, sustainability issues, spatial planning, sociology of law, sustainable development in practice, public concern over electromagnetic radiation, technological optimism, norm conflicts

Project: MiSt 2 - Infrastructure for the third generation mobile telephone system as a sustainability issue in planning and environmental administration.

The infrastructure for the third generation of mobile telephony is under construction in Sweden. The 3G case offers a unique possibility for studying how the planning and environment protection administrations at local and regional level in practice handle a sustainable development issue: on the one hand a national technological growth system and on the other environment protection, resource use, public concern over radiation etc. A licentiate thesis in Spatial Planning at BIT is part of the MiSt 2 project.

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3G OF SWEDEN – TECHNOLOGICAL GROWTH AND SUSTAINABILITY ISSUES

Stefan Larsson

Part of the MiSt2: Infrastructure for the third generation mobile telephone system as a sustainability issue in planning and environmental administration

The licentiate thesis confronts planning issues of the construction of the infrastructure for the third generation of mobile telephony in Sweden. In doing so, it contains a wide range of empirical data, not the least regarding permit processes. The licentiate thesis depicts the problem areas of the construction and relates the centrally and nationally stated goals to the everyday handling practise of the issues at the local municipal level.

There are conflicting goals between institutional levels, vertically as well as horizontally. The technological optimism of the national and regional politics is struggling with environmental and sustainability goals at the same time as the assessment is pushed down to the local authorities at the permit process level. There are unplanned effects, both environmental as well as social as a result from the lack of a more comprehensive assessment.

The infrastructure for the third generation of mobile telephony is since the year of 2000 under construction in Sweden. After the initial beauty contest four operators were given licenses to build the infrastructure for 3G on a few conditions. Within three years four operators were to build competing systems to cover 99,98 % of the population giving the administrative system an extreme challenge. The coverage by the end of the period was lacking about 26 %, with only three operators still participating in the construction. The 3G case offers a unique possibility for studying how the planning and environment protection administrations at local and regional level in practice handle a sustainable development issue: on the one hand a national technological growth system and on the other environment protection, resource use, public concern over radiation etc. When seeking answers to questions deriving from the construction of 3G in Sweden, the permit process within the municipalities holds many of the keys. Hence the legal design, the planning and environmental legislation, and the outcomes of it, especially the permit process for mast construction, will empirically be investigated. Overall or comprehensive aspects of the infrastructural construction, such as the design of the initial license procedure, the 3G-developments physical aspects in a different actors driving forces point of view will be studied from a perspective of both planning and sociology of law. The electromagnetic radiation, and the anxiety for it, and the question whether it is a legal concern or not is of interest, especially in relation to the *precautionary principle* of Swedish environmental law. The study of conflicting norms, legislation and means of control is clearly interesting in the case of 3G of Sweden. Methodologically the thesis will capture and explain aspects of the construction and development of the infrastructure of 3G from a quantitative foundation with qualitative contributions to it in certain aspects of special interest. The study continues and extends a pilot study of the 3G infrastructural construction by Emmelin and Söderblom, and will be both empirically broadened and theoretically differently founded (Emmelin & Söderblom 2002). The study will be presented as licentiate thesis in Spatial Planning at BIT, Sweden, and is a part of the MiSt2 project. The object of the study is to make:

1. An in depth study of a number of theoretically and practically important aspects of the 3G project of Sweden, related to spatial planning and sociology of law, specified below.
2. Charting of the permit processes as they develop in time and over the entire country and screening for the main issues and conflicts, as listed below.

Such a sizeable infrastructural project as the one of 3G in Sweden is of interest from many views. From the planning perspective and the approach of sociology of law the following themes are focused on within the thesis:

1. Sustainable development in practice
2. The 3G game
3. The precautionary principle and 3G
4. 3G and the rhetoric of competition

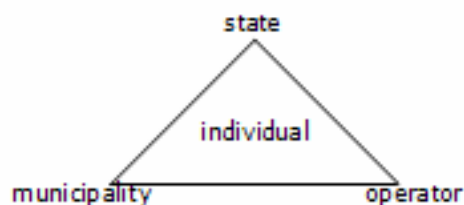
The four themes of the study

1. Sustainable development in practice

The construction of the 3G infrastructure in Sweden can serve as a model of how the central issues of “sustainable development” are handled in practice by planning and environmental administration at regional and local level. The issue may be outlined in terms of an implementation issue in the conflict between a national growth policy confronted with regional and local environment protection. This has clear relevance to the discussion of *the Game of 3G* below. Is the municipalities jammed between a national technological growth system on one hand and the environment protection, resource use, public concern over radiation etc on the other? If so, what effects may be seen? What if the municipality is overall negative to the 3G infrastructure? Critics mean that the environment in a too large extent pays for the technological optimism behind the 3G infrastructure construction. Some mean that the 3G construction means a too large infrastructural interference to be kept within the Planning and Building Act, that a more comprehensive planning is necessary.

2. The 3G game

The decision on how, and how fast, the infrastructure to 3G should have been developed has had several implications of great interest to both the perspective of planning and sociology of law. The decision was central and governmental but the carrying out was set to be through the rules of the market via operators who received licenses depending on promises of coverage and fast infrastructural development. The decision

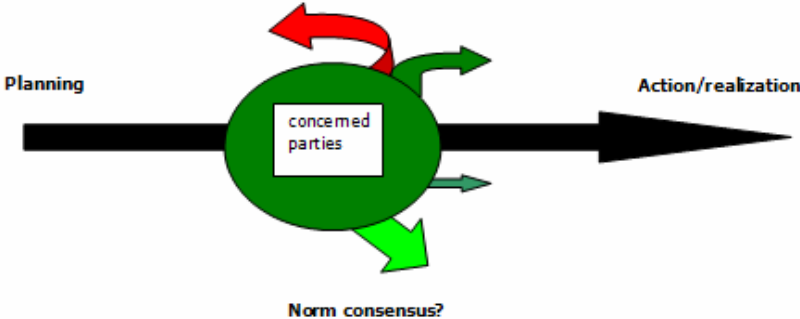


included all of the populated areas of Sweden, about 25 % of the total area, meaning the construction of several thousands of masts governed through the permit processes locally and regionally, including 290 municipalities and 21 county administrative boards, 4 operators and numerous individuals with right to appeal on specific mast matters. The construction was to

be supervised by a central agency, the PTA, with power to negotiate with and fine operators not complying with the license terms.

The construction of the 3G infrastructure can be seen as a game with three main participants. The government handed out licences with ambitious requirements in terms of coverage and when to reach it. In the operators interest lies to reach the best position on the market and economical benefit, which do not necessarily correlate with the license terms. Using a simple figure may describe the lack of consensus between the participant or the parties concerned by the construction of 3G infrastructure in Sweden. Different norms may be the case in different parties and these conflicts may give a different outcome of the project than planned. A party may also have internal conflicts of interest or driving forces, i. e. the state.

There are many different concerned parties in the 3G mast issues, of importance to the environmental as well the sustainability issues. The attitude, or normative posture, of the involved parties is clearly influencing the outcome of the planned action, hence The practical side of the conflicts between sustainability dimensions in the systems are handled at the lowest levels in local authorities. Implementation of the decision of 3G demands that some kind of consensus is created between the acting participants. This opens for factors as organisational culture, competence, the ability to cooperate, attitude towards the project etc. In short does it require that micro-organisational behaviour is taken into account (Khakee 2000, Lipsky 1979) It is not far fetched to add that the study of norms, both within the organisation of a participant and between participants within the project. Some of the aspects that are relevant to whether a project will be successful or not, where the ‘action’ will take place in a way the planning intended we choose to describe as depending on norm structures. The process of implementation can in this sense be described as:



In the transition to a more sustainable development the planning paradigm can be supported by the concept of norms in sociology of law. The 3G infrastructural development can be described as a constant progress containing norm conflicts. The legal norms are involved mainly as a result of the top - down setup, which quite naturally lead to the question of what the ability is of the legal system to create a degree of consistency from supranational via national and regional to the local level where legally binding land use decisions are taken in a fragmented system. This is where part of the problem lies, in the fragmented system, the jigsaw puzzle created one piece at a time through each and every mast permit process. In the initial design of the infrastructure construction the search for market efficiency seems to have overbalanced the environmental assessments, at least from a PTA point of view (Emmelin & Lerman 2004, SOU 2005:97).

3. The precautionary principle and 3G

Public concern over electromagnetic radiation, and the question whether this is a legal concern or not is of interest, especially in relation to the *precautionary principle* of Swedish environmental law. The Environmental Court of Växjö ruled out, at the 13th of September 2004 (case no M 3411-04), that the possibility of radio masts being regarded as an activity causing damage or detriment to the environment. The operator, in this case represented by Svenska UMTS-nät, therefore was not obliged to map out the mast locations, which the municipality of Landskrona had injunctioned. However, the Environmental Court of Appeal revoked in 12 October 2005 the decision (case nr M 7485-04). Does this mean that the view on the impact of the radio activity that a 3G mast has on its surrounding has changed from the initial view of the Swedish Radiation Protection Authority, SRPA, the National Board of Health and Welfare, (Socialstyrelsen) and the Swedish Environmental Protection Agency (Naturvårdsverket)? When does the fact of what people fear become a legal concern? This is of great interest from the view of sociology of law. When, and how, that fact is communicated into the legal sphere is of clear interest, not the least from a sociology of law point of view.

4. 3G and the rhetoric of competition

Initially the competitive aspects of having four different operators and infrastructures were emphasized, “The forces of the market shall rule” was the rhetoric. This soon turned into a concern for the lack of inter-operators mast-cooperation. The Minister of Information Technology in the year of 2003, Ulrika Messing, announced in a press release in March that the Government wanted to reinforce the PTA possibilities to intervene “when the free competition is not working”. In the beginning of the year 2005 a commission was appointed to investigate the possibilities of forced co-location and how the cooperation between operators could increase, which was not met with enthusiasm by some of the operators. The commission resulted in the report SOU 2005:97. Between the changes in the Electronic Communications Act, ECA, of 25 July 2003 up until the end of 2004 there were 11 applications from operators to the public authorities to force other operators to cooperate concerning the space for equipment on a mast. 9 of these were settled through private agreements between the operators and in 2 of these cases were settled by the PTS (both applications were dismissed). The commission resulted the 20 March 2006 in a governmental proposition regarding changes in the ECA on the forced mast co-location issue. The proposal expands the possibilities to force an operator to offer co-location on mast at a compensation adjusted to the conditions of the market and is suggested to come into effect 1 July 2006 (Prop. 2005/06:191).

Co-location of masts

The operators are free to make agreements with each other

Operators may be obliged to co-locate if it is required for the protection of the environment, peoples health, general security or for physical planning goals (ch. 4 § 14, 2003:389 Electronic Communications Act

Co-location may be the case when an operator is denied building permit and alternate locations are missing. If there is mast in the vicinity the operator can apply for co-location at the PTA.

A recent legal proposal suggests expanded possibilities for the PTA to force co-location.

The initial rhetoric of not interfering with the market forces can be questioned on the grounds that the market premises to a large extent was put out of action already by the license conditions of full coverage and short infrastructural construction time-limit.

There are conflicting goals between institutional levels, vertically as well as horizontally. The technological optimism of the national and regional politics is struggling with environmental and sustainability goals at the same time as the local authorities are left to deal

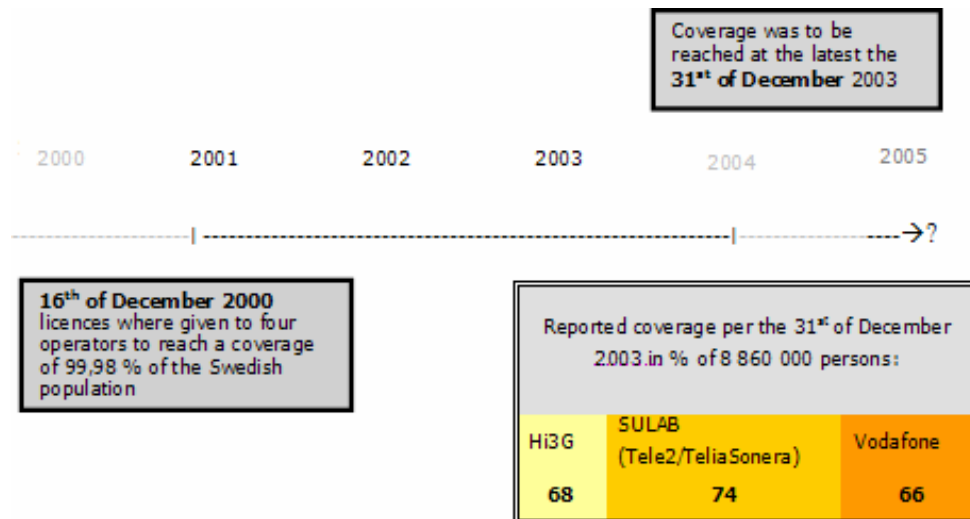
with it in the shape of permit processes. On one hand there is a central, national, decision on that Sweden will have 3G infrastructure granting high mobile coverage and on the other hand each municipality has a monopolised function of controlling the planning and building within its region. The rhetoric of the initial period was emphasising the importance of a fast reach of high coverage. Still, the legal instruments remained unchanged. Under the headline questions as the following will be discussed from an empirical foundation: What happens when the local planning authorities does not share the technological vision the original decision was taken in? Is it common for the municipalities to have a narrow interpretation of who has the right to appeal in a mast permit process? Is the practice more narrow than the law intended? To what extent can the coverage delay be explained as a result of a slow local or regional permit processes?

On the perspective of sociology of law and the legal structure

Sociology of law offers a set of perspective-giving tools in relation to law and norms as something directing actions. The method of sociology of law is a social scientific method opposing, or in addition to, the traditional legal method. Sociology of law, being a social science, may collect whatever facts regarded as relevant in the context of the theoretical standpoint and the research questions. Sociology of law has in a sense an external view at the legal practise. If you want to find out the *actual* consequences of a legal rule you have to *actually* open your eyes and take a look, collect empirical data of some sort. Theoretically the project expands the planning understanding in a legal as well as socio-legal way. Part of the sociology of law studies will be of the normative processes relevant to concerned parties of the infrastructure construction. The ‘norm’ is in this case not understood as synonymous to a legal norm but as something governing or assigning human actions, the inherent entity that is expressed in the action. Some norms do equal the legal norm, many do not, and the most behavioural norms are simply not the object of legislation (Hydén 2002). There are several examples of study of norms in a institutional, organisational or structural sense (Baier 2003, Wickenberg 1999). The norms consist of three conditions described as *will/values*, *knowledge/cognition* and *system/possibilities* by Hydén (2002). The three interact to different degrees but all form the prerequisites of action. The norm perspective gives a methodological context of studying the driving forces as well as other relevant factors for the actions around sustainability issues such as cognitive aspects and systemic disposition. The study of conflicting norms, legislation and means of control is clearly interesting in the case of 3G of Sweden.

Investigated time span and empirical data

The time span investigated in the licentiate thesis has its focus on the period charted in the license conditions, although the time span will be expanded in relation to certain important aspects. The period before the end of the year 2000 is of interest, especially when it comes to understanding the big picture and the background of 3G in Sweden. The investigated time span for the thesis will be stretched beyond the period after the end of the year 2003 in relation to specific aspects of the thesis. In the light of the license conditions the expansion of 3G in Sweden never became what it was said to become. At least not within the time limits.



All permits regarding 3G masts up until November or December 2005 is collected from the County of Blekinge, which includes the municipalities of Karlshamn, Karlskrona, Olofström, Ronneby and Sölvesborg. In addition to the collected Blekinge material two questionnaires made by Temo addressed to the municipalities of Sweden from 29 December 2003 and 7 April 2003 regarding the permit process will be used in the analysis. Both surveys are quantitative but the latter is added with a qualitative study based on interviews with handling officers, politicians and trade and industry responsible of 25 municipalities and 2 county administrative boards. In order to broaden the understanding of what phenomena the process of expanding the infrastructure of Sweden is depending on, the empirical data from the Blekinge permit processes may be expanded with i. e. selections from different “type” municipalities. Such types could be extremes on the scale of municipalities with different attitudes towards the infrastructural process or different local strategies for the construction and permit processes of the infrastructure within the area of the municipality. This could for instance be Trelleborg in the southern of Sweden, a municipality that has been known as an “anti-municipality”, in the sense of having been outspokenly reluctant to the new mobile technology and it’s required masts. Several questions outlined below demand studies of certain legal cases of principle interest, as well as other legal material and articles as well as different official PTA reports and information gathered via interviews.

On the final analysis

One could claim that every meaningful critique should suggest improvements. The cumulative process of creating well-founded knowledge about the Swedish system of building the infrastructure for the third generation of mobile telephony allows a counterfactual and comprehensive question to emerge: How can a administrative system be designed to handle in a satisfactory way both a large scale infrastructural development and environmental concerns at the same time? The counterfactual discussion, or the counterfactual aspects lies within an analytical segment of the study. Naturally, a problem with a counterfactual discussion is the problem of falsification. There is no scientifically self-evident way to prove a counterfactual discussion wrong, or right. Nevertheless the discussion is of relevance and the aim is that the study within the thesis will add knowledge to this discussion. The understanding of sustainability issues, especially in such a grand billion dollar project as the 3G construction, seem to benefit from such an inter-disciplinary approach between planning and the legal and socio-legal aspects of sociology of law. The practical implications of a society in transition

towards the thinking and acting for a sustainable development lies as a foundation for the study, which also includes the dimensions and functions of legal systems and conflicts of norms. In this case in relation to the organisations, institutions and concerned parties, both planning, administrative as well as private, of the development of the third generation of mobile telephony in Sweden.

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INTEGRATION OF ENVIRONMENT INTO REGIONAL GROWTH POLICY – the lack of environmental consideration in implementation

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Abstract: Sustainability at the level of national policy and regional programmes is implemented in project funding. If tiering is to be effective methods of screening projects for environmental impact and for deciding if projects are in line with policy are needed. Project funding can not be shown to be influenced by programme ambitions for sustainable development with regards to the environmental component. Sector integration which is central to Swedish sustainability policy seems so far not to have had any great impact.

Key words: Policy integration, regional development, structural funds

Project: MiSt 10 – The impact of sustainability on regional development – an empirical pilot study

The project surveys a sample of Swedish regional development programmes and examines how environmental considerations have been integrated and sustainability expressed. The impact on allocation of resources to projects and the methods of assessment have been studied.

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INTEGRATION OF ENVIRONMENT INTO REGIONAL GROWTH POLICY - the lack of environmental consideration in implementation

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This paper discusses the main findings of the empirical study, MiSt 10/”The impact of sustainability on regional development – an empirical pilot study” and how environmental considerations were integrated into the preparation for decisions on individual structural fund projects in a number of regions in Sweden. The study is part of the overall effort of the MiSt-programme focus on effectiveness in tiering and consistency between programme level and implementation and the role that methods and tools of environmental assessment can have for this.⁶¹

Sustainability at the programme level needs to be implemented at the project level especially in allocation of structural fund and other forms of support. This study has surveyed a sample of programmes and their projects to examine how sustainability expressed and environment has been integrated into programmes. The impact of the programme level on allocation of resources to projects and the methods of assessment was then examined looking for the use of methods or tools for assessment.

Background: regional development programmes in Sweden

EU regional development policy rests on three concepts: sustainable development, regional growth and social cohesion. These three concepts are essentially based in three different discourses on development. The ambition to achieve these three objectives at the same time means that the policy makers have to successfully manage conflicts between them.

Recent Swedish regional development programmes have been shaped and implemented by regional partnerships. This mode of working is new to Sweden. Previously regional development was a government undertaking with the county administrations having responsibility for policy, knowledge support and implementation. Implementation has so far largely remained in government hand with the responsibility for allocation and approval of structural fund money remaining there while some of the programming work has been moved to partnerships and to politically appointed regional organs. The exact construction of the regional co-operation over development varies between regions however since Sweden is at the moment experimenting with several different models of regional governance. The situation for regional development in Sweden is thus that there are overarching policy goals at EU and national level. These are to be implemented within organisational frame-works that vary between regions. They have in common however that they are shaped in a complex interplay of actors at the regional level. The composition of partnerships is of importance e.g. in deciding the balance between the regional development paradigms and the possibility of forming effective sustainability discourse coalitions.

⁶¹ The diligent and effective work in collecting and analysing material and interviewing officials or regional funds and administrations of our project assistant, Anette Löfgren, Dept of Spatial Planning, is gratefully acknowledged.

The process of formulating regional programmes have followed a rough model beginning with a situation analysis, SWOT-analysis, formulating of visions goals and strategies ending with definition of measures to be taken. However the concrete measures would in practice depend on whether project proposals were in fact made by various regional actors.

A case study

There are several reasons to study how environmental considerations are taken into account in project funding within regional development and EU structural funds. Project funding is the most concrete step in the implementation of regional development and growth policy. The degree to which environmental considerations are taken into account is thus an indicator of how policy on sustainable development is implemented. Sector responsibility and integration is a cornerstone of Swedish environmental policy. The degree to which environmental consideration is taken in project decisions is an indication of how well this functions in practice.

The relationship between SEA and EIA is based on the notion of tiering and a reasonable degree of consistency between policy levels: the notion of a hierarchy of policy, programme, plan and project (Wathern 1988). This notion can be criticised from several different theoretical and practical perspectives and has been termed “the hierarchy fallacy” (Emmelin 1996). Recently the notion of tiering has come under rather general criticism in the SEA community and there seems to be a trend to discard the notion all together⁶². However correspondence and consistency between at least the levels of regional development programme and the projects that are the concrete measures for the programme seems reasonable to ask for and perhaps even expect.

Five Swedish regions were chosen for study. They represent the different forms of regional governance at present in Sweden. Programmes and projects within the following objectives were sought: Objective 1 south, Objective 2 west, south and “islands”, Objective 5 “the archipelago” and Objective 6. Projects were chosen to represent local applicants rather than applications from the public sector such as county administrations or municipalities. The reason for this is to study how national policy and regional programmes is integrated at the lowest level by local project owners and the interaction between project owners and regional administrations advising on projects and preparing for the decision making on funding.

Project application forms are processed by the responsible authorities prior to decision making by the structural fund delegations. The forms are stored in an electronic archive to which we were granted access. Documentation from the programme level to the various steps in the decision making process on individual projects were examined in detail for a sample of projects representing the regions and funds. The document studies were complemented with interviews with officials responsible for advice to project owners and for the assessment prior to funding decisions.

Sustainable development: from policy to project

Sweden has proclaimed a high level of ambition in the work towards sustainable development. According to the policy declaration made by the incoming prime minister, Göran Persson, after social democrat return to power in 1996 Sweden would become “an

⁶² IAIA conference: International Experience and Perspectives in SEA, 26-30 September 2005 Prague

internationally driving force and a forerunner in the endeavour to create ecologically sustainable development. The ambition to influence EU-policy on sustainable development was also set high in the arguments prior to joining the union. How Sweden handles environmental issues within the structural fund programme could be seen as an indicator of how these ambitions are made operational.

Sustainable development is at the policy level given a prominent role: the Government directives for regional development programming contain a brief to develop intersectoral methods that promote sustainable growth combining the three dimensions, ecological, social and economic sustainability (Naturvårdsverket 2002). However it is clear that different central actors are at the programme level laying different stress on the three components

Sector integration of environment is, as noted above, at the centre of Swedish environmental policy. How integration of environmental concerns in regional development project works in practice is thus a test of the relative strength of sustainability components but also of the effectiveness of a central element of sustainability policy and of the effectiveness of the SEA/EIA system as a set of tools in promoting the environmental or ecological component of sustainability. As Lundqvist notes (2004) there are two aspects of sector integration of importance: how well integration functions depends both on whether it is effective and efficient but also on the strength of the interests that are to be integrated. Effectiveness and efficiency relate to whether the intended degree of integration and the changes to sectoral policies that is accomplished. The strength component refers to the degree to which sectoral policies are required to incorporate and be modified by environmental concern.

Sustainable development at the regional level

At the Swedish regional level the three EU regional development components are also discernible and promoted with various strength by different actors. In the programming at regional level these three concepts and their underlying discourses have different expressions and prominence. The organising of the regional development work is therefore likely to influence which concept and discourse will dominate the programme work.

EU and Swedish national sustainability strategies are to be implemented in the regional growth programmes. To date Sweden has had two generations of such programmes the so called “regional growth agreements (RTA)” during 1999 to 2003 and the present generation of “regional growth programmes (RTP)” from 2004 to 2007. A third generation, the regional development programmes (RUP) is under preparation. Programmes have been shaped by regional partnerships. Implementation in practice is largely tied to projects that will receive funding from the EU structural funds. Sustainable development was given prominence in instructions and was also separately evaluated (Hilding-Rydevik 1999) by the responsible central agency, the Swedish Agency for Economic and Regional Growth, Nutek. As a result of these evaluations instructions to regional partnerships to increase the visibility and substance of sustainable development was given as a condition for central approval.

At regional level sustainability indicators were to be shaped by regions. Sets of “horizontal indicators” were to be employed in project development and in screening project proposals for funding: environment, gender equality and employment effects, in some cases also social integration and the application of information technology. Thus the methods for ensuring environmental integration at the project level is left to the regional partnerships and project administrations.

Sustainability in the programme documents

Analysis of programme documents will be reported in more detail in the project report. Three major general observations apply to the final documents.

Firstly that they are characterised by general political sustainability rhetoric. The concept of sustainability is not clarified to support applicants or those processing it. It is used in programme documents in the wider sense of combined economic, social and ecological sustainable development i.e. the “Brundtland sense” of the term. It is however also used in instructions as synonymous with the “horizontal criterion environment” for project evaluation. These two meanings of the term can occur in the same programme document. The view of environmental problems that is formulated in the EU sustainability strategy i.e. environmental problems as a threat to economic growth and thus in the final analysis to sustainable development does not come through.

Indicators to assist in operationalising “sustainability” or even “environment” are lacking. Regions were supposed to develop their own indicators for the horizontal criteria. This seems not to have been done; at least not so as to leave traces in the actual assessment of applications. This means that it is unclear what is to be assessed: the sustainability of the project or the environmental impacts as part of a wider sustainability appraisal.

Secondly, that the responsibility and initiative for how to incorporate sustainability or environment is left to the proponent.

Thirdly, that the responsibility for integration of environmental considerations is ultimately left to the official responsible for advising proponents and assessing the proposals for their suitability for funding. These officials have come from the regional development administrations formerly responsible for development programmes and projects. Their expertise is not in environmental matters. The support for their assessment of the “horizontal indicators” is thus crucial for the integration of environmental concern into the projects.

Environmental assessment support

No tools for assessment have been recommended to the partnerships or to officials dealing with projects. The project proposals have not been seen as needing a formal or informal⁶³ environmental impact assessment at the stage of approval of funding. This is interesting in itself in that several projects will in fact need both building permits and various forms of environmental permits. The assessment support was instead supposed to come from consultation with the regional environmental experts of the county administrative boards.

Conspicuously absent from documents or the actual processes are indications of any EIA approach. There is no support for analysis of such central aspects of assessment as undesired or perverse effects, alternative modes of achieving the project goal, the analysis of no-action alternatives as a base line for comparing the impact with a base line.

Instructions on assessing the environmental effects have not, however, been completely lacking. The funds have had slightly different instructions. These were incorporated into the instructions for writing up of applications. Instructions are characterised by an assessment that is essentially oblique and aimed at intention rather than actual impact. The instructions characterise projects into four categories from projects aimed at environmental enhancement to environmentally negative projects. Specifications of how to arrive at the classifications are

⁶³ The Swedish system provided for an informal or “small eia” at the time

vague or absent and based mainly on such indications as whether environment friendly technology will be employed etc.

The project level: environmental integration in practice

The process essentially leaves the initiative concerning the environmental component to the writer of the project proposal. The proposal should show how the environment is taken into account, what measures for mitigation are made and what the environmental impacts of the project are assumed to be. As noted no form of EIA is demanded to support this.

The assessment is basically just the classification of the project into one of the four classes:

- environmental project i.e. a project aimed at environmental enhancement
- environmentally positive
- environmentally neutral
- environmentally negative.

Figure 1 show the distribution into classes of the Objective 1 & 2 projects reviewed in our study. It is notable that there are no projects classified as environmentally negative and a large number of projects classified as neutral. If taken at face value the table might seem to indicate that there are no projects with negative environmental impacts. This would of course be a highly unlikely situation given that there are for example infrastructure projects. Instead it mirrors the fact that the classifications do in fact not reflect the impacts but a weighting of supposed benefits against impacts.

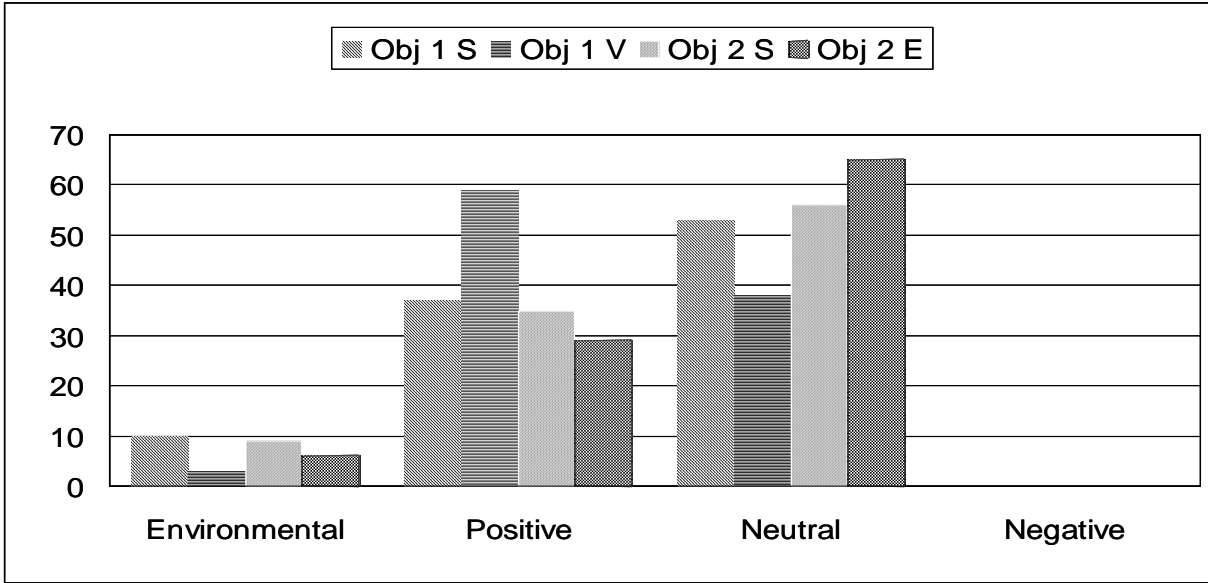


Figure 1. Distribution of projects over different environmental classes in four structural fund regions. Note that this is not, as might be thought, a classification of environmental impacts of project – see text.

The support for the classification is contained in the way in which the proposal is worded and at times in a statement from the regional environmental expert. There is no indication of the use of formal methods or tools of assessment. Perhaps most interesting is the idea that a project aimed at enhancement of the environment is automatically regarded as positive.

The lack of operational definition or indicators of sustainability was noted above. This leaves the project proponent and the officials concerned with guidance and with project approval with little concrete information on which to base guidance and approval. In interviews the lack of guidance was noted as a major obstacle to handling the “horizontal indicator environment”. The lack of indicators also leaves the regional environmental officials reviewing the proposals in a consultation process with little guidance. They are supposed to review but not given concrete indication what to review for. In practice the environmental assessment by these experts would therefore be an informal “best professional judgement” highly dependent on the level of specificity of the project proposal and their knowledge of the particular type of activity contained in the proposal.

Most important however is that the classification does not reflect whether the projects have environmental impacts or not. It is rather the result of a total assessment of the projects presumed positive effects against the environmental impacts.

The classification in fact reflects a combination of two factors. First, that the environmental experts have in many cases made the classification conditional on certain conditions being met. However in practice there is no follow up of if these conditions are in fact met in the implementation of the projects. Fulfilling the conditions is left to the discretion of a proponent that may be more or less interested in doing so. In theory it could be found during the auditing stage but this seems not to have been the case; auditing being mainly concerned with the formalities of project economic reporting.

Second, the classification of projects in many or possibly most cases was seen not as an assessment to go into the overall project decision but a negotiation between the regional environment expert and those handling projects. Projects that were deemed to have on the one hand significant environmental impacts but on the other hand were also seen as desirable for regional growth were classified as “environmentally neutral”. This is technocratic decision making in that the decision is taken in negotiation between two sector experts rather than as a political decision of balancing environmental impact against social or economic benefit. It is a form of conflict resolution by obfuscation which is contrary to good environmental assessment practice. It is also definitely at odds with the purpose of environmental assessment as part of decision making as defined by Swedish legislation on EIA; chapter 6 of the Environmental Code.

Examples of classification

To illustrate the basis for classification we have chosen examples of all four classes from environmental enhancement to environmentally negative – figure 2. They illustrate a number of our findings.

First, that the wording and the intention of the project is crucial. Classification is largely an acceptance of the project at face value; especially so in the two positive classes: environmental projects and environmentally positive projects.

Second, that the intentional component is notable also in that the intention to use environment friendly materials, techniques etc is accepted, but as noted above not followed up or audited.

Third, that the classification seems rather arbitrary: the examples illustrate that it can be difficult to see the distinction between a positive and a neutral project.

Fourth, that lack of verbal environmentally good intention rather than any intrinsic character of a project may render it a negative classification. The project in our example would in fact seem to be typically a project on which decision concerning overall benefits should be taken

on the basis of the contribution to regional development offset by any environmental impacts that it may have. The classification here reflects the lack of environmental rhetoric in the proposal rather than any assessment or balancing.

Environmental project (projects aimed at enhancement of the environment)

There is a possibility to study the flora and fauna in both running and still water. The mill environment can furthermore be used as a resource in the development of the area in cultural tourism in conjunction with the narrow gauge railway.... The Kullbacken museum foundation intends to make a plan for the annual upkeep and management of the mill environment.

Project: Valstad Kvarn (Valstad Mill), Objective 2 south

Environmentally positive

The facility will be built so as to minimise damage to the environment as far as possible. This can be done by if feasible using:

- *Environment friendly heating system – solar panel, possibly a heat pump etc.*
- *Adapting the exterior as far as possible to the existing environment (two smaller buildings)*
- *Environment friendly sewage system*

The Ytterö ferry service building. Objective 2 islands

Neutral

By building the café the immediate vicinity will be cleaned up which in itself is an enhancement of the local environment.

Public meeting point on Åstol, Objective 2 islands

Nature will be preserved as far as possible. Blasting will not be done but bore holes are necessary for handrails and fastenings.

The "Dyrö trail" – a marked trail around the island Dyrö, Objective 2 islands

Negative

To secure fisheries on the island in the long term and create new jobs. The project includes upgrading the harbour and a goal is to construct more much needed mooring places for the inhabitants on the island and for visitors.

Vrångö harbour, Göteborg municipality, Objective 2 islands

Figure 2. Examples of project wording different classes of the horizontal indicator "environment.

In summary the examples illustrate our general finding that it is the rhetorical integration of environmental concern into the project proposal that is the basis for assessment and for the reporting of impacts to the decision maker and to the EU.

Where and why does environment get lost?

We have already pointed to some mechanisms by which the integration of environmental concern into projects is weakened: the lack of clear indicators, instructions or tools. The

importance of the composition of partnerships has also been noted. The process of project proposal writing and the interaction between project owners and the officials responsible for promoting and preparing projects for decision is an important further reason. The process basically has four steps at the level of regional administration.

Marketing the idea and potential and inspiring actors to submit proposal is an important component of the work of the regional administrations. In most regions there has not been a surfeit of projects and stimulating actors to propose projects has been part of the job of officials concerned with project approval.

Dialogue to ensure that the proposal fulfils formal requirements. At this stage advice on wording that will ensure a positive environmental classification has frequently been given.

Start of the project. At this stage control of compliance with any environmental conditions is lost. However in some cases normal permit procedures may take over the responsibility for this. The fact that projects have been given grants will in many cases reduce the effectiveness of permit procedures; alternatives are foreclosed and permit granting authorities placed in a difficult situation.

The final project reporting may contain information concerning any noticeable change in the environment. However no monitoring or follow up is normally made and auditing aimed mainly at the financial book-keeping aspects of the project.

There are thus several mechanisms that work against integration of effective environmental concern. The job of the regional official responsible for project is to stimulate projects. To get a big share of structural fund money for the region is seen as important. In the annual reporting of the regional administrations to central government this is a measure of success in regional development. The officials come from regional development administrations and have little or no background in environmental issues. Their professional and organisational culture is growth oriented not environmental. The level of awareness of environmental issues or the environmental component of sustainable development may be variable in their administrative units

With a lack of instructions, indicators or tools the role of the regional environment expert in assessing or rather reviewing proposals is not strong. It can be assumed that they will have limited time and may prefer to give priority to other problems rather than those creating internal tension within the regional administration. This is an impression from discussions that we have however not followed up systematically.⁶⁴

Another aspect of the problem of lost environmental concern is the question of policy integration. Lafferty considers policy integration to be an important tool for sustainability given that there is “a commitment to minimise contradictions between environmental and sectoral policies by giving priority to the former over the latter”⁶⁵. Lundqvist (2004:146) in concluding his discussion on whether integration of environment as part of sustainability – what he terms “ecologically rational governance” concludes “tentatively” that this is the case in Sweden. It seems to us that this relates to integration at the verbal or rhetorical level and largely ignores both the effectiveness in implementation. Part of the problem may be that the verbal integration at the policy level may be reasonably effective but that the strength with which integration is carried out is lacking. With no indicators, tools or clear directives sector interests are not likely to yield to outside interests regardless of the exhortations at the policy level. Integration lacks concrete strength and therefore in the final analysis of what actually

⁶⁴ One of us (LE) was for a period chairman of the sustainability group of the regional growth agreement partnership in the Blekinge region.

⁶⁵ Quoted from Lundqvist 2004:146

gets done also effectiveness. The notion of management by objectives of the national Environmental Quality Goals is another example, relevant also to regional development. The vagueness of the goals and the multitude of subgoals makes it possible for sector agencies to disregard goals in conflict with their projects. Reference can always be made to some subgoal or another that a project helps advance. The system offers wide scope for ritual observance (Emmelin & Lerman 2006).

Regional growth programmes as strategy and the role of SEA

Effective tiering presupposes a reasonable consistency from policy to implementation. Strategies are assumed to be guidance or determination at programme level which in turn is assumed to steer implementation in the form of projects. However strategy can be seen as several things. A simple typology of strategies is that strategies can be anything from a plan that provides guidance for action towards a goal, an attitude that leads to a constant behaviour over time, an overarching idea as a basis for action and down to strategy as a rationalisation of choices already made.

At the regional growth programme level it seems reasonable to see the programme as more of a rationalisation than as a determinant of subsequent action. If seen in the light of bottom up policy formation of Hjern and Porter (1981) the regional programmes can be seen as rationalisations of the concrete actions and projects that regional partnerships can agree on. Priorities for such action is often present in the regional development discourse and on the agenda of regional actors: better infrastructure, support to typical regional industries, support for tourism development etc.

The role of the programming is thus to frame this in a form that makes subsequent action legitimate. Legitimacy in relation to national goals and policy is important in programme formulation. The variation in relative strength of development perspectives noted above can be understood as a function of the composition of individual partnerships and the relative bargaining power of the participating actors.

The role of SEA

The issue of environmental assessment is interesting. Neither the now incoming regional development programmes (RUP) nor the previous programme generation (regional growth agreements, RTA and regional growth programmes, RTP) that our study refers to have been seen as needing environmental impact assessment. With the implementation of the Directive 2001/42/EC this seems to be a somewhat contentious issue. The Swedish interpretation is that at the most the individual programmes will have to be screened. The crucial question is deemed to be that granting of project financing is not considered to be a permit process in the sense of the directives. The programmes would thus not come under the definition of programmes and plans needing an environmental assessment. Clearly however the programmes and the project proposals can be of such a character that they set the conditions for actions that have a significant impact on the environment and that do require formal permits such as building permits, permits in accordance with the Environmental Code etc. Several projects have for example been concerned with building of harbour facilities, establishment of industries, tourism plans etc. Swedish view may not be in line with the directive. It is however consistent with the mode of implementation in Sweden: minimalist rather than intentionalist or environmentalist (Emmelin & Lerman 2004).

If viewed from the substantive point rather than the formal there are three major problems with the practice as it has been and is seen officially to be.

First, the development programmes are not examined critically for environmental impact. The rhetoric of sustainability on the programme level is not operationalised or scrutinised. Second, this also means that chances to set operational conditions for project screening and help formulate conditions for grants are foregone. Third, there is the risk that projects later subjected to permit processes and EIA may in fact not be acceptable. We have not followed up this but it would be fruitful to do so.

The procedure violates one of Westerlund's (1997) criteria for good EIA-practice: that the EIA should be available before the "time of the real decision". Even if the formal decision on building permit or environmental conditions is taken at a later time much of the factual decision is taken when a project is granted financing. In some cases it might even be seen to be part of the tactics of foreclosing the decision options at the formal stage. The argument of foreclosure of options and the limited degree of freedom to examine alternatives is a major reason for strategic environmental assessment i.e. assessment at the programme stage.

Environmental concern as a means or a hindrance

A comparison with the so called LIP-programme (local investment programme) is relevant. This was a national programme initiated in 1997 to support investments that would towards "greening the welfare state". (Lundqvist 2004) A major part of the programme consisted of support for municipalities for investing in various forms of "eco-cycling" – project in energy, waste management, district heating, sewerage etc. The programme spent some 6,2 billion SEK in the period 1998 – 2002. LIP support was 30 % of investment which means that it directed considerable investment volumes at the municipal level (Naturvårdsverket 2005). The LIP-programme was just one of several policy initiatives in the late 90'ies which were all part of an offensive by the social democrats to take the political initiative in environmental policy and most important to harmonise it with the traditional social democrat policy areas of employment and economic growth. The ambition to take the lead in the EU mentioned above was another component. Specifically the LIP-programme was based in a proposal by professor Olle Eriksson (Eriksson 1996) to use the building slump to literally build a more environmental society by investments in infrastructure. One of the examples of need used by Eriksson was the ageing sewage systems and the need for separate storm water systems i.e. a well known, conventional problem long neglected for reasons of economy and inconvenience and conspicuously lacking in political lustre. Employment and economic growth as the driving forces behind LIP explains the size and the speed with which the programme was planned and executed. The role in taking the political initiative is illustrated by Lundqvist (2004:46) who points out that Cabinet Ministers regularly went to the municipalities and "announced the granting decisions at well-organised press conferences, particularly pointing out the number of jobs resulting from the local 'green' investment programme".

The programme was criticised for addressing only a three of the major environmental threats identified (Kågesson & Lidmark 1998), for essentially supporting investments that would have been made by the municipalities anyway and for being assembled and implemented so hurriedly that municipalities had little opportunity for innovative thinking (Anselm 2002; Lundqvist 2004). However, detailed analysis seems to indicate that the programme was in fact not only effective but also economically efficient in CO2 reduction (Kåberger & Jürgensen 2004)

Environmentally positive results may of course be achieved by programmes that have other basic motives; with the New Deal as a classic example. However if the primary motive is economic growth or increased employment the risk is obvious that other considerations will not just be secondary but in fact relegated to a symbolic role. In the case of LIP the underlying political motive was employment. However the effort was directed towards a few areas of environmental significance. These were, as pointed out above, conventional and thus well established as needs. In the case of the structural funds and the regional development programmes there is no clear or identified subsidiary environmental objective. At national policy level the objectives are referred to in general sustainability terms. The national Environmental Quality Goals are invoked. They are however so general and diverse that they give little practical guidance towards. Rather they can be used to legitimise an extremely wide variety of projects without any need for assessment of whether the project in fact is in conflict with other goals (Emmelin 2005; Emmelin & Lerman 2006) The regional partnerships seem to regard environment as a restriction on programmes and projects. “Sustainability” and the horizontal indicators – environment, equality and integration – are imposed from the national level rather than sprung from regional perceived needs. It is environmental regulation rather than environmental problems that seems to be seen as a threat to regional growth. In several cases “sustainability” seems to have been an add on after the programmes had been reviewed and found wanting in this aspect. The rhetoric has been changed from sustainable development to sustainable growth emphasising the role of growth as a goal in itself rather than a means to other ends. A clear indication of this view is the concrete treatment of the horizontal indicator “environment” in project proposals. It is seen as a verbal or rhetorical hurdle to pass rather than as something that should influence the project.

Conclusion

The present study samples project proposals from several regions and different structural funds. The results are uniformly discouraging in that they show a lack of concrete environmental assessment of the impacts of projects. Environment as a component of sustainable development is integrated at a rhetorical level in programme documents. No SEA has been undertaken to see whether the programmes in fact live up to this.

Concerning environmental assessment and the basis for deciding whether individual projects contribute towards sustainability we note that:

- The basis for reporting the environmental impact of projects has been a combination of how the projects were presented in the proposal and ad hoc expert judgement by the regional environmental expert.
- No formal impact assessment has been made of projects.
- Projects with a vague aim at environmental enhancement have not in any way been subjected to an assessment to show either if there is substance in the claims or whether there are unintended side effects. Good intention is assumed to give good results!
- It is notable that the classification could be conditional. To fulfil these conditions was then left to the proponents. No follow up to check whether this was in fact done was made by either the environmental expert or in project auditing.
- Projects will be considered environmentally acceptable based on general pro-environment wording. Project owners are helped to get acceptable wording in the process of dialogue with responsible officials.

- The degree to which project funding influences later permit processes that in some cases will be necessary is not known i.e whether funding puts pressure on later environmental approval or whether projects may have to be aborted or modified.

In summary our general finding is that it is the rhetorical integration of environmental concern into the project proposal that is the basis for assessment and for the reporting of impacts to the decision maker and to the EU. The lack of strength of integration shown by lack of concrete indicators, instructions for tools or procedures for assessment etc means that integration of environmental concern does not significantly influence the role of sector goals and rationalities.

Our results thus indicate a signal failure of a central component of Swedish environmental policy, i.e. sector responsibility and sector integration, in regional development support. Environmental issues are in practice thus not integrated into the implementation of a central policy area for EU sustainable development.

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