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ANALYSING STRATEGIC ENVIRONMENTAL ASSESSMENT

TOWARDS BETTER DECISION-MAKING



**EDITED BY
PIETRO CARATTI, HOLGER DALKMANN
AND RODRIGO JILIBERTO**

THE FONDAZIONE ENI ENRICO MATTEI (FEEM) SERIES
ON ECONOMICS AND THE ENVIRONMENT

Analysing Strategic Environmental Assessment



THE FONDAZIONE ENI ENRICO MATTEI (FEEM) SERIES ON ECONOMICS AND THE ENVIRONMENT

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Abbreviations

BCR	Benefit Cost Ratio
BMV BW	Bundesministerium für Verkehr, Bau- und Wohnungswesen (German Federal Ministry of Transport)
CBA	Cost–Benefit Analysis
CEQ	Council on Environmental Quality
CS	Country Strategies
DMP	Decision-Making Process
DW	Decision Window
EA	Environmental Assessment
EC	European Commission
ECMT	European Conference of Ministers of Transport
EIA	Environmental Impact Assessment
EIS	Environmental Impact Study
ERA	Ecological Risk Analysis
EU	European Union
FANC	Federal Agency for Nature Conservation
FEA	Federal Environmental Agency
FStrAbG	Fernstraßenausbaugesetz (German Trunk Road Extension Act)
FTIP	Federal Transport Infrastructure Planning
GUP	General Urban Plan
IAIA	International Association for Impact Assessment
IAO	Input, Analysis, Output
IEA	Institute of Environmental Assessment
MFA	Swedish Ministry for Foreign Affairs
MoT	German Ministry of Transport
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
PC	Procedural Criteria
PEIS	Programme Environmental Impact Statement
PIOT	Tenerife’s Insular Development Plan
PPP	Policies, Plans and Programmes
SchwAbG	Bundesschienenwegeausbaugesetz (German Federal Railway Extension Act)
SEA	Strategic Environmental Assessment

SEIA	Strategic Environmental Impact Assessment
SIDA	Swedish International Development Cooperation Agency

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Preface

The content of this book is the result of the Analytical Strategic Environmental Assessment project (ANSEA), financed under the Fifth Framework Research Programme of the European Union, started in March 2000 and concluded in 2002. Given the nature of the project, all participants recognize a unique common authorship of the project's result published here. Project participants were:

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Foreword

For those of us who want environmental assessment (EA) to actually *do* something – improve decisions by ensuring that they integrate environmental considerations, rather than just produce handsome and useless reports – it is clear that the focus of EA needs to be firmly on the decision-making process. Only in guidelines and pipe-dreams does EA follow an elegant rational procedural path from screening through to monitoring, with a nicely assessed and massaged plan as a by-product (shown as a box labelled ‘revised plan’ pointed at by an arrow from the EA process). In practice, *effective* EA is all about making the right comment at the right meeting to get the right person to consider something that they had not thought of before.

We are currently being bombarded with new legislation and guidance, with boxes and arrows, with idealized rational decision-making flowcharts. The European Directive on strategic environmental assessment requires legislation and guidance to be implemented in each of the European member states, and other countries worldwide are establishing procedures for strategic environmental assessment. This very timely book on ‘analytical strategic environmental assessment’ (ANSEA) deals head-on with the decision-making systems that these regulations and guidance documents are supposed to influence.

ANSEA focuses on the quality of the decision-making process rather than on the impacts of the decision; on describing the decision process rather than the output of the decisions and ensuring full integration of environmental values in decision making. The approach was developed by an international star team with extensive theoretical and practical experience with EA.

To my mind, ANSEA makes several enormously important contributions to our understanding of how to make EA effective. First, it acknowledges and clarifies that decision making is not always the rational process that the flowcharts assume. Decision making is often messy, unpredictable, non-sequential. Particularly at the strategic level, uncertainties make it difficult to predict impacts. Any EA system needs to take this on board.

Second, it defines the important concept of the ‘decision window’. Even as children we know when it makes sense to influence our parents to buy us sweets/ toys/ jeans with strategically-placed holes, and when that just isn’t an option. Yet, with EA we often persist in symbolically considering options that were closed off months ago or in requesting more time for detailed studies

when decisions are being made *now*. The concept of the ‘decision window’ helps to focus EA on those decision makers and times that really matter.

Finally, ANSEA helps to ensure that environmental values are fully integrated into decision making by giving some very logical and manageable rules for how decisions should be made in terms of their inputs, analyses and outputs. Decisions should be comprehensive, timely, transparent, participative and credible. This gives a nice checklist for SEA practitioners and decision makers.

Of course, ANSEA is not the universal panacea. It is – currently and on paper, at least – bulky. It assumes a prescience about the specific EA decision-making process which is unlikely to be found in practice. It will need more pilots and case studies to test just how well it works. On the other hand, I feel that the ANSEA approach could easily be expanded to cover sustainability as well as environmental issues.

This book should be essential reading for anyone who is trying to improve decisions and particularly for all of us, EA practitioners, who are trying to figure out how to fit those nice theoretical flowcharts to the real-life messes that we constantly seem to meet.

Riki Therivel

Introduction

In the second half of the 1990s, the scientific SEA debate was acknowledged to have significantly failed to address the role of Strategic Environmental Assessment (SEA) in decision-making processes (Kørnøv and Thissen 2000). Policies, plans and programmes are based on political decisions, and an efficient SEA must therefore refer to the specific logic of decision making.

This book introduces the Analytical Strategic Environmental Assessment (ANSEA) approach, taking a step in this direction. It collects the results of a two-year project financed under the Fifth Framework Research Programme of the European Union. The ANSEA project develops an approach to environmental assessment based on decision-making sciences to ensure the integration of the environmental dimension into decision-making processes. The project aims at providing a top-down deductive approach to environmental assessment of policies, plans and programmes in order to integrate environmental protection objectives and measures systematically into strategic decision making. For this purpose, the ANSEA project covers a broad set of issues related to several disciplines such as decision theory, policy analysis and environmental assessment. The approach developed is designed to be applied to a broad spectrum of planning instruments that range from local to national scale in different sectors (from agriculture to telecommunications). It therefore results in a broader and more abstract assessment methodology.

The key point of Analytical Strategic Environmental Assessment is the shift from an analysis of the environmental consequences of a decision to an analysis of the decision-making process. The focus is on the priorities, issues and values that govern decision making. The objective of the ANSEA project is to provide a complementary and decision-centred approach to the assessment of policies, programmes and plans (PPP).

So far, the project seems to have developed a conceptual platform on which a decision centred on Strategic Environmental Assessment (SEA) might be further developed. At the same time, it has pointed out some theoretical issues that this new approach to SEA should deal with, highlighting open questions for further research. The outcome of the project is a serious attempt to link the environmental assessment theory with decision theory and policy analysis.

The ANSEA approach is based on desk research drawing on *ex-post* analyses of finalized decision-making processes. In an *ex-post* evaluation the approach was found to be a useful and successful methodology for providing

environmental values in decision making. In the future, further pilot studies of real decision-making processes will have to test its concepts and procedures to make it a fully integrated instrument.

The ANSEA approach has been developed at a time when the practice of Strategic Environmental Assessment (SEA) is growing and extending to an increasing number of applications. In June 2001 an EC Directive was adopted, Directive 2001/42/EC, for the assessment of the effects of certain plans and programmes on the environment. Its full and coherent implementation within three years represents a crucial step for the future development of the environmental-related policies of the Member States. In this context, the definition of a transparent and systematic approach to Strategic Environmental Assessment and of useful tools represents a high priority. Further knowledge and approaches to SEA are needed to respond to such legislation and to achieve a better integration of environmental protection objectives. In this perspective, the ANSEA approach is an invitation to open a more extensive discussion on environmental assessment, decision-making theories and policy analysis. This could lead to a new way of thinking that could contribute not only to environmental assessment, but also to the design of environmental policy.

This book is in three parts. The first part is devoted to the development of the conceptual background of the ANSEA approach. It locates and attempts to clarify the contribution of the ANSEA approach to the current state of the art. It is a review of the different decision theories and policy analysis streams.

The second part of the book presents the practical outcome of the ANSEA approach, which is the ANSEA methodology. The aim of this part is to clarify how the ANSEA concepts could be integrated in real assessments of PPPs, and it introduces a sequence of seven methodological steps as a possible framework for the assessment of the decision-making process.

The third part of the book includes two explicatory examples of the ANSEA approach. These examples are based on the information collected and processed in two of the eight case studies developed within the ANSEA project. They analyse the significant environmental implications of specific decision-making processes through the step-by-step application of the ANSEA approach.

The editors

PART I

ANSEA theoretical background

1. Background and context of a strategic environmental assessment

Gary Haq

1.1 INTRODUCTION

This chapter aims to provide the background and context to the ANSEA project. It reviews the evolution and development of Strategic Environmental Assessment (SEA) from project environmental impact assessment (EIA). It examines the definitions of environmental assessment (EA) and its limitations and identifies a need to develop a new conceptual framework for SEA based on the systematic integration of environmental values in the decision-making process.

1.2 EVOLUTION OF ENVIRONMENTAL IMPACT ASSESSMENT AND NEED FOR SEA

The 1969 US National Environmental Policy Act (NEPA) introduced the first EIA system as a result of the convergence of several factors. These included (O’Riordan and Sewell 1981): a tradition of rational planning; a new level of public concern about the environment; the increasing scale and wider repercussions of major development schemes; and the failure of project appraisal and review procedures to account for evident ecological and community impacts.

Since its introduction, different EIA systems have been set up worldwide and have enabled EIA to become an important tool to safeguard the environment in the project planning process (Morris and Therivel 1995; Petts 1999). EIA procedural and methodological developments have reinforced each other and have resulted in a shift towards broader and more integrative assessments. In particular, the EIA process has taken a stronger socio-political dimension while its scientific-rational basis has become methodologically diverse and specialized (Sadler 1996).

Three main trends in the evolution of EIA can be identified:

1. adoption of EIA worldwide since its US origins (NEPA);
2. innovations in law, method and procedure that have driven the development of the EIA process, resulting in the development of the environmental assessment of policies, plans and programmes (PPPs), usually called Strategic Environmental Assessment; and
3. expansion in the scope of assessment in response to new challenges and issues, namely the move towards integrated sustainability assessments.

EIA has increased the level of attention given to the environment in the planning of development projects. However, the emphasis on individual development projects means that the cumulative, synergistic and indirect effects of individual development projects are rarely adequately assessed (Therivel *et al.* 1992). Although EIA is widely accepted as a useful tool in decision making, it largely reacts to development proposals after fundamental decisions have been taken. This results, for example, in a limited number of alternatives being considered. In the case of road developments, the issues of less polluting modes of transport or improvements in public transport, railways and cycles are not considered, and only alternative routings of the road are considered. Mitigation measures are also limited and mainly concentrate on reducing the general impacts associated with a particular transport scheme, for example noise barriers or landscaping.

This disillusionment in the ability of EA to ensure sound environmental decision making, from policy to project, catalysed the move towards undertaking an environmental assessment at the PPP level. SEA is intrinsically proactive and provides the opportunity of addressing cumulative impacts, alternatives and mitigation measures at an early stage in the planning process, thereby counteracting some of the limitations of the EIA of projects. From this perspective, SEA has been evolving as a mechanism that attempts to assess systematically the environmental impacts of decisions made at what is conventionally called levels of strategic decisions (Partidário 1996). SEA can play a significant role in establishing a framework to develop EIAs for specific projects by enabling the environmental assessment of continuous planning tiers, from policies to individual projects, and full coverage of relevant alternatives.

An idea that has advanced in recent years is that SEA can also play a significant role in the promotion of sustainable development (Sadler 1996; Sadler 1999; Noorbakhsh and Ranjan 1999; Feldman *et al.* 2001). SEA is able to enhance the integration of environmental concerns in policy and planning processes, thereby helping to implement sustainable development. A new 'sustainability-led' framework for SEA could allow the principle of sustainability to be carried down from PPPs to projects, thus contributing to more efficient, environmentally integrated planning (Therivel and Partidário 1996).

1.3 DEFINITIONS AND RATIONALE

1.3.1 Environmental Assessment

Environmental assessment can be seen as an information process which is external to the decision-making process but which aims to incorporate a given set of environmental values into a decision, whether it relates to the construction of an airport or a transport planning process. A decision is understood as any decision-making process that goes from the conception of a policy, plan, programme or project to its administrative approval and definite execution.

The concept of EA as a decision-making tool is not new in EIA literature. The rationale for using EIA under NEPA was the underlying belief that environmental values were being given little attention in decision making (Clark and Herrington 1988). Bidwell, cited by Clark and Herrington (1988), states that: 'EIA is not an environmental protection measure ... the requirement for an EIA suggests that some thought is being given to environmental consequences ... and [this] feeds awareness of the need for balanced development and sustainable environment'.

A more recent definition has been advanced by the International Association for Impact Assessment (IAIA), with the co-operation of the Institute of Environmental Assessment (IEA), in which EIA can be defined as 'the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made' (IAIA and IEA 1999).

1.3.2 Strategic Environmental Assessment of PPP

A simple definition of SEA is that it is the EA of a strategic action: a policy, plan or programme. In this sense, SEA should be seen as an EA tool, on a par with other EA tools such as EIA of projects, cumulative impact assessment and auditing (Therivel and Partidário 1996). More specifically:

SEA is a systematic, on-going process for evaluating, at the earliest appropriate stage of publicly accountable decision making, the environmental quality, and consequences, of alternative visions and development intentions incorporated in policy, planning, or programme initiatives, ensuring full integration of relevant biophysical, economic, social and political considerations (Partidário 1999).

Terminology has raised an extensive debate in the definition of EA applied to PPP development. 'The word strategic in SEA assumes diverse interpretations as to its relative positioning in the pyramid of decisions from policy visions to programmes of more concrete activities' (Partidário 1994). Usually, this strategic component should be associated with:

- the strategic nature of decisions: intentions, guidance, orientations, regulations; strategies are reviewed or replaced, but they are not built or demolished.
- the continuity of the decision-making process as opposed to discrete decision making. SEA deals with the process of developing PPPs, which is continuous in nature, and not only with the PPP instrument *per se*. A PPP may be created, reviewed, or replaced, and this is part of the continuous nature of the decision-making process at this strategic level.
- the optional values, referring to the range of multiple issue/alternatives involved in a strategic process. The questions are: 'What are the possible options to deal with a specific problem or a particular need?'; 'What might be the environmental consequences of these options?'; and 'Which environmental option is the best one to chose?' rather than 'This is what will be done – what are its environmental impacts?'

SEA deals with concepts, and not with particular activities in terms of their location or technical design (Partidário 1994). Although in practice, the difference between policies, plans and programmes is not very clear, Wood and Djeddour (1992) suggest that: 'A policy may ... be considered as the inspiration and guidance for action, a plan as a set of co-ordinated and timed objectives for the implementation of the policy, and a programme as a set of projects in a particular area'.

SEA is seen as providing an adequate context and rationale for sound and integrated decision making, which is strongly linked to achieving sustainability and considering cumulative, synergistic and long-term effects. It provides a way of incorporating environmental and sustainability considerations into the highest levels of decision making and policy development. The two main bases that provide the rationale for the emergence and strengthening of SEA are the policy-based and the project-based approaches. The policy-based approach involves tailoring EA principles to the formulation of policies and plans via the identification of needs and development options with a view to achieving sustainable development. The project-based approach involves the extension of EA information, methodologies and assessment stages to policies and plans (Partidário 1999).

To ensure an effective environmental assessment process, a tiered approach has been advocated (Wood 1988; Wood and Djeddour 1992; Nooteboom 2000). It requires a step-by-step application of environmental assessment to each planning stage (policy, plan and programme) to ensure that each impact is assessed at the most appropriate planning level. The tiered approach allows the reduction of the scope of the EIA of projects, as issues will be addressed at the appropriate level during the planning process. SEA therefore needs to be flexible in order to ensure a flow of information between the various stages of the planning process, rather than simple repetition. When an SEA has been undertaken at a previous tier it should not be reproduced at the level of EIA of projects (EC 1997). The Dutch SEA system is perhaps one of the most comprehensive tiered approaches currently in place, covering all levels of decision making and policy sectors (Sadler and Verheem 1996; Verheem and Tonk 2000).

SEA is important in that it enables the integration of environmental and sustainability factors into policy making by addressing the cause of the environmental problems at their policy source rather than treating the symptoms of impacts as in EIA (Sadler 1996).

The SEA of policies, plans and programmes is an important aid to informed and rational decision making because it (Sadler 1996):

- builds environmental considerations into all levels of decision-making development, not just project approvals;
- helps to determine the need and feasibility of government initiatives and proposals;
- avoids the foreclosure of options and opportunities which arise when assessment occurs at the project stage;
- addresses environmental issues and impacts that are best dealt with or can only be considered at the policy or programme level (for example initiatives that are not divisible into projects); and
- establishes an appropriate context for the EIA of projects, including the pre-identification of issues and impacts that warrant detailed examination.

At the Fourth European EIA Workshop the link between SEA and decision making was identified as being of crucial importance, especially whether or not the SEA is binding for the decision makers. One of the conclusions of the workshop was that decision documents should describe which environmental concerns have been taken into account and consider possible deviations from these concerns. If the results of SEA were made binding for the decision maker then the discretion of the authorities would be limited (Kleinschmidt and Wagner 1998).

1.4 SEA SYSTEMS

The popularity of SEA has been growing in recent years, although very few European countries have formal legislation in place (Lee and Hughes 1995). In March 2000 the European Commission adopted a common position on a future EU SEA directive, which will assist environmental integration with a view to contributing to sustainable development (Feldmann 1998; Feldmann *et al.* 2001). On an international level, an array of SEA forms has been developed, differing in openness (level of public participation), scope (for example mandatory requirement to consider alternatives), intensity and duration (for example one day to several years) (Verheem and Tonk 2000).

Although these different forms are essentially the same, differences between them are a result of the national and institutional development of tools for the evaluation of PPPs according to the needs of the different planning processes and policy making (Partidário 1999). The scope and form of SEA will depend on the function assigned to it, the policy and institutional frameworks that are in force, and the extent to which other comparable processes and instruments are used or are available for similar purposes. Depending on these purposes, SEA can be used to operate either as part of an integrated process or as a separate approach incorporating other factors (for example social, health) or focusing only on biophysical factors. At the operational level, SEAs will vary with several factors including:

- The level and generality of decision making (for example broad policies versus specific plans);
- The policy sector covered (for example energy and transportation are known to cause environmental concerns); and
- The type of environmental consequences that can be anticipated, notably, whether likely effects are direct or indirect, discrete or with spatial linkages (Sadler 1996).

SEA systems have been divided into three general procedural forms: the standard (EIA-based) model; the equivalent (environmental appraisal) model; and the integrated (environmental management) model (Sadler and Verheem 1996).

In the standard (EIA-based) model the SEA of policies and programmes generally follows the EIA process, with similar steps and activities but with differences introduced by more fluid policy requirements. The United States system is an example of the EIA-based model, with SEAs referred to as Programmatic EAs.

The NEPA applies to 'legislation and other major Federal actions'. As interpreted by the Council on Environmental Quality (CEQ), this refers, *inter*

alia, to PPP. CEQ regulations note that an EIA may be prepared for broad federal actions such as the adoption of new programmes or legislation. The approach, called Programme Environmental Impact Statement (PEIS), has gained currency as a means of facilitating long range planning and dealing with the cumulative effects of tiering actions requiring the EIA of projects. So far, NEPA provisions have yet to be applied to broad government policies (Sadler and Verheem 1996).

The equivalent (environmental appraisal) model requires that policy and plan evaluations are undertaken to identify and take into account environment effects. An example of such a model exists in the UK.

The UK approach is to integrate SEA into existing policy and planning processes with the minimum of formal provision. It has a non-statutory system of environmental appraisal, which covers central government policies, regional and local authority land-use plans and plans and programmes for various sectors. Since 1991, the UK government has been committed to the appraisal of the environmental effects of policies. Ministers will be required to give details of significant environmental costs and benefits for the proposal, requiring clearances by the Cabinet Committee. The role of Green Ministers appointed in each department has been strengthened to improve the departments' appraisal of policies. The environmental assessment of local authority development plans is relatively advanced, although no statutory provision exists. Planning Policy Guidance Note 12 requires authorities to undertake environmental appraisals of development plans (DETR 1998).

In the integrated (environmental management) model the SEA is undertaken as an integral part of a comprehensive policy and plan setting process. Such a model is followed in New Zealand and The Netherlands.

The approach to SEA adopted in New Zealand is to incorporate environmental policy into the heart of the governmental system. The comprehensive system of strategic policy making and planning to protect and enhance the environment is based on three cornerstones: first, the 1991 Resource Management Act, which is a comprehensive law with the main aim of promoting sustainable management of the environment; second, the 'Strategic Result Areas', which provide a political framework within which government policies are developed, including those that have environmental effects; third, the Environment 2010 Strategy, which provides a benchmark against which environmentally related activities, budgets and work priorities are judged (DETR 1998). In New Zealand, the practice of SEA involves determining which combination of objectives, policies and rules best achieves the purpose of the 1991 Act. Under the Act, SEA is undertaken as part of the preparation of policy statements and operates on three levels: national policy statements, regional policy statements and regional and district plans. The framework set

by such policies and plans can outline project-specific requirements at the consent (permit) level. Where this is done, it should lower the costs and time spent on preparing an acceptable consent application (VROM 1996).

The Dutch have tried to match SEA to the characteristics of decision making. The Dutch system has two tiers, which consist of an environmental test (E-test) for draft legislation and a strategic environmental impact assessment (SEIA). The E-test was established in 1995. The objective of the test is to encourage ministries to apply a relatively simple appraisal procedure to policy initiatives in order to ensure that appropriate consideration is given to environmental effects. The product of the E-test is an 'environmental paragraph', which is included in an explanatory memorandum to the Dutch cabinet, describing the anticipated environmental effects of the proposed policy initiative. In contrast, the SEIA is a statutory requirement under the 1987 Environmental Impact Assessment Act. The Act applies to specified land-use and sectoral plans and programmes, which fix the location of physical projects for which an EIA is required (VROM 1996; Dutch EIA Commission 1996, 1998; DETR 1998; Verheem and Tonk 2000).

The three models suggest the range of adaptation that is necessary to account for the realities of policy making. The uniform *a priori* adoption of an EIA procedural model, widely promoted by the literature, can be argued to be an inappropriate response to many circumstances and configurations of strategic policy making (Sadler and Verheem 1996). Verheem and Tonk (2000) argue that SEA should be seen as a concept with multiple forms and that a balance can be achieved in diversity if it is accepted that SEA includes a wide range of different processes, all achieving the same goals. Being aware of the variety of existing SEA processes is important and an SEA process should be selected and fine tuned to a specific planning process with an emphasis on, *inter alia*, the specific decision-making context, and the culture of decision making in a particular organisation or country.

Partidário (1999) identified three main dimensions that characterize each SEA system and which should be taken into account when adapting an SEA framework to the realities of policy decision making:

1. The **policy-making/planning dimension**, which refers to the structure and response of established policy-making/planning systems to the incorporation of SEA. Two dominant planning approaches exist: the linear planning process and the cyclical planning process. The latter is associated with rational or problem-led planning whilst the former follows a more objective-led approach. The SEA system will reflect the nature of the underlying policy-making or planning system in place, which can differ considerably.
2. The **decision-making dimension** relates to the options and priorities in

development decision making, whether it is based on economic priorities or the sustainable management of natural resources or capital.

3. The **environmental assessment dimension** relates to the form and integration of environmental assessment principles and approaches into traditional PPP decision making. SEAs that use or have evolved directly from project EIA procedures and methods have been described as ‘bottom up’ approaches. Procedures that are newly conceived or result from policy and planning-based procedures are termed ‘top down’ approaches. These approaches enable existing SEA systems to be characterized and understood.

1.5 KEY LIMITATIONS OF SEA

SEA is a process that is still evolving and changing. Limitations in current SEA practice cover methodological issues, participatory approaches and quality control, as well as the more general procedural and institutional deficiencies. Conclusions from the 1994 EU Workshop on EIA Methodology and Research identified the main political and institutional problems of SEA, which include:

- the considerable difference in PPP-making processes and procedures within countries and the need for a different (or flexible) system to ensure environmental integration;
- political support for SEA may depend on retaining a measure of political discretion in decision making and avoiding major shifts in power;
- regarding public participation and consultation, the conclusions identified the ‘closed’ nature of the PPP-making process and the need to establish broadly based consultation procedures with experts and public at different stages of the SEA process (EC 1997).

The 1997 EU Study on an EIA/SEA research strategy (EC 1997) identified the other political and procedural problems in SEA as being:

- poor political support for SEA;
- limitations on existing practice which inhibit the effective integration of SEA into the decision-making process;
- the absence of formal decision-making procedures for many PPPs to which SEA can be linked;
- the shortage of trained personnel; and
- the absence of guidelines and case studies.

SEA also has technical limitations. Therivel and Partidário (1996) identified the main technical difficulties in SEA as:

- SEAs generally cover a large area (sometimes several countries) and a large number of alternatives, which make collecting and analysing data for SEAs very complex;
- SEAs are subject to greater levels of uncertainty than project EIA: uncertainty about future environmental, economic and social conditions; uncertainty about the developments likely to take place as a result of the PPP, and uncertainty about likely future technologies;
- SEAs often have to cope with limited information where, for example, environmental data collected in different countries are incompatible or limited;
- SEAs have to deal with information at a different level from the EIA of projects: a national-level SEA needs to focus on national-level concerns, and thus may have to disregard impacts that are important at a local level but do not influence a national-level decision.

The main lessons on the future of SEA recommended by the International Study of the Effectiveness of Environmental Assessment (Sadler 1996) included the need to:

- begin as soon as feasible the process of PPP formulation;
- start with a ‘reality check’ that recognises that: (i) assessment is part of a larger process; (ii) the purpose is not to produce a study but to inform decisions; (iii) integrating environmental concerns is likely to involve a change in organisational culture; and (iv) time spent in preparation can be an up-front investment that is recouped later;
- as a rule of thumb, make sure that the assessment’s specificity or generality corresponds to that found in a proposal;
- promote environmental benefits, as well as avoid adverse impacts, for alternative approaches;
- use the simplest procedures and methods consistent with the task; and
- obtain the right information from decision makers at the right time; otherwise the SEA risks being irrelevant, no matter how high the standard.

Furthermore, the International Effectiveness study emphasized the need to consider fully the relationship between SEA and other policy tools with a view to including practical opportunities to develop a more integrative sustainability-oriented analysis.

1.6 THE NEED FOR A NEW CONCEPTUAL FRAMEWORK FOR SEA

The dilemma in current SEA practice is that there is no general agreement on how best to assess a policy, plan or programme. In effect, policy ‘success’ cannot be easily defined. Under such circumstances, should SEA constitute a definitive and completed assessment for all levels of PPP and should policy decisions be based on the ‘partial’ evaluations that become available?

There is no clear answer to these questions, although promoting the systematic integration of environmental values into decision-making processes can reduce uncertainty. In the short term, assessments should be conducted and disseminated in a manner that enhances their utility for a diversity of decision makers with persuasive evidence (Kraft 1999).

A key objective of SEA is to change the way in which decisions are made by integrating environmental values into the PPP decision-making process (Partidário 1996). Depending on the decision system, this may not be adequately achieved if the procedure and methods of SEA are based on modified EIA procedures and methods. EIA focuses on the ‘objective’ identification, prediction and evaluation of environmental impacts of concrete and objective development solutions. However, current SEA practice has shown that, in the case of PPP, EA must go far beyond the analysis of the environmental consequences of decisions, that is, it should influence the process and content of priorities, issues and values in decision making. Brown and Therivel (2000) argue that emphasis should be on the SEA process rather than the product (SEA Report). To be effective, SEA should start an early formulation of PPP, as not doing so would restrict the potential of SEA to influence the outcome of PPP, by limiting the consideration of alternatives and the role of SEA as a tool for the environmental education of the actors involved in PPP making. Therefore, focusing exclusively on the environmental impacts at the PPP level does not ensure the full integration of environmental values in the PPP decision-making process.

Kørnøvn and Thissen (2000) argue that SEA has been mostly based on the assumption that the provision of rational information will assist in improving decision making. However, other characteristics that in ‘reality’ influence decision-making processes include: cognitive limitations; behavioural biases; ambiguity and variability of preferences and norms; distribution of decision making over actors and in time; and the notion of decision making as a process of learning and negotiation between multiple actors.

2. Setting the ground for a new approach to SEA

Rodrigo Jiliberto

2.1 INTRODUCTION

The methodological and practical challenges faced by SEA can only be overcome if some of the basic assumptions of environmental assessment are further developed. There are two possible ways of doing this. The first one is strictly theoretical, while the second is a historically pragmatic approach. A theoretical approach is worthwhile and useful, but it requires a timeframe which surpasses a project timeframe. On the other hand, there are enough empirical facts and experiences accumulated on SEA to allow setting a new ground for SEA on a historically pragmatic basis.

There are three facts that support the development of a new ground for SEA.

- First, the short history of SEA has demonstrated the difficulty of assessing the environmental impacts, effects and consequences of complex strategic decisions like PPP. This has a very sensible and practical effect. Since an SEA primarily centred on the impact/effects concept is not useful in supporting sound decision making, given the uncertainty surrounding the impact estimation, the assessment has had to expand its analysis to a broader number of aspects to deliver consistent information for decision making.
- Second, a detailed analysis of past experience shows that SEA goes much further than the pure assessment of the environmental effects of decisions. What a careful analysis shows is that SEA has attempted to improve the consistency and quality of the decision-making process (DMP) by introducing a set of decisional criteria. SEA attempts to affect complex DMP by making them sensitive to decisional criteria, allowing environmental concerns to be taken into greater account in decisions. In fact, SEA can be seen historically as a tool meant to affect a broad range of DMP aspects.
- And finally, past experience has also shown that environmental assessment (EA) of complex decisions is only effective if it is done *ex*

ante. This presupposes focusing the assessment on the decision process rather than on the output of the decision process, thus changing the assessment object. In an impact/effect/consequences-oriented EA the output is improved. This means that the assessment tries to improve the output of the decision from an environmental point of view. When an *ex post* assessment seems unfruitful, the aim of the EA is to improve the decision process. The assessment acts on the DMP rather than on the output.

A more detailed explanation of the scope and content of these three aspects can be found below.

2.1.1 Uncertainties in the Estimation or Prediction of the Environmental Consequences of Strategic Decisions

Environmental impacts at project level have always been predicted with a significant degree of uncertainty. This is not new for environmental assessment.

Of interest in this respect is Culhane's proposal (Culhane 1987, cited in Canter 2000) to replace the concept of impact prediction by one of forecast, 'since "to predict" means foretell with the precision of calculation, knowledge or shrewd inference from facts or experience, whilst "forecasting" suggests that conjecture rather than real insight or knowledge will be involved'.

However, according to the literature, the weakness of impact prediction in SEA goes a little further. The European Commission's paper on Strategic Environmental Assessment, which is the result of a large comparative study on applied SEA, states it quite clearly.

In each step of quantifying the parameters of effects networks, additional uncertainty is introduced. Since these uncertainties tend to accumulate, final impacts of effects networks with many parameters normal have more uncertainty than simple, short effect network. In practice the impact of proposed strategic actions on final effects is not calculated: the calculation often stops somewhere 'halfway' the effect networks. (EC 1994, 14)

The relevance of this statement is very high because the same paper considers that impact prediction for SEA is absolutely necessary and defines it as '... an objective estimate of the type and magnitude of the PPP's likely future impacts' (EC 1994, 39).

Other authors evaluate the uncertainty surrounding impact estimation in SEA in a similar way (Sadler and Verheem 1996, 114). The Fourth European Workshop on EIA concluded: 'It was argued that SEAs usually cannot be as detailed in impact prediction as EIAs', or 'The greatest technical difficulties

in SEA usually relate to impact prediction' (Kleinschmidt and Wagner 1998).

A similar effect of the uncertainty surrounding impact estimation in SEA is the low level of quantified impacts in SEA studies (Fischer 1999a).

One can easily agree with several authors (Sadler and Verheem 1996, 114; Glasson *et al.* 1999, 404; Clark 2000, 24) that it is the level of abstraction of strategic decision making which makes impact prediction highly uncertain. However, this uncertainty is not eliminated by means of sensitivity analysis or other methodological tools as is very often stated in the literature (EC 1994, 38). These techniques aimed at dealing with uncertainty, simply reveal how certain or uncertain data are, showing uncertainty as objectively as possible. However, if uncertainty is there, as in this case, they cannot eliminate it.

This does not mean that it is not possible to create artificially, through different tools, some indications about possible virtual effects of strategic decisions on the environment. But this is far away from '... an objective estimate of the type and magnitude of the PPP's likely future impacts' (EC 1994, 14).

However, what really matters for environmental assessment is that the usefulness of an objective estimate for sound decision making differs strongly from the usefulness of a plausible indication. A decision taken based on 'objective' impact estimation is safe and sound, because it implies that in a given range of probability the future impact of the decision will be similar to the estimated one. Decisions are taken on a consistent basis.

When the information available is only a plausible indication of possible future events, the decision taken based on this information lacks a consistent basis. It is known in advance that the most probable situation is that 'real' future impacts of the decision will differ from those reflected in the indication.

This conclusion does not mean that indications are not useful for decision making, because when there is no other information it would be useless or worse not to use them. However, it makes no sense to focus the effort to improve the decision on the incorporation of those indications.

An assessment method aiming at the improvement of decisions based on more or less objective facts or information describing causal relationships (as EIA) must strongly differ from an assessment method aiming at the improvement of decisions based on something as subjective as information related to issues or implications.

The conclusion to be drawn is that in accordance with the fact that the environmental impact/ effect/ consequences of strategic decisions cannot be identified with a reasonable degree of confidence, a new assessment methodology needs to be developed. In this new approach, the environmental impact/ effect/ consequences/ issues of strategic decisions should play a role,

but they cannot define the objective of the assessment methods nor their central methodological and procedural aspects.

2.1.2 SEA Practice and Decision Making

As already mentioned, most recent SEA definitions describe it as a tool to incorporate information about environmental considerations, concerns, issues, or implications in strategic decision making (Brown and Therivel 2000, 184; Verheem and Tonk 2000, 177).

To identify what environmental considerations, concerns, issues, or implications mean in practical methodological terms, it is useful to look at the real SEA practice and try to analyse what it does in terms of influencing the decision-making process, in order to understand what the incorporation of environmental concerns into decision making means.

The EIA methodology allows for the fact that the incorporation of the environmental dimension into a decision means more than just taking into account its environmental impacts. An important part of the EIA methodology is, for instance, the analysis of the alternatives considered, although EIA practices have shown that this has not been its strong point.

In SEA there are several aspects which are environmentally relevant and which go much further than those considered in the EIA techniques. For instance, much more important than the identification, design and evaluation of alternatives could be the proper definition of the social demand for these alternatives. In other cases, the use of the proper general and environmental information is as relevant as a good evaluation of the environmental profile of the alternatives. Consulting with the public and other administrative bodies is as important or perhaps more so than using proper selection techniques for alternatives. In a strategic decision, it is important that the environmental consequences of the decision are considered. However, probably much more relevant is to require that, from the beginning, it defines the environmental policy objectives, and that it takes into account other environmental objectives defined by other policies.

All these aspects can be considered initially as the environmental dimensions, considerations, concerns, issues or implications of a decision, which should be properly incorporated.

The European Directive on SEA is an example of how the proposed procedure is not just meant to incorporate information on the likely environmental effects in decisions, but an extended set of information of a very different nature (EC 2001). According to the Directive, environmental assessment is meant to be useful to integrate environmental considerations into decisions. This is to be achieved through a procedure which includes:

1. the elaboration of an environmental report;
2. consultations;
3. the consideration of the information of the report and of the consultations in the decision;
4. the information about the final decision;
5. monitoring during implementation.

The environmental report should give information about two aspects:

- the likely significant environmental effects of the strategic decision; and
- the alternatives considered. Alternatives should be identified, described and evaluated.

The directive requires that the report contain a demanding list of information about:

- the description of the plan or programme and the link to other plans and programmes;
- relevant environmental information;
- information concerning environmental protection objectives;
- existing environmental problems;
- mitigation measures;
- criteria for the selection of alternatives;
- a monitoring system.

Following the Directive, and bearing in mind several other different SEA frameworks around the world (Therivel and Partidário 1996; Sadler and Verheem 1996; Partidário and Clark 2000), it is possible to identify what the Directive means by integrating environmental considerations into decisions.

Looking at the Directive's text, the answer could be that a decision has integrated its environmental considerations if it has:

1. evaluated its likely significant environmental effects;
2. identified, described and evaluated the alternatives according to a defined set of criteria;
3. carried out consultations with other public agencies and public stakeholders;
4. used proper environmental and general information;
5. identified environmental protection objectives;
6. defined a set of mitigation measures;
7. defined a monitoring system for the execution phase.

From this description, it is possible to say that the integration of environmental concerns into a decision implies a list of actions that have an independent function; consultation cannot be reduced to the evaluation of the likely environmental consequences, and so on.

Each one of the elements of this list are specific actions in a decision-making process. They could be named decisional actions. Therefore, an objective of SEA is that the decision-making process follows a specific and previously determined chain of actions. Hence, it is reasonable to suggest that SEA is about procedures that have to be followed during a decision-making process.

As far as these procedures entail a normative prescription, they can be called criteria, more precisely procedural criteria. These criteria represent the procedural requirements a society includes in a strategic decision-making process in order to consider it environmentally sound or sustainable.

Any real SEA or legislation on SEA entails a list of procedural criteria, which are the basis for the SEA. The procedural criteria shape or orient a decision-making process. SEA considers the application of those procedural criteria that have an environmental relevance. Procedural criteria cannot be derived theoretically, as there is no universal theoretical way to set up a list of such criteria. They are the result of a process in which all stakeholders discover which procedures in strategic decision making improve the environmental profile of decisions.

This second historical fact permits the suggestion that SEA is about the promotion and evaluation of the application of environmentally relevant procedural criteria in strategic decision making.

2.1.3 The Decision-making Process in Focus

Another relevant aspect of current SEA practice, which supports the development of a new basis for SEA, is the relationship between the assessment and the strategic decision-making processes.

Standard EIA of projects should be carried out before a decision is taken, but, given the normative shape of the assessment process, it does not run in parallel to the decision-making process. It appears as an *ex post* assessment. This *ex post* approach is in accord with the philosophy of EIA. If the effects of a decision are to be considered, there must be a virtual decision before the assessment takes place.

The *ex post* nature of the EIA of projects is implicit in its philosophy. It is *ex post* to the main decision-making steps: analysis of the situation, diagnosis, conception of alternatives and selection of alternatives. The EIA process could require that some of those steps be repeated, if the environmental impact study

reveals relevant effects. Yet the EIA is intrinsically located after several main decision steps.

As far as SEA practice is based on the same principles as the EIA – see previous chapter – it could also be conceived as an *ex post* assessment. In fact, some SEA legislation also follows these principles. However, in the analysis of past experience and in the literature, it is quite widely accepted that in strategic decision making it is practically impossible to change the output of the decision process significantly. Therefore, SEA practice and legislation try to recognize this fact.

Once again, the European SEA Directive is a good example, because it is explicit when it stresses that SEA should be carried out during the decision making and clearly should not be an *ex post* assessment: ‘Article 4. General obligations. 1. The environmental assessment referred to in Article 3 shall be carried out during the preparation of a plan or programme and before its adaptation or submission to the legislative procedure.’

However, the more the evaluators go into the process during its earliest stages, the more they must be aware that at this stage the SEA could not have the same goal as in a standard EIA, simply because at those stages there is no decision or tangible element that can be correlated in a coherent manner with the environment. At this stage the process in itself becomes the central element of the assessment (Brown and Therivel 2000, 188). The following two references illustrate this perception quite clearly. ‘Finally, we note that SEA methodology should emphasize the role of SEA as a PPP formulation tool’ (Brown and Therivel, 187). ‘If SEA is to have the intended impact, the approach should be guided by insight into the nature of decision process and the ways to influence this process’ (Kørnøv and Thyssen 2000).

SEA experience and legislation are promoting an assessment practice which implicitly implies that the unique scenario of SEA is the decision-making process itself. The analysis object which SEA has to look at in this scenario is the relationship between this decision-making process and a set of environmentally relevant procedural criteria.

It is not relevant when the SEA has to start; the assessment of the decision process is relevant. It is an assessment of the way in which a set of procedural criteria has been applied to it. It is no longer the output of the decision which needs to be environmentally improved, but the decision process itself.

2.2 CHANGING THE FOCUS OF ENVIRONMENTAL ASSESSMENT

Based on these three historical and pragmatic facts, a new framework for SEA can be proposed, which enables SEA to be considered not as an extension of

the EIA of projects, but as a new methodological field endowed with its own conceptual foundations, assessment processes and procedures, and methods.

This approach basically assumes that SEA has the same goal as the EIA of projects, which is to ensure that environmental values are properly considered in decisions. But it emphasizes that the operational SEA objectives have a larger scope than those of the EIA, which are implicitly focused on the incorporation of the likely environmental consequences in decisions. SEA goes far beyond the assessment and incorporation of the likely environmental consequences in decisions. Its objectives, and the assessment process, methods and procedures, need to be thought of in a particular way, which assumes a change in comparison to standard EIA.

The methodological key point in this approach is the shift from an assessment based on the analysis of the environmental impacts, consequences and effects of a decision to an assessment based on the evaluation of some environmentally relevant decisional criteria during the decision-making process. Formerly, an assessment was centred on the relationship between two separate 'events' or 'things', a decision and the environment (related by the impact), the relationship of which could be made objective to a certain extent. In contrast, SEA is an assessment centred on the quality and consistency of a decision-making process against a set of environmentally relevant procedural criteria. From here onwards, the decision process becomes a central element of the assessment.

A central hypothesis of this approach is that by properly addressing the procedural criteria during the decision-making process, the environmental assessment enables the direct and indirect environmental implications a decision-making process might have to be taken properly into account at the same time. Also in ensuring that all direct and indirect environmental implications of a decision-making process are properly addressed, the EA ensures a sound decision output, a PPP, that incorporates, as far as possible, the environmental values a society might have.

In summary, this new approach promotes changes in the status of EA. Table 2.1 summarizes and illustrates the features that characterize the changes it promotes.

When moving from a short-term and local scale situation to a broader horizon, accuracy and data availability become limited. In such context, an EA centred on likely effects loses its reliability and its practicality in supporting decision makers. Therefore, instead of focusing the assessment on the analysis of the effects of the decision on the environment in order to enhance directly the environmental quality of the output, this approach is focused on the decision process itself. It attempts to enhance the quality of the decision process by incorporating the environmental value, thus improving the environmental profile of the final decision.

Table 2.1 Changing perspectives in approaching EA

From	An EA centred on the impact of a decision (output oriented)	to	An EA centred on the quality of the decision-making process (process oriented)
From	An EA oriented to the description of the output of decisions	to	An EA oriented to the description of the decision process
From	A relationship between decision and a one-time EA which is not necessarily symbiotic	to	A relationship between decision and a multi-scale iterative EA which is necessarily symbiotic

In this approach, the likely environmental consequences of decisions are only one type of information that needs to enter the decision-making process (DMP) at the appropriate moment; however, they are not the only relevant information. Therefore, one of the most important issues is the identification and description of the DMP in order to highlight and improve its consistency and completeness through the integration of environmental and non-environmental information in decision making, especially when this information has an environmental dimension that needs to be addressed in the decision-making process itself. The detailed analysis of the DMP is the basis of the EA proposed by this approach.

Another of its main characteristics is the time frame of the environmental assessment. The analysis is carried out integrated with the substantive DMP. The *ex ante* approach is a powerful tool for providing advice in an environmentally friendly decision-making process. The iterative assessment allows the environmental assessors to interact with actors of the DMP, providing them with relevant environmental and non-environmental information and checking their actual incorporation into the DMP. The environmental assessment will be a *dynamic* and *iterative process* rather than a static procedure, which integrates the EA closely into the decision-making process in order to achieve more complete and aware planning decisions.

In this approach, the assessment covers the whole set of procedures through which the decision is taken and it starts even before any single decision in the DMP is taken. The incorporation of new decisional criteria into the decisions is carried out, in this case, through a top-down approach seen from a social point of view. It is not through the automatic *ex post* assessment that the new decision-making pattern is gradually expanded towards the upper levels of decision making, but through an exogenous and upper-induced process.

However, this top-down approach should not be seen as a centrally managed process, but rather a social participative procedure during which criteria and assessment tools are developed.

This new focus on SEA gives rise to a complete assessment framework, which implies several aspects:

1. A theoretical background, which is a conceptual explanation of what environmental assessment is, particularly environmental assessment of policies, plans and programmes; that is, the conceptual explanation of the assessment object of an SEA, partially explained from a historically pragmatic perspective.
2. A set of new assessment concepts, the operative concepts, which enable such environmental assessment.
3. A new approach, which is a sequence of methodological assessment steps based on the new concepts.
4. The set of tools that can be used in the different steps of the assessment sequence defined by the new assessment approach.

One of the features underlying this new framework is a focus on environmental assessment from an analytical perspective. Therefore, it will from now on be an analytical strategic environmental assessment approach, or an ANSEA approach.

3. SEA and decision-making sciences*

Måns Nilsson and Rodrigo Jiliberto

3.1 INTRODUCTION

Despite the central importance of the decision-making context for the performance of environmental assessment (EA),¹ few researchers have attempted to relate EA to decision-making theory. Recent experiences in Strategic Environmental Assessment (SEA), have revealed an increasing complexity and variation in the characteristics of the decision-making processes, compared to applications of project-level EIA. This has resulted in very mixed results for the EA itself and has highlighted the need to understand the role of EA in different decision contexts. This chapter will examine some different theoretical perspectives on decision making, discuss some concepts in current decision research and draw out some implications for environmental assessment, which form a basis for the ANSEA approach within a general decision-making perspective. Finally, it tries to build a link between these new concepts and the assessment approach to decision theory. It is a brief attempt to show why and how environmental assessment and decision theory (policy analysis) are connected in the ANSEA approach.

3.2 DECISION-MAKING SCIENCES

The systematic study of decision-making processes is a relatively new discipline, usually named decision science, decision-making theory, behavioural decision research, or decision analysis. Closely related to decision-making theories, or perhaps a particular subset of them, are the methodologies and theories of policy analysis and of planning theory. Policy analysis aims at creating, critically assessing and communicating policy-relevant knowledge (Dunn 1994). Decision-making theory is usually said to examine the paradigm in which a decision maker (individual or unit)

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contemplates a choice of action in an uncertain environment. Theories of decision making do not belong to a single academic discipline; contributions have come from philosophy, economics, political theory, sociology and psychology (Dunn 1994; Keeney and Raiffa 1993; Sexton *et al.* 1999). There is no clear and distinct set of criteria that defines this theory. Nonetheless, two main theoretical streams of decision making can be identified. The first is the structural theories, which focus on the structure of the society. The second is the behavioural theories, focusing on the assumed behaviour of the decision maker in an organizational context (Weston 2000). The theoretical background can be derived from the streams of behavioural decision theory that were advanced in the 1950s and 1960s by, for example, Herbert Simon (1957). Theories around organizational behaviour were established earlier through path-breaking theoretical work, for example by Max Weber (Weber 1947), which underlies many of the contemporary streams in decision, social, and policy research.

Behavioural decision-making theories can also be grouped into qualitative and quantitative approaches. Clearly, the decision can be strengthened through quantitative approaches to decision support, such as multi-attribute utility theory (Keeney and Raiffa 1993). It is often worthwhile to quantify concepts such as risk and probability, timing and impacts. However, other research emphasises the importance of qualitative guidelines in order to improve the decision and sharpen the thinking about values, concerns and trade-offs in the decision-making process, rather than relying on mathematical representations of the decisions to be made (Gregory 2000).

3.3 NORMATIVE, DESCRIPTIVE AND PRESCRIPTIVE APPROACHES

Decision sciences and related methodologies and perspectives can be grouped into three categories. First, the normative theories that tell us how, according to the authors, decisions should be made. Normative approaches to decision making are usually based on rationality and consistent methodologies and spell out what would be perfectly rational behaviour under various circumstances. Second, the descriptive theories that attempt to explain how decisions are actually being made in practice, which obviously might differ substantially from the first. Third, prescriptive theories (that can be said to be a type of normative theory based on descriptive theories) that attempt to improve decision making in a specific context through removing limitations and biases identified in descriptive theories (Kleindorfer *et al.* 1993). Prescriptive approaches seek to formulate recommendations that lead to better decisions, given the complexity and uncertainty characteristic of real-world

situations and given the true nature of decision makers as we know it (Johnson-Laird and Shafir 1993).

Many theories and methodologies can display a combination of these approaches. They can be partly descriptive and partly normative, the latter particularly when theories acknowledge the existence of values and ethics in decision making (Dunn 1994). Proponents of, for instance, rationality, incrementalism and mixed scanning models (discussed below) all argue that these models both fit with reality (descriptive) and can be applied to improve policy (normative). In Hill (1997), Smith and May argue that this is too bold a statement and that this confusion between 'is' and 'should' statements is the cause of much unnecessary debate.

Environmental assessment in the ANSEA framework, as will be discussed in detail later on, is predominantly prescriptive. It provides a prescription for decision makers who want to think systematically about the environmental factors in decision making, but it must ultimately be based on a descriptive account of decision-making practices. However, sound prescriptions must be based on good descriptions (Kleindorfer *et al.* 1993). In other words, we have to understand all stages of the real decision-making process before we can prescribe improvements to this process. Therefore, the environmental assessment needs a characterization, a model, of the process.

3.4 A TAXONOMY OF DECISION-MAKING MODELS

Many theorists see the analysis of the decision-making processes as the key to understanding how organizations function. However, research has yielded apparently contradictory analytical frameworks, which range from models that depict decision making as rational and sequential to models that describe it as random and anarchical. These apparently contradictory frameworks have resulted in theories ranging from rational choice theories to garbage can theories. The differences are also related to the approach taken, which varies from normative to descriptive.

3.4.1 The Rationality Theory in Decision Making

For a long time, literature on decision making was dominated by the assumption that it could take place in an entirely rational way. This normative perspective, which was developed in the fifties and sixties, has its roots in Weber's sociological theory in which he sees the rationalization of decision making within bureaucratic structures as the dominant approach to organization. The 1950s and 1960s saw organization theory developing in many directions. Herbert A Simon introduced decision theory into organisation

theory in his book: *Administrative Behaviour* (Simon 1957). According to Simon, the decision-making process is the core of all administration and organization theory. It should therefore address questions such as: 'How are decisions being made?' and 'How can decisions be made more rationally?' To decide and to act are the main phenomena in all organizations. Theories should therefore be about developing principles for securing efficient and rational decisions and actions in organizations.

Organizational theory is therefore one departure point for rationality theory. At the decision level, the basic principles of decision making can be derived from utilitarian theory. Utility theory can be a normative as well as a positivistic theory. It underlies rationality because it helps identify preferences and the rational choices to satisfy these. This rationality theory is only concerned with guidelines of consistency, transparency and transitivity but does not include analysis of the underlying preferences and values. The roots of rational decision making are also evident in the underlying assumptions of classical and neo-classical economics, where the concept of the rational 'economic man' is an underlying principle. The rational-economic man is one that chooses an action rationally, based on a hierarchy of preferences (values, utilities) that promises the highest net benefit to the actor and the highest probability of occurrence. It is assumed that actions are undertaken to achieve objectives that are consistent with the actor's preference hierarchy (Zey 1998). This rationality has also been labelled rational choice theory (by economists and sociologists) and expected utility theory (by psychologists) (Zey 1998).

Rationality can be defined in many different ways. Early economists defined it simply as self-interest. According to rationality theory, the decision-making process is goal-oriented and rational. At the conceptual level, two propositions underlie the conception of rational choice. Firstly, people act rationally if their actions respect their aims. Actions make sense with respect to their aims if they seem appropriate means for achieving these aims (Nida-Rümelin 1997). Second, at the individual level, it is proposed that the individual is purposeful and intentional, that is, there are goals and ends towards which actions are intended. When it comes to collective rationality at the group, organizational or societal levels, which appear as the most relevant levels of analysis in environmental assessment, most theorists hold that the collective choices are guided by aggregated individual preferences alone. Box 3.1 outlines the key assumptions underlying rational choice theory.

The core proposition is that actions are guided by a rational choice between alternative outcomes and that costs and benefits are weighed. The action that gives a prospect of highest benefit, based on the hierarchy of preferences, will be chosen. A rational decision-making model can be described at a high level of aggregation, as a process containing a sequence of steps. Such a rational

BOX 3.1 ASSUMPTIONS OF RATIONAL CHOICE THEORY

Humans are purposive and goal oriented.

Humans have sets of hierarchically ordered preferences, or utilities.

Information is complete and available.

In choosing lines of behaviour, humans make rational calculations with respect to: the utility of alternative lines of conduct with reference to the preference hierarchy, the costs of each alternative in terms of utilities foregone, the best way to maximize utility.

Emergent social phenomena – social structures, collective decisions, and collective behaviour – are ultimately the result of rational choices made by utility-maximizing individuals.

Emergent social phenomena that arise from rational choices constitute a set of parameters for subsequent rational choices of individuals in the sense that they determine the distribution of resources among individuals, the distribution of opportunities for various lines of behaviour and the distribution and the nature of norms and obligations in a situation.

model is usually the foundation of current environmental decision-making models and EA approaches that usually are variations on a theme such as:

- framing the problem;
- defining key objectives;
- establishing alternatives;
- identifying consequences;
- clarifying trade-offs.

This particular model was given the acronym PROACT, (Problem, Objective, Alternatives, Consequences, Trade-offs) as a reminder to be proactive (Gregory 2000; Hammond, Keeney and Raiffa 1999).

3.4.2 The Critique Against Rationalism

Although the rational decision-making process can be used as a model for structuring decision making, actual processes are often characterized by limited rationality. A variety of critiques of rational choice theory have been

put forward in several contexts and at various units and levels of analysis. Rationalism is a normative perspective, portraying an ideal image of the decision-making process, which differs a great deal from how decisions are actually being made in practice. The fact that the rationalist tradition is normative, that is, that it describes decision making as it should be, rather than necessarily how it takes place in practice, is the basic reason for challenging it. Therefore, rationalist theories have been criticized heavily. However, as Faludi (1987) points out, much of the critique of the rational model was well known to the first developers of various applications, and the fact that it is normative should hardly be a reason in itself for criticism of the model. Rather, it is the inappropriate applications of the model that need to be challenged.

Green and Shapiro (1994) offer a far-reaching critique of the methodologies utilized by rational choice theorists. They criticize not the theory itself, but rather how it is being implemented. They argue that politicians and other decision makers frequently use rationalism as an argument to justify and legitimize decisions and lend authority to their viewpoint or action (Weston 2000).

A second main critique is related to the attempt to portray policy making as an objective and predictable procedure, while in reality it is known that such decision making is inherently value-laden and strongly influenced by issues such as power, conflict, trust, solidarity, inequality, communication and legitimacy (Zey 1998). These issues are typically not addressed in the rationalist model.

Another critique against the rationalist perspective on decision making addresses cognitive limitations (Miller 1984). Rational models do not adequately address how people process information and deal with uncertainty. It is often impossible to rank all of the decision maker's options. Due to insufficient time, money or knowledge, only a limited number of alternatives are identified and the consequences are only partly assessed. Decision-making processes are therefore often finalized before the best possible alternative has been identified.

Not surprisingly, therefore, the assumption that rational individuals optimize behaviour to achieve expected utility does not correspond to empirical findings on organizational or individual behaviour. Especially, it is argued that the rational approach does not do (sufficient) justice to the fact that real world public decision making takes place in complex systems, characterized by: uncertainty; the involvement of mutually dependent organizations; social interaction; unpredictability; conflicting interests; divergent problem definitions; and lack of knowledge.

Miller (1984) suggests that the relevance of the rational model is connected to the levels of analysis used when studying organizational decision making.

Although human limitations, real and imagined, play an important role even at the individual level, the rational model is often a powerful instrument to explore an individual actor's position in complex decision-making processes. At the organizational level, decisions often follow a non-rational approach (the use of judgement, persuasion and relentless conflict-resolving sequences). Strategic political decisions typically involve a number of stakeholders, who are dependent upon each other in order to come to a decision. This mutual dependence hinders decision making along the lines of a rational model.

To overcome some of the problems connected to the rational model, other models have been developed and will be introduced in the following sections.

3.4.3 Bounded Rationality

Bounded rationality, conceived by Herbert Simon, implies that a rational decision-making process takes place within the boundaries of the limited capability of human beings to be entirely value free and objective. According to Simon, since individuals' decisions are limited in their rationality, full rationality can never be achieved. Rationality is also constrained by institutional norms such as laws, policies and codes of conduct. Bounded rationality also embraces the limitations of information processing, perception, memory and judgement.

In line with this idea, Simon (1957) states that imperfect rationalism results in decisions that are a compromise, decisions based on satisfying rather than on maximizing. This approach has been seen as the way in which most decisions are taken in practice. That means that a decision maker comes to a decision that is good enough, selecting from a limited range of known alternatives and allowing for the extra costs involved in striving for optimal solutions. In situations involving more than one stakeholder, feasibility criteria have a central position in the debate. In other words, decision makers find a solution that is sufficiently satisfying and can be reached in an efficient way.

Hardin (1982) defines rationality thus: one is rational if one, after considering all of one's concerns, including moral, altruistic, familial and self-interested, then chooses coherently in trading off against the other, or even in refusing to make certain trade-offs. By introducing 'all of one's concerns' into the formula, he comes closer to the bounded rationality concept.

In the light of a bounded rationality, the concept of procedural rationality has emerged. The decision is procedurally rational if it is the outcome of appropriate deliberation. This means that the decision is not made rational by an optimization of the information available for the decision; instead, the process by which a decision is taken legitimizes the decision as being rational.

Appropriate deliberation procedures substitute for the lack of information or uncertainty involved, and a socially acceptable decision is arrived at.

3.4.4 Incrementalism/Process Models

Theories of incrementalism have been put forward based on the rejection of rationalism as a descriptive model and acknowledging a decision-making process largely reactive to the external circumstances in the process and more or less driven by political considerations. Incrementalism holds that decisions are made on the basis of small changes away from the status quo. This approach sees administrative decisions as largely reactive as society adjusts incrementally to changing circumstances. The theory also states that decision making cannot be value free, as the means and ends of decision making are politically defined (Lindblom 1959; Weston 2000).

Incrementalist models differ from rational models in the way that the decision situation is not assumed to be given, but constructed by the decision maker, who is no longer assumed to be able to oversee all aspects of the decision situation at the same time. Incrementalist models argue that neither all alternatives nor their consequences can be known and that, even if this is the case, all the information could not be adequately processed (Braybrooke and Lindblom 1963). Incrementalist models are primarily put forward as being descriptive.

According to this tradition, changes have an incremental character, and new situations differ only slightly from old ones. Compared to the rationalist approach, the focus has shifted from the content of the decision to the structure of the process and the determination of its structure.

A concept that builds upon the process approach is the network approach, described by authors such as De Bruijn. According to De Bruijn *et al.* (1998) this approach is needed for decision-making processes concerning unstructured problems, problems that need to be solved in networks (characterized by mutual dependence and strategic behaviour), and dynamic problems (and solutions).

The network approach to decision making promotes the role of a process architect. The role of this organization or individual is to intervene in the process. Specific instruments which the process architect can use are cost allocation and compensation measures. For a successful intervention, some basic conditions should be met: the parties involved are interdependent, the parties accept the process architect and, last but not least, the process architect is expected to be impartial.

To summarize, incrementalist models focus on the processes of political negotiations and coalitions and see decision making as a process of gradual change.

3.4.5 Garbage Cans and Policy Soups

There are many other theories and models that characterize multi-actor processes at various levels, where decisions emerge in more or less unpredictable ways. The garbage can model (March and Olsen 1976) is one extreme model that depicts high levels of uncertainty and complexity, rapidly changing alliances and preferences, and a lack of knowledge of the means and objectives of the process.

Building on this is the policy soup model (Kingdon 1995). Kingdon's model is an adaptation of the 'garbage can' model for describing national policy making in the United States. It depicts the existence of three parallel streams developing independently. These streams are 1) the problems – how a set of problems emerge; 2) the policies – people have policies and solutions and wait for problems to come along; and 3) the politics – elections, pressures, public moods, negotiations. When these streams come together at critical times, this sometimes leads to 'policy windows'.

These models are of a strong descriptive character. In later years, these types of descriptive models have gained increasing empirical support, notably at the higher levels of strategic decision making (Kørnøv and Thissen 2000; Renton and Bailey 2000).

3.4.6 Mixed Scanning

Incrementalism has also been criticized. Etzioni (1966) argues, for instance, that powerful interests and organized partisans dominate incremental decision making, and discourage or even severely inhibit, basic social innovation. Incrementalism gives an image of decision making (in organizations) as something over which decision makers cannot exert any influence. Although acknowledging the limitations of decision making is useful, it is important to look for possibilities for managing and controlling the processes that do exist. This view corresponds with the prescriptive approach to decision theory.

In line with this idea, Etzioni (1967) proposes a third approach to decision making that synthesizes the rational and incremental approaches: the 'mixed scanning' approach, closely related to the concept of bounded rationality. A system of fundamental and incremental steps should overcome the faults of rational or incremental methods alone. Fundamental decisions set the context for numerous incremental ones, which in turn lead to fundamental decisions. Etzioni sees the actual process of decision making as an attempt by decision makers to identify the most appropriate and effective course of action. This requires a combination of approaches to decision making: this mixed scanning method utilizes rational techniques of assessment, such as environmental assessment, cost-benefit analysis or goals-achievement matrices, as well as

more intuitive judgements that are based upon experiences, codes of practice and political values. Thus, mixed scanning is based on the normative assumption that there is a need for structured and rational problem solving in policy processes, while acknowledging the necessity to take into account multi-participant complexity.

3.4.7 A Complex View on Decision Making

Decision research has demonstrated that it is difficult to describe most public decision-making processes according to the rationalist theory. In general, the level of rationality involved might correlate with the level of abstraction in the decision. Higher-level policy decisions seem to be more difficult to characterize with a rational model than concrete investment projects or planning processes at the local level. Therefore, the rationality model is a poor representation of strategic decision making, at least for descriptive purposes. Instead, issues of multi-stakeholder interests, powers and values have come to lie at the centre of decision making and policy analysis. Early on, Max Weber pointed out that every action (and every in-action), implies the acceptance of certain values and the rejection of others (Dunn 1994). In other words, we deal with systems that are characterized by complexity of a technical and multi-participant nature (van den Herik 1998).

Nevertheless, decision making at all levels shares features of several different theories. For instance, public decisions need to be based on rational and objective assessments and measurements, but ultimately need to be taken based on the values society assigns to the environment and other criteria (Wildawsky 1979; Petts 2000). Ralph Keeney and others have been instrumental in developing methodologies for systematically strengthening the consideration of values in the form of criteria for decision making (see for example Keeney and Raiffa 1993; de Vries 1999 and Gregory 2000). When criteria and values are made explicit, the decision process becomes transparent and controllable. It requires the decision maker to make explicit choices between different options. It is not a matter of whether subjective elements are considered but whether they are articulated and incorporated in the decision process in a systematic way.

The various theoretical developments in decision science and policy analysis have contributed to a fuller picture in explaining and describing decision making that should inform the further development of environmental assessment. It is impossible to give a uniform picture of how decision making at strategic levels takes place or should take place today. The richness and variety of theoretical models show this. Some processes will be very rational and others will be quite chaotic. Environmental assessment must be aware of and able to respond to this variation.

3.5 IMPLICATIONS FOR ENVIRONMENTAL ASSESSMENT

The motivation and foundation behind the development of the environmental assessment (EA) concept was the notion of rational decision making. As the public concern for environmental issues increased in the 1960s through books such as *Silent Spring* (Carson 1962), the lack of public participation in decision making and the lack of environmental control called for formalized processes. At the same time, the rationalist school was the dominating stream of decision-making theory. Early literature on EA emphasized rationalism and the language was dominated by rationalist concepts such as ‘objective’, ‘systematic’ and ‘comprehensive’ (Petts 2000). Clearly, the conventional approaches to EA have been established in rationalist-dominated territories. When EA was applied to more complex strategic decisions under the label of SEA, the issues of values and complexity were further emphasized (Partidário 1999; Therivel *et al.* 1992; Therivel and Partidário 1996). This has revealed the limitations of rationality-based decision support methodologies, such as EIA.

One could argue that if the decision-making process (private and social) were completely rational, all values and criteria would be considered, including the costs and benefits of each alternative. In this case there would be no need for an environmental assessment. The completeness of the process would render superfluous any attempt to make it more efficient. However, environmental assessment is needed because this application of environmental criteria does not occur automatically.

Current EA literature identifies the inherently political and value-laden nature of environmental decision making, recognizing trade-offs between different impacts of the project on social, economic and environmental values (Petts 2000; Therivel *et al.* 1992). In issue-driven science such as the one relating to environmental debates, typically facts are uncertain, values in dispute, stakes high and decisions urgent. It is also argued that environmental assessment tools such as screening and scoping are also inherently political decisions and should be recognized as such, rather than given the dubious distinction of being ‘rational’ and therefore attributed as objective and of non-political status (Weston 2000). Not only does EA function in a value-based and political process, it is also in itself based on a mixture of value judgements and rational criteria.

Uncertainties and information gaps, as well as cognitive limitations in the decision-making process, are all, to varying degrees, typical features of environmental decision making. Fully rational processes are basically a theoretical construct. In reality, the EA must, in order to be effective, look beyond the prediction of the environmental consequences of the decision and

ensure that a set of procedures is applied in the decision-making process that guarantees that environmental considerations are being made. This can be called an application of the procedural rationality concept, as described in the previous section.

In response to the variations in how decisions are being made, environmental assessment frameworks need to be adaptive to the decision context in which they operate. This approach has been called the ‘contingency approach’ of the planning environment (Faludi 1987). Differences in the degree to which decision making is rational should then be accommodated in the assessment approach. Table 3.1 outlines some theoretical perspectives on decision-

Table 3.1 Theoretical perspectives to decision making and relations to EA

Decision model	Decision basis	Implications for decision support	Implications for environmental assessment
Rationality (Simon 1957)	Scientific evidence and formulated objectives lead to ‘optimal’ decision.	Technical and analytical support for optimizing impacts of the decision.	Formalized procedure for analysis.
Bounded rationality (Simon 1957)	Separation of ends and means, leads to satisfying decision.	Technical and analytical support to the extent that it can be processed in the decision context.	Formalized procedure ensuring analysis and deliberation.
Mixed scanning (Etzioni 1967)	Muddling through leading to satisfying decision.	Technical and analytical support as well as process management.	Adaptive procedure ensuring analysis and deliberation.
Incremental (Lindblom 1959)	Available means and solutions leading to socially acceptable decision.	Process management for exchange and compromise.	Flexible procedure ensuring deliberation.
Garbage can (March and Olsen 1976)	Unpredictable round of negotiations.	No basis for decision support.	No procedure can be established.

Source: Adapted from Nilsson and Dalkmann, 2001

making and suggests that each model will have its particular implications for decision support and for environmental assessments. By understanding and being able to characterize the decision-making context, we can establish the appropriate approach for the EA.

The EA procedure is established when we have a full understanding of the decision context. In a decision context characterized by full rationality (which is strictly a theoretical case), the EA can rely solely on the application of environmental criteria to the process in terms of quantified measurements that are given weights according to a pre-set formula. But as soon as the process is less than fully rational, it is necessary for the EA to introduce a set of procedures. In a mixed scanning or bounded rationality process, procedures and deliberations around the environmental concerns must be made in addition to the quantified analysis which is now restricted or incomplete. In incremental processes, when environmental information is difficult to substantiate, the EA would sometimes need to rely solely on this set of procedural principles for decision making. In a garbage can process, the EA will represent and push for the particular interests of environmental considerations and procedures when opportunities for doing so emerge in the process.

Thus, the EA procedure will look quite different in different decision situations. However, it might still be possible to establish an overall EA framework that is driven by the decision context, hence allowing the assessor to establish an EA procedure based on the particular context on a case-by-case basis. Faludi (1987) discusses the decision-centred view on planning. ANSEA takes a decision-centred view on environmental assessment. The next section will introduce some general features of such as framework.

3.6 THE ANSEA APPROACH AND THE DECISION THEORY

Focusing the environmental assessment on the decision process necessitates looking into decision theory and policy analysis in order to understand the relation between the rationale of decision making and the rationale of its environmental assessment. The introduction to this topic in this chapter facilitates the drawing of some tentative conclusions about the rationale behind the ANSEA approach.

The ANSEA approach is based on the basic idea that environmental assessment must turn to an assessment centred on the quality and consistency of a decision-making process against a set of environmentally relevant procedural criteria. Accordingly, there are two aspects to consider: First, the rationality model behind the set of procedural criteria needed to carry out the

ANSEA approach; second, the rational nature of the decision or PPP which has been assessed.

3.6.1 The Rationale of Procedural Criteria

Procedural criteria should not be attached to a specific rationality. The ANSEA approach can work based on procedural criteria (PC) produced by different decision-making rationales. It simply requires the existence of a set of criteria for decision making.

However, the hypothesis taken on board here is that the PC currently used in SEA practices and those proposed as an illustrative tool by the ANSEA project are decision norms or rules based on procedural rationality (see earlier explanation in this chapter); that is to say, they are heuristic decisional norms, socially developed to legitimate a public decision-making process. What PC based on procedural rationality try to do, and by extension the EA based on them, is to legitimate socially a complex decision-making process by the definition and assessment of a set of heuristic decision rules.

Therefore, in terms of rationality, these PC imply that society is more in favour of a reasoned decision than an unreasoned one, even if a procedural rational decision does not suppose, *a priori*, any goodness of fit between ends and means. For instance, if the PC used in an ANSEA assessment is based on procedural rationality, then the rationality of the assessment in itself is procedural and not substantial. But the rationality of the substantive decision process does not necessarily fit the rationality of the environmental assessment; therefore, the rationale of the result also depends on the rationality of the substantive DMP, as explained below.

In that it is not possible to say that decisions or the assessment of decisions are guided by a unique rationality model, it is not possible to say that a unique set of universal procedural criteria exists. The criteria to apply in any ANSEA analysis must be produced by those affected or involved in the decision, according to the democratic or participatory rules each society has developed.

Table 3.2 is an example of how an assessment against some of these generic procedural criteria may look. The example is taken from the case study on Swedish bilateral development co-operation and the decision window concerns the specification of the issues to address in the preparation of a country strategy (for example education, health problems, democratic reforms).

The list provided by the ANSEA project (see Part II) is the result of a search for common decision rules applied to different decision-making and environmental evaluation processes, mostly in developed countries. It has a particular shape and it is structured in a specific form. All these features are, of course, relative and do not necessarily imply any standard format to be

Table 3.2 Description of specific procedural criteria of the Swedish case study in the DW ‘specifying the issue’

Generic procedural criteria	Inputs	Analysis	Outcomes
Comprehensiveness	Comprehensive inputs depend on and must be secured in the previous decision window (of Background/context ²).	Not available	Ensure that the environment as an issue and/or as an aspect of other issues is part of the understanding of the development situation.
Timeliness	Ensure that the initiation of the country strategy (CS) process is well planned in advance. Due to the regularity of the CS process, this should be no problem.	Consider whether more time is needed for initial discussions and deliberation than at present, since the outcome generally influences the rest of the process to a large extent, for example, what studies to make and what SIDA activities to propose.	While this stage must necessarily take place early to guide the process, there is also the risk that it may be difficult to depart from the agreed specification and objectives as new information enters the CS process.
Transparency	See DW Background/context.	Consider how to document discussions and underlying assumptions and make them accessible to interested parties.	Consider how to make the issue specification public, directly after it has been reached, for example, web publication, web newsletter.

Source: Case study (SEI) – Country strategies in Swedish bilateral development co-operation

followed in any environmental assessment. This would imply jeopardising the basic idea behind the ANSEA approach.

3.6.2 The Added Value of an Assessment Based on the ANSEA Approach

According to the ANSEA approach, EA has to develop practical assessment tools that allow it to check whether the specific PCs of a specific decision have been properly considered.

The compliance of the criteria applied in a specific decision process with the previously stated procedural prescription needs to be assessed. In other words, what is analysed is the way in which the tasks should be or have been carried out in a specific decision process in order to assess whether they are performed according to their specific procedural requirements. If a decision complies with these prescriptions, it can be assumed that this decision has satisfactorily addressed the environmental implications of the decision and therefore incorporated the environmental values.

From a decision-theory point of view, the result of considering all procedural criteria in decisions is not easy to characterize. It strongly depends on the rational nature of the decision process (see section 3.4 on decision theory). At the same time, it depends on the rationality behind the PC used in the assessment (see previous section). For instance, if the assessment faces a completely rational decision process (this is obviously only a theoretical hypothesis) an ANSEA assessment based on substantive PC would be a perfect tool to incorporate environmental values into decisions, as the DMP works on the basis of respecting a set of given decision principles. The optimization principle would work perfectly. The mandate implicit in the PC would be automatically considered in the decision process. A decision resulting from this assessment procedure could be considered a social optimum. In this case, the assessment is meant to develop the decision to its optimum.

But, if the assumption is that the decision process assessed behaves, for instance, according to a garbage can model or according to a networking model, the ANSEA approach, even based on substantive rational PC cannot automatically assume that environmental values are properly incorporated into decisions. The process itself is not guided by any procedural criteria. In this case, the application of the ANSEA approach can be considered as a tool to provide arguments for those defending environmental values. The assessment cannot be considered as having improved the decision, but as a tool to provide coherent argument to one of the parties involved in the debate or negotiation.

Finally, if the assessment is of a decision process which behaves according to what Simon calls bounded rationality, or according to the mixed scanning model, an ANSEA assessment based on PC derived from procedural

rationality would have helped in reaching a satisfying decision. This means that the ANSEA approach helps to extend the boundaries of searching for a better solution, but not to the extent that an optimal decision is found. In this case, the assessment is meant to improve the decision to that which is satisfactory.

The ANSEA approach does not presuppose the decision model underlying the decision process assessed nor the rationality behind the assessment. Therefore, it is aware of the differing rationality nature of the assessment output.

The ANSEA approach can be applied to a decision process based on different decision models, bearing in mind that the rational nature of the assessment output depends on the decisional models applied in each decision process and on the rationality of the PC applied in the assessment.

4. ANSEA concepts

Rodrigo Jiliberto

4.1 INTRODUCTION

The context in which the ANSEA approach developed was described in previous chapters, its basic assumptions were explained and insights on aspects of decision theory were also introduced. This chapter develops the main new concepts needed to support and make operational the ANSEA approach.

According to the ANSEA approach, the object of analysis which Strategic Environmental Analysis (SEA) has to look at in this scenario is the relationship between the decision-making process and a set of environmentally relevant procedural criteria. An ANSEA assessment could be defined as an assessment of the way in which a set of procedural criteria is applied to the decision-making process.

The ANSEA approach is based on a short set of basic concepts. These are:

- functional descriptions of the decision-making process (DMP);
- decision windows;
- the environmental implications of decision windows;
- procedural criteria.

Each of these concepts is further explained in the following sections.

4.2 THE FUNCTIONAL DESCRIPTION OF THE DECISION-MAKING PROCESS

In so far as procedural criteria are operative at single points of a specific decision-making process, their definition undergoes the exhaustive description of the latter.

What really matters from an EA point of view is not just the decisions in general, but the decisions or sub-decisions made at one single point of a specific decision-making process. To carry out an exhaustive description of

the decision-making process it is necessary to take account of the functional description of the process. A functional description allows the identification of the functional relationships between all sub-decisions or tasks in a decision-making process (see an example in Figure 4.1).

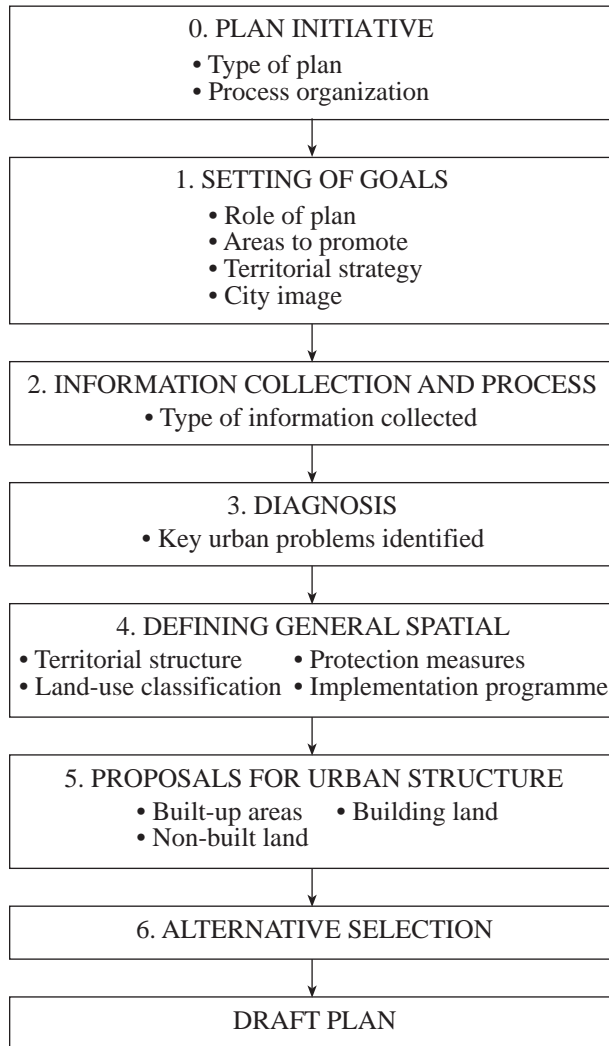


Figure 4.1 Flow chart of the DMP of a general urban plan in Spain

A functional description of the decision-making process constitutes a description of the sequence of each of the different sub-decisions of the decision-making process.

The functional description of the decision-making process allows it to be characterized as built up by single decision moments or single sub-decisions. At the same time, it also implies describing the content of each of the single decision moments. It is reached by the combination of different analytical tools, like a flow chart, as shown in Figure 4.1, and by the use of the IAO (Input–Analysis–Output) framework (see section 4.3), and other similar tools.

4.3 THE DECISION WINDOWS

An ANSEA limits its assessment to those decision moments which are environmentally relevant. Those units are called decision windows.

Decision windows are moments in the decision-making process where critical choices are made, which have an environmental implication.

The fact that a decision window has an environmental implication means that the output of that single decision moment might have a role in determining the environmental profile of the final decision or the policies, plans and programmes (PPP).

The environmental implications of a moment in the decision-making process are always concrete and might be direct or indirect. Let's take one specific moment in the transport planning process: the origin–destiny survey. It is important because it tells the planners which are the major transport flows and modes used by the population in a given city. The environmental implication of this decision window is related to the fact that the survey could be conceived in such a way that it does not properly reflect the actual use of bicycles as a transport mode. As a result, in the course of the planning process, this transport mode would not be considered relevant to solve the transport problems encountered.

A decision window may have more than one environmental implication. In some cases, the way in which a decision moment determines the environmental profile of the final decision is evident. It could be, for instance,

the moment when the objectives of the PPP are set. The consideration or not of environmental or sustainability objectives directly affects the environmental profile of the PPP.

In other cases, this happens in a less direct way, as for example, in the decision moment when some information on demographic matters is collected to define the social demand for a given policy, plan or programme. Even if this moment obviously affects the environmental profile of the PPP, it does so in an indirect way.

Therefore, the environmental implication of a decision window is always concrete and should always be described *ad hoc*, starting from knowledge, past experience and other types of heuristic approaches.

A decision window consists of three components: Inputs, Analysis and Outputs (the IAO framework). Inputs refer to data and information as well as values and opinions. In the analysis, the inputs are considered either formally (for example cost-benefit analysis and modelling) or informally (for example expert judgement and group discussion). The outputs can be both formal and informal, and will act as inputs in subsequent decision windows.

Only a subset of all the decision moments into which a DMP is disaggregated through functional description is relevant for the environmental assessment (see an example in Table 4.1). This implies that not all single decision units of a decision-making process are equally relevant when incorporating environmental and non-environmental information.

As will be explained later, the ANSEA approach does not presuppose the existence of a unique method of identifying the decision windows. It can only be a discretionary process based on knowledge and experience, which makes (as in the case of EIA) the need to open the assessment to a broad audience of interested parties even more evident.

4.4 PROCEDURAL CRITERIA

The use of criteria as a core component of environmental assessment is not new. Criteria can be thought of as constraints to a choice that effectively limit the range of possible alternatives under consideration (de Vries 1999). In conventional SEA, the set of criteria used refers mostly to substantive environmental issues; for example, that certain urban air quality standards should not be exceeded as a consequence of the PPP. Sometimes the criteria will be quantitative in nature, whereas some others may call for more qualitative judgements, for example visual landscape impacts. By introducing the ANSEA approach, however, substantive criteria are complemented with a set of procedural criteria. Procedural criteria act as constraints on choices made throughout a decision-making process and not only on the choice

Table 4.1 Description of a decision window in the German Federal Transport Infrastructure Planning case study

DW 5.3 – Decision about the relation of valuation tools in the priority rating (Priority Rating)

Environmental implication	The macroeconomic evaluation (CBA) was the central element in the priority rating. The findings of the ERA were presented in addition to the benefit–cost ratio. If there were major environmental impacts found in the ERA, the relation between results of the ERA and the CBA had not been defined and led to non-transparent decisions.
Actors	<ul style="list-style-type: none"> • The project group FTIP of the MoT is the main responsible institution • The Länder participate in the ongoing working circle for the FTIP methodology • The Federal Environmental Agency and consultants are contacted in a scientific board

Input	Analysis/Deliberation	Output
<ul style="list-style-type: none"> • Results of evaluation • Länder share • Financial resources 	Evaluation procedure	Priority rating

relating to the selection of alternatives, as in conventional SEA. For example, a transparency criterion will rule out deciding on objectives in the beginning of a DMP in a closed and undocumented way.

Before further examining the concept of procedural criteria, let us reiterate some of the defining features of the ANSEA approach in relation to SEA:

- The decision does not only refer to the final approval or disapproval decision of the PPP, but to all decisions made throughout the PPP-making process.
- Alternatives do not only refer to alternative PPP actions, but also to alternative choices taken throughout the DMP, that is, alternative information sources, alternative modes of deliberation, alternative analysis models.
- Criteria do not only refer to the substantive demands we have on alternative courses of PPP action, but on how the whole DMP is conducted to establish the PPP.

As explained in the chapter on decision-making theory, achieving fully rational outcomes in PPP making is widely seen as an impossible task. This is due to imperfect information and the bounded rationality of human beings. As a response to this, it has been argued that a degree of procedural rationality should be considered. In order to maximize the opportunities for considering values and feasible alternatives, best practice procedures have been recommended or prescribed for various DMPs. To introduce SEA instead of *ad hoc* and perhaps inadequate environmental considerations is an example of such thinking. The ANSEA approach, however, takes this one step further by arguing that procedural aspects of environmental considerations must be addressed throughout the DMP and not only during the stage of environmental assessment. As previously explained, decisions made earlier in the process often have environmental implications on decisions made at later stages. For example, the formulation of general objectives for the PPP may exclude some alternatives being considered, the choice of information sources may affect the results of the environmental assessment, and the choice of the steering committee members may result in bias in favour of certain objectives.

Ideally, we would like to know the exact contribution of each decision to the final environmental impact of the PPP, so as to recommend to the decision maker how to minimize negative impact and maximize positive impact. However, this is likely to be difficult, since the impact will often be very indirect. Furthermore, PPP may involve several sectors with complex inter-relationships and may not be concrete enough for establishing the physical consequences. In the absence of this knowledge, the ANSEA approach proposes applying procedural criteria to maximize the opportunities for satisfactory environmental consideration. The rationale behind the procedural criteria is that they will promote the consideration of environmental aspects when it may be difficult to find direct environmental linkages, and consequently, make specific recommendations or use specific substantive criteria.

Based on this rationale, the role and operation of procedural criteria can be defined.

Procedural criteria (PC) are prescriptions on how decisions should be taken. They are based on principles of good decision making and provide a basis for assessing the quality of the process in a particular decision window (DW). They can be used *ex ante* as prescriptions, or *ex post* as evaluation criteria.

The ANSEA approach does not differentiate between those criteria related to substantive environmental issues and those which are procedural, because

it is assumed that procedural criteria comprehend both. For instance, it makes no conceptual distinction between the criteria concerning certain urban air quality standards that should not be exceeded as a consequence of the PPP, and the criteria that at a certain stage of the decision process an expert's opinion should be considered. What matters is that their application is critical to the environmental outcome of the decision. Their environmental relevance is more evident in some cases than in others, but this does not imply that they are more or less relevant.

BOX 4.1 BROAD CATEGORIES OF PROCEDURAL CRITERIA

- **Comprehensiveness** (the scope of environmental issues covered at each step);
- **Timeliness** (when environmental information has been collected, made available and incorporated in the analysis);
- **Transparency** (the way the analysis has been undertaken and the environmental information has been taken into account);
- **Participation** (including the relevant organizations and individuals who may express different views on the inputs, analysis or outputs of a given step in the DMP); and finally
- **Credibility** (the quality, robustness and consistency of the inputs, analysis and outputs of each step in the process).

Also relevant is the way in which these criteria are expected to affect the decision-making process. In all of them it is expected that the decision maker will take on board the prescription that the criteria imply and shape his or her decision-making process accordingly. All criteria are effective only if they can be translated into specific decision actions that influence the decision-making process. This is their common decisional nature. They are all procedural prescriptions (see Box 4.1).

4.5 PROCEDURAL CRITERIA AND DECISION WINDOWS

A two-way relationship exists between decision windows and procedural criteria. On the one hand, if a moment in the decision-making process has been pragmatically or inductively identified as having an environmental

implication, then specific procedural criteria for this moment must be identified or developed. This would help to ensure that the environmental implication of this decision window is properly addressed.

On the other hand, if deductively, and based on a set of previously given procedural criteria, a moment in the decision-making process is identified as having an environmental implication, then this moment can be considered as critical for the environmental outcome of the decision and therefore a decision window. The procedural criteria help to ensure that the environmental implication is properly considered in this decision window.

Therefore, decision windows and procedural criteria are linked concepts. One or more procedural criteria apply to each decision window, and a procedural criterion always applies to one or more decision windows.

The procedural criteria allow the proper consideration of the environmental implications of decision windows in the decision-making process.

This means that the prescription of a specific decision norm or rule for the decision window ‘origin–destiny survey’ would promote the recollection of all the information needed, and that the bicycle-mode option as an alternative for solving the transport problems of the city would not be excluded. Therefore, it can be assumed that the environmental implications of this decision window are better addressed than in the standard decision procedure.

PART II

The ANSEA approach

5. ANSEA's steps

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5.1 INTRODUCTION

Part II focuses on the practical application of the ANSEA approach. The theoretical foundations were developed in the earlier chapters. During the research project a seven step framework was established for proceeding with the application of an ANSEA assessment.

For each of the steps, different tools were developed in order to provide some guidance. It must be stated that this part presents only a conceptual idea for further scientific and practical discussion, because the development is based on desk research and there has been no actual testing of the concept yet. The role of the steps should be reviewed in practice, and the ANSEA approach will need to show its capacity in a real decision-making process. In addition, the tools have to be established and further developed.

Firstly, there is a presentation of the general background with a description of the main elements of an ANSEA approach. An overview of the seven assessment steps is given; both the assessment modes (integrated and *ex post*) will be described and the role of the assessor will be discussed. In the subsequent sections, the seven steps will be described in detail. In every step different tools will be presented to support the analysis. During the description of the steps, examples will be given for some of the tools. These are taken from three of the case studies carried out in the ANSEA project.

5.2 BACKGROUND

This section is intended to provide a clear and accessible explanation of the ANSEA approach and illustrations of useful tools for carrying out an ANSEA assessment. It draws on the lessons learned from the ANSEA case studies, desk research and project workshops, which have all been used to develop the methodology.

There are three key elements to the ANSEA approach:

- understanding the decision-making process as a series of moments which could each have real environmental implications;
- identification of procedural criteria which reflect principles of good decision making in the context of this particular decision-making process;
- assessing whether these principles or procedural criteria have been fully taken into account at each of the decisive moments (named decision windows).

By following this systematic approach to planning a decision process or evaluating a completed process, the ANSEA approach provides a transparent assessment of a process. This is intended to complement or replace the necessarily uncertain prediction of likely environmental outcomes of strategic decisions associated with many SEAs.

The ANSEA approach attempts to do this by:

- building on recent practice and theory developments in SEA;
- focusing on the whole decision-making process (DMP);
- integrating good decision-making criteria and environmental values throughout the DMP (rather than once the decision has been taken).

The ANSEA approach is designed to be used as an integrated approach in the assessment of policies, programmes and plans to ensure that environmental considerations are taken into account, or as an evaluation of how far environmental integration has been achieved in a fully or partially completed decision-making process.

The focus on the whole decision-making process is intended to combat the inevitable tendency of most DMPs to focus on different dimensions (economic, social, environmental) at different times, usually relegating the environmental dimension to the end of the process, when key decisions have already been taken. This should result in better integration of environmental considerations and thus better decision making.

5.2.1 Key Underlying Concepts

The ANSEA approach relies on a few key concepts as the basis for analysis:

- **Decision windows** are moments in the decision-making process where critical choices are made which have an environmental implication.
- **Procedural criteria** are prescriptions on how decisions should be taken. They are based on principles of good decision making and provide a

basis for assessing the quality of the process in a particular decision window. They can be used in an integrated assessment as prescriptions, or *ex post* as evaluation criteria.

The ANSEA approach also uses a simple framework to describe and analyse each step of the decision-making process – the IAO framework.

- I – (INPUTS) the quantitative or qualitative data, information, opinion and advice that is used as an input at each stage of the decision-making process;
- A – (ANALYSIS) using either formal tools and techniques (for example environmental assessment, cost–benefit analysis, modelling and so on) or informal techniques (expert judgement and so on); and
- O – (OUTPUTS) either formal or informal outputs from the analysis which then inform later stages of the decision-making process.

Within the ANSEA approach, decision moments are characterized in this way as the basic unit of analysis.

5.2.2 How to Carry Out an ANSEA

The ANSEA approach involves seven key steps, described graphically in Figure 5.1 and in more detail in the paragraphs below.

1. **Screening.** During this stage, the main proponent of the PPP assesses whether the ANSEA assessment is a relevant approach and, if so, how it fits with any SEA that may be required under any legislative framework such as the new EU Directive (2001/42/EC). The form of the ANSEA analysis and resulting report and how this will be taken into account in the DMP are decided at this stage.
- 2A. **Scoping.** During this stage, the assessor describes the legal and institutional characteristics of the DMP and how they relate to other processes. The decisional boundaries will be spatial, temporal and organizational. This description provides the basis for analysing the DMP in greater detail.
- 2B. **Identification of procedural criteria (PC).** The assessors identify a set of criteria for good decision making against which each decision window can be assessed. These will initially be generic to the whole process and will include the environmental or sustainability dimensions of the decision and societal values such as public participation, transparency, credibility and comprehensiveness. Specific criteria for assessing how these broad principles are taken into account will be

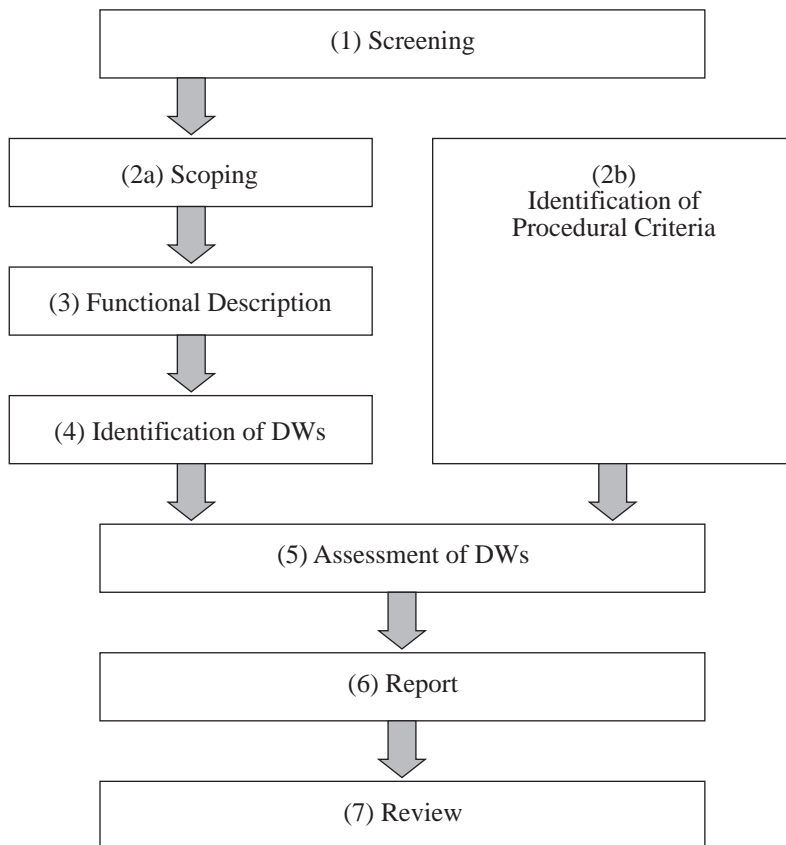


Figure 5.1 ANSEA approach: overview

developed during the assessment of individual moments (decision windows) in the DMP (step five).

3. **Functional description of the DMP.** During this stage, the DMP is described in greater detail in terms of the inputs (information, lobbying, consultation and so on), analysis and outputs (reports, presentations, decisions to proceed to next stage and so on) which occur at each stage of the DMP. This provides the basis for identifying decision windows.
4. **Identification of decision windows (DWs).** During this stage the key decision moments – where taking environmental implications into account is really critical – are identified for further analysis.
5. **Assessment of DWs.** Each DW is assessed using specific questions that

show how generic procedural criteria identified during step 2B should be taken into account in the DMP.

6. **The ANSEA report** brings together the assessment of all the decision windows, draws conclusions and makes recommendations about any further steps in the DMP, which will also serve as the basis for future review.
7. **Review** is an ongoing process either against the ANSEA report in the case of an integrated ANSEA assessment, or against the key findings (for example of particularly environmentally sensitive assumptions in the PPP) for an evaluation.

Section 5.3 describes each of these steps and the supporting tools developed during the ANSEA study, and gives examples of how these have been used in the case studies. For the sake of continuity, examples are mainly drawn from three of the eight case studies undertaken during this research. These are:

- Urban planning in Puerto de la Cruz (Canary Islands) – TAU. According to Spanish legislation, every municipality is obliged to plan the use of its territory with specific urban tools and legislation. Built-up areas must be delimited, it must be defined how the rest of the territory is to be used and, if pertinent, where and how the town will expand. The formal output of this planning activity is the General Urban Plan. The case study is focused on urban planning in the coastal town, Puerto de la Cruz (Tenerife, Canary Islands).
- Country strategies in Swedish bilateral development co-operation – SIDA. The Swedish International Development Co-operation Agency regularly formulates country strategies for the main recipient countries, in order to improve coherence and effectiveness in bilateral development co-operation. The country strategy pinpoints priority areas for development, forms of co-operation and collaboration partners.
- Federal Transport Infrastructure Planning (FTIP) in Germany – Wuppertal Institute. The FTIP is a long-term plan with a 20-year horizon for the German long-distance transport infrastructure (railways, inland waterways and motorways). It provides the financing framework for long-distance roads and motorways. The FTIP was completed in 1992 and at the time was considered one of the most advanced planning processes in Germany in terms of the incorporation of environmental considerations.

5.2.3 When to Use the ANSEA Approach

It is important to remember that policies, plans and programmes (PPP) are

often long-term and iterative procedures. As a result the ANSEA approach, or particular aspects of it, may be used before, during or after the DMP or in different ways for different aspects of PPP.

The integrated ANSEA approach, which is used to plan a decision process, should help decision makers to identify opportunities for integrating environmental considerations which might otherwise have been missed, in a positive way for the programme.

A brief description of each assessment mode is presented in Table 5.1.

In practice, the ANSEA approach may apply to only selected parts of the DMP. When applied to parts of a larger decision process the analysis can be done at the beginning of the specific decision stages, or in combination with other types of assessment, such as environmental assessment approaches required under the new EU Directive.

5.2.4 Who Should Carry Out the ANSEA Assessment

As in existing SEA approaches, the ANSEA approach is likely to involve a number of different actors and interest groups. These typically include the proponent, the competent authority, the environmental authorities, the public and other interested parties (for example environmental non-governmental organizations, industrial and commercial federations). The higher the level of the strategic action, the more complex the interplay of actors becomes. One of the major difficulties in SEAs to date has been a lack of clear assignment of responsibilities (Mens *et al.* 1997), particularly where SEA has been carried out by independent assessors or voluntary organizations. It is therefore important to be clear who will carry out the ANSEA, who they will report to, and how the outcomes will be shared with other stakeholders and taken into account in the decision-making process.

The ANSEA approach can be carried out by either the proponents of the PPP decision-making process (with assistance from experienced ANSEA planners or evaluators if necessary) or independent assessors. The decision about which institution undertakes the ANSEA approach will depend on the legal framework within each country, with implications for:

- the legal standing and the authority attached to the process and results;
- the level of access to information; and
- the timing and possible co-ordination of the decision-making and assessment processes.

There are pros and cons for either approach for a lead assessor.

Table 5.1 Assessment modes

Assessment modes or ANSEA	Description	Benefits	Procedure	Timing
Fully integrated assessment during planning	During planning of the PPP, PPP, procedural criteria can be used to develop guidance (for example in the form of terms of reference) for all those involved in each DW. Participants are identified at the start of the process to ensure that the DMP takes into account and operates according to the values reflected in such criteria. After the completion of each DW, PC can be used to assess the performance of DWs against them.	Such guidance contributes to the integration of environmental issues and values in the DMP from the earliest stages. Assessment of how each step has been carried out should provide useful feedback to the remaining DWs and the rest of the DMP.	An <i>ex ante</i> evaluation will be produced for each DW, thus providing targeted recommendations and guidance for the main activities of the DWs.	The <i>ex ante</i> mode is carried out at the earliest stages of the DMP. It is completed as soon as possible after the identification of the DWs. Guidance for later DWs can be revised and updated once each DW has been completed, assessed and integrated.
Evaluation	Once the whole DMP has been completed and the PPP approved, PC can be used to carry out an <i>ex post</i> evaluation of the quality of the whole process, focusing on the DWs.	The ANSEA report identifies lessons on how future processes could be better managed and identifies issues for future review.	The evaluation is generally a single assessment of the entire DMP and DWs.	The evaluation takes place after a final decision has been made on the PPP.

Proponent leading the ANSEA approach

In many cases it will be most appropriate for the responsibility to lie with the proponent (which is often also the competent authority for PPP development). On the positive side, giving responsibility for adapting the ANSEA approach to sector authorities ensures that there is a feeling of ownership of the process within the promoting body, encourages the long term integration of environmental values and facilitates informed decision making. However, the competent authority may lack the necessary skills and objectivity to carry out the ANSEA approach effectively. Furthermore, self-assessment demands the establishment of internal and external mechanisms to monitor performance and verify accountability.

Independent body or environmental authority leading the ANSEA approach

Where the proponent of the PPP does not have the necessary expertise or resources to carry out an ANSEA assessment, this might be done by external experts. There may also be a strong case for an independent review of SEA systems to ensure that the process is properly applied and to maintain public confidence in its integrity (Sadler and Verheem 1996). In these cases the ANSEA approach can be carried out *ex post* as an external evaluation of the quality of a decision-making process or as an independent check on the quality of a legally required SEA.

In either case the participation of wider stakeholders early in the process is likely to improve the quality and usefulness of the ANSEA approach.

Who else should be involved?

In general, the proponent, that is the decision maker or other groups or individuals, takes the decision on who should be involved in the assessment process. Participants can be identified through a variety of tools, including stakeholder analysis, social profiling and needs assessment surveys. The initial analysis should also help to identify the potential roles which different stakeholders could play (for example analysts, information providers and sounding boards for alternative strategies). In most participatory processes, some form of consultation may be used to determine who the key stakeholders are and how they might best be involved at each stage.

A broad public participation strategy should identify who might be involved, and when and how they will be contacted and the tools for involving them. This should be addressed during the screening stage, step one. A public participation strategy for the ANSEA approach should address the following key issues:

- the objectives of the participation process at each stage of the assessment;
- whether all relevant parties are going to be involved or at least represented in the process;
- whether the necessary resources have been made available to support participation;
- whether sufficient time has been allowed for participation within the timetable of the decision-making process;
- whether sufficient flexibility has been built into the process;
- how public participation will influence the decision-making process at each stage.

However, it is important to view this process as a dynamic one, which should be repeated and refined as each decision stage is reached in order to identify new and changing interests.

5.2.5 Resource Requirements

On the basis of our current experience in applying the ANSEA approach to date, it is clear that the level of resources required for an ANSEA analysis can vary considerably. At one end of the scale, the planning of a fairly straightforward and abstract decision-making process may only require a few well-structured planning workshops led by a skilled facilitator and ongoing review against the resulting plan. At the opposite end of the scale, an integrated assessment or *ex post* evaluation of a large complex PPP – such as a major transport or land use planning strategy – would require many person months of input from a multi-disciplinary team.

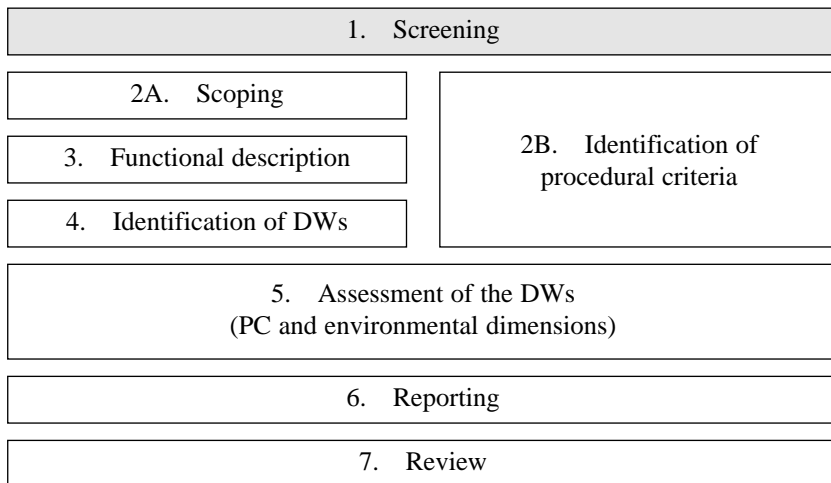
5.2.6 Reporting Requirements

Throughout the ANSEA process it is important to communicate progress and findings to interested parties. This may take the form of a communication plan, the scope and form of which should be decided during screening, step one.

5.3 ANSEA's STEPS

5.3.1 Step 1. Screening

The ANSEA approach is intended to provide a practical methodology for assessing the environmental implications of policies, plans or programmes, with the ultimate aim of improving the environmental quality of decision



making. Among other things the approach is intended to meet the aims of strategic environmental assessment (SEA) as envisaged in the new EU Directive, by providing a framework for the process aspects of SEA. However, where an SEA could in theory be limited to defining the objectives of PPP, identifying alternatives and assessing environmental consequences, the ANSEA approach instead focuses on the process of decision making. In Part I, some of the methodological difficulties in predicting environmental consequences of different strategic courses of action were highlighted. The ANSEA approach is intended to provide a framework for assessing whether environmental values are being internalized during each and every step of the decision-making process, including those which might not be assessed during a conventional SEA. The screening stage allows the PPP proponents to determine whether the ANSEA approach will add value to the decision-making process or would help to meet the requirements for an SEA under the new EU Directive.

How to develop screening

Since the ANSEA approach can provide a process framework for meeting the requirements of the EU Directive (2001/42/EC) (Box 5.1), it is suggested that the rules for screening within the directive equally apply to the ANSEA process .

However, the case studies used to develop the ANSEA approach demonstrate that the applications could be far wider than just the sectoral PPPs identified in Article 3 above. It has to be considered that the ANSEA approach could also be useful for more abstract or multi-sectoral PPP, and for the growing body of policies, programmes and plans which require other types of

BOX 5.1 SCREENING IN THE EU DIRECTIVE 2001/42/EC

1. An environmental assessment [...] shall be carried out of plans and programmes referred to in paragraphs 2 to 4 which are likely to have significant environmental effects.
2. Subject to paragraph 3, an environmental assessment shall be carried out for all plans and programmes,
 - which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use and which set the framework for future development consent of projects listed in Annexes I and II to Directive 85/337/EEC, or
 - which, in view of the likely effect on sites, have been determined to require an assessment pursuant to Article 6 or 7 of Directive 92/43/EEC.
3. Plans and programmes referred to in paragraph 2 which determine the use of small areas at local level and minor modification to plans and programmes referred to in paragraph 2 shall require an environmental assessment only where the member states consider that they are likely to have significant environmental effects.
4. Member states shall determine whether plans and programmes, other than those referred to in paragraph 2, which set the framework for future development consent of projects, are likely to have significant environmental effects.

assessment such as sustainability, health or gender impact analysis. In general, the more uncertain the specific elements of the PPP are likely to be, the more useful the ANSEA approach is likely to be.

In identifying types of PPP where an ANSEA evaluation would provide added value, consider the following criteria:

- Very complex sectoral PPP where there are many different elements, spatial and temporal dimensions and a large number of detailed studies involved. The ANSEA approach would provide a systematic framework for organizing information and planning the process.

- PPP at very early stages of definition where the options are still very abstract and it is difficult even to identify the key elements of the PPP, let alone the likely environmental consequences of these elements.
- Other sectors where environmental consequences are likely but almost impossible to predict (for example budgets, health, education, and governance).
- Processes where there are growing requirements for greater scrutiny, where ANSEA can make the DMP more transparent.
- Processes where decision makers are willing to incorporate the outcomes of the ANSEA: for example a DMP where an *ex ante* assessment can be used to shape the DMP or an *ex post* assessment where the lessons learned will inform better DMPs in the future.

If any of these criteria apply, then an ANSEA approach is likely to add value to the DMP. Given the relevance of the decision whether or not to carry out an ANSEA, it is useful to involve some stakeholders in the screening process. This is likely to include, for example, policy makers in other sectors and environmental or sustainability experts from other government departments, the academic and non-governmental communities. The decision on whom to involve in this screening stage will ultimately rest with the PPP proponent, where applicable advised by the independent assessor.

Having decided that the ANSEA approach would be applicable to a given DMP, the next step is to decide on the form, content and resourcing for applying the ANSEA approach. The assessor will need to prepare terms of reference for the next steps of the study, defining:

- the timing of activities;
- who will be consulted, who will provide information and who will participate in the analysis;
- how the results will be incorporated in the DMP;
- how the results will be communicated and the form of the final ANSEA report; and
- the resources required for the ANSEA assessment.

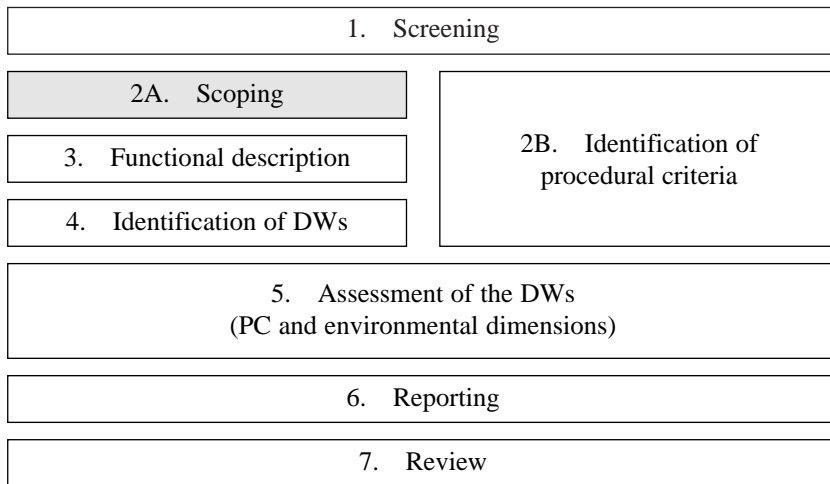
The resources required for applying the ANSEA approach will depend on:

- the stage of the DMP and the timing of the final decision;
- its complexity;
- the number of institutions involved;

- the environmental implications of the PPP and whether detailed environmental assessments of different options identified during the DMP will be required.

The scoping stage will help to shape the process of application of the ANSEA approach as well as provide the basis for the following analytical steps. Scoping is described in the next section.

5.3.2 Step 2A. Scoping



Scoping is a critical phase in all assessments, where this stage serves as a basis for both understanding the scope and boundaries of the DMP (step 2A). In parallel with this mainly descriptive task, step 2B involves defining the procedural values which need to be incorporated for good decision making to take place. In many respects, good decision-making values are generic within a particular society, but they will also reflect the specific decision-making process and will highlight the environmental considerations which are critical for a given type of activity. Thus the scoping stage sets the foundations for all subsequent analytical steps in the process.

The scoping provides:

- an initial description (background information) of the decision-making process;
- a description of the legal context;
- a definition of the decisional boundaries of the DMP and the relations to other PPP;

- a description of the institutional framework and the key stakeholders for the DMP;
- an identification of the key environmental issues relating to the decision. This step is closely linked to the definition of procedural criteria, ensuring that environmental considerations are integrated throughout the DMP.

Each step is discussed in turn in the following sections. This does not imply that each step should be carried out in a particular order. In fact, it is very likely that each step will be developed simultaneously and a certain amount of iteration is unavoidable.

Describing the steps in the decision-making process

The first important step in scoping is an initial description of the decision-making process. Much of this information will not be apparent from published sources and it will be necessary to carry out interviews with the architects of the DMP and others involved in the decision-making process.

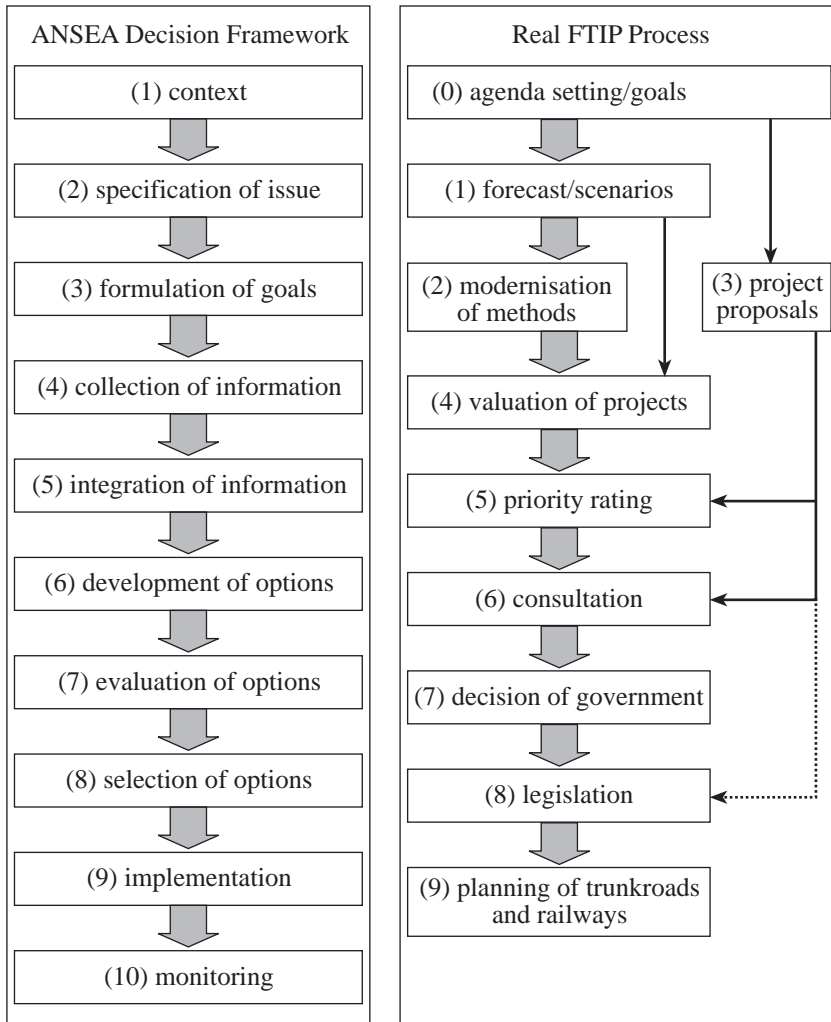
Decision framework flowchart A standardized decision-making process flowchart is shown in Figure 5.2. The template describes a ‘rational’ process, but is not intended to suggest that real DMPs will follow this exact order. Rather, the template is intended to help those involved to describe the process and identify the order in which key parts of the process will/have happen(ed) and to identify any iterations in the process.

The decision framework is a general flowchart of a typical decision-making process. It describes a general structure of decisions from the awareness of a problem to the final decision and the implementation phase. By comparing this model of a DMP with the stages of a real DMP, the specific character (focus, intention, decision modes and so on) of the examined DMP can be identified.

To use the decision framework for scoping in the ANSEA approach, the assessor and the proponent need to agree on the key steps in the process. This can be done either in individual interviews or in a small meeting using a flipchart. If an independent assessor is carrying out an evaluation of a partially or wholly completed DMP, then interviews should be carried out individually. This will highlight different views about the order and focus of different steps in the DMP and it will then be the role of the evaluator to synthesize different views into an agreed description of the DMP.

Alternatively, if the ANSEA approach is being used for an integrated assessment, it may be useful to use this tool in a group. The resulting view of the DMP will be based on consensus and the flowchart can form the backbone

for planning all subsequent stages of the DMP. In either case, the DMP flowchart is a tool to evaluate the structure of a DMP and focus the ANSEA assessment on difficult stages of the DMP.



Source: Wuppertal Institute

Figure 5.2 The decision framework flowchart: example from a real DMP – from the case study on urban transport planning in Germany

Describing the legal and institutional context

The legal and institutional context for the PPP is very important in understanding the type of DMP process, who has responsibilities for carrying it out and what environmental values should be taken into consideration. This task provides the basic data for the identification of the decisional boundaries of the PPP. This stage is important in defining the shape of the ANSEA approach and is the basis for the analytical steps which follow. In addition, this step is the basis for first thinking about procedural criteria (see step 2B) for the assessment. In particular, legislation and public policy will help to define the extent of public participation and the degree of transparency expected in the PPP.

Two key issues are to be considered:

- the link between the PPP to be defined and environmental policy and legislation;
- the link between the PPP to be defined and other sectoral and economic policies and legislation.

Such links can relate to:

- current and/or future policies and legislation (for example, planned initiatives);
- local, regional, national or international policies and legislation; and
- state of the environment reporting, which can provide the background and context within which environmental impacts should be assessed.

These will be important information sources in defining the problem that the PPP is addressing and in defining goals and objectives and so on. Box 5.2 provides a number of prompt questions for describing the legal and institutional context.

BOX 5.2 LIST OF PROMPT QUESTIONS FOR DESCRIBING THE LEGAL AND INSTITUTIONAL CONTEXT**Legal and political context**

- What is the legal and political context for the decision. Is the PPP statutory or part of a regular cycle; is it a new or established PPP; will it be repeated in other settings?

- Who is the proponent organisation, how long has it been established, what are its powers in relation to design, financing, implementation and monitoring of the PPP?

Objectives of the PPP

- What are the proposed objectives for the decision/PPP being produced?
- How have they been identified and who has been involved?
- How do these objectives relate to the institutional context? Do they reflect the objectives of the proponent institution or are they externally driven?

Timing of the decision

- What is the time frame for the DMP?
- When will the final decision be taken or is this stage already completed?

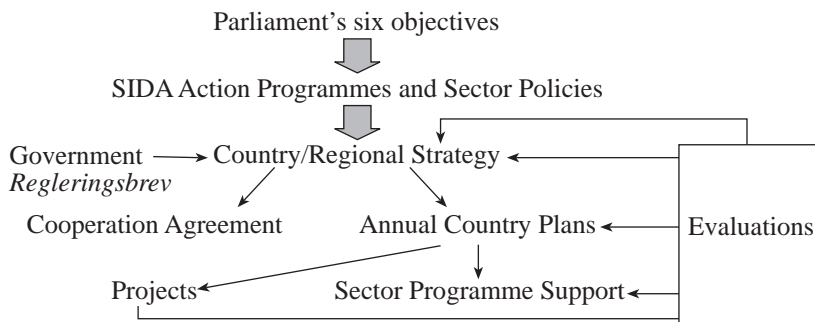
Assessment requirements and procedures

- Are there statutory requirements for environmental or other assessment of the PPP?
- What assessment procedures are envisaged? How do they relate to each other?
- How will the results of the assessment be taken into account in the DMP?
- What further assessments are expected once the PPP is approved?

Links with other PPPs and projects

- What relevant PPPs precede the decision and its DMP?
- What links should be made between the decision and other ongoing DMPs?
- What plans and programmes, or even policy directions, will follow on from this decision?
- How, if at all, does the decision relate to future project proposals?
- What is the geographical sphere of influence of the DMP?

Like the description of the steps in the DMP, the above information can be gathered from individual interviews or from small group meetings. It may be presented in text or graphic form. An example of the graphic representation of the links between the DMP being assessed and other policies, programmes and plans is shown in Figure 5.3.



Source: SIDA 1997 and MFA 2000

Figure 5.3 The links between SIDA country strategies and other PPPs (SIDA case study)

In addition to providing a great deal of useful information for the assessment, the task of answering these questions will have implications for the ANSEA process, since it will help determine:

- who should be involved in the assessment;
- how the results will fit with other statutory assessments and decision rules for the PPP (such as economic assessments);
- the timing of the stages.

A description of the organizational framework (actors and stakeholders)

The next task is to identify the organizations involved in the DMP, including those involved in the final decision, financing the resulting PPP and implementing it, and other interested parties who need to be consulted during the DMP.

If the ANSEA approach is applied as an integrated assessment, it could help to improve the co-ordination of the planning. This offers an opportunity to maximize co-ordination and integration of the organizations involved in implementing the relevant plan and those related to it. It also provides a clear overview of the stakeholders who could be involved and allows assessors to

make prescriptions about effective and transparent communication and public involvement throughout the process.

If the ANSEA approach is carried out as an evaluation of a partially or fully completed DMP, then this step will provide the basis for identifying procedural criteria (step 2B), and supply a basis for assessment (step five).

The medium- to long-term objective is to promote mutual learning through the interaction between different parts of the organization(s) involved and the stakeholders.

The tools for clarifying which organizations are or should be involved are stakeholder analysis and organogrammes.

Stakeholder analysis This provides a methodology for identifying interests and stakeholders based on addressing a number of key questions such as those illustrated in Box 5.3. In most cases, this analysis can be carried out on the basis of document review and interviews with the proponents and a few key stakeholders.

BOX 5.3 LIST OF PROMPT QUESTIONS FOR STAKEHOLDER ANALYSIS

- Who is directly affected by the PPP being addressed?
- What are the interests of the various groups of stakeholders in relation to the PPP under consideration?
- How does each group of stakeholders perceive the PPP?
- What resources does each group bring to bear (positively or negatively) in relation to the PPP?
- What organizational or institutional responsibilities do key stakeholders have?
- Who should benefit from the PPP?
- What conflicts might a group of stakeholders have with a particular PPP strategy?
- What activities might be carried out that could satisfy the interests of the various stakeholders?

Organogramme The final output will be useful to the promoter and environmental authorities in describing the DMP and establishing points of contact and collaboration. It will also provide assistance during the stage of identification of procedural criteria. The outcome of this exercise will be an important input to the functional description of the DMP (see step three). The exercise of developing an organogramme can help to define which actors will

and which will not be included in the analysis (for an evaluation) or in the DMP in the case of a planning exercise.

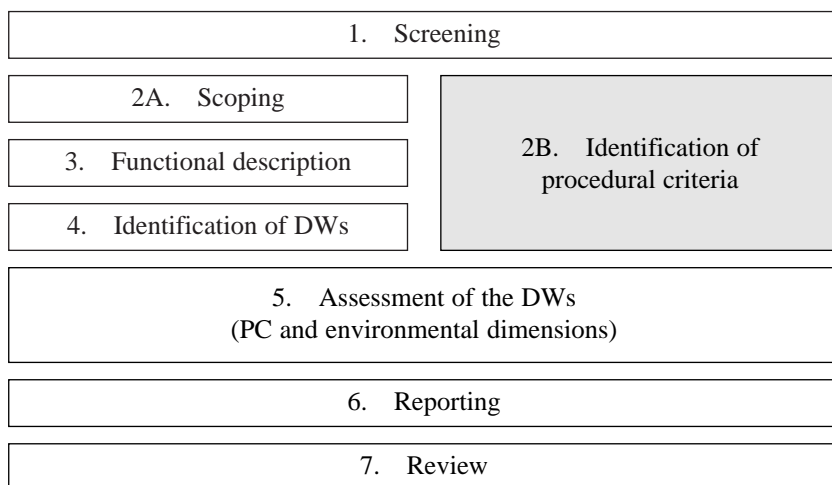
To have a clear view on the focus of the DMP, the following questions need to be answered:

- Who is taking the initiative (organization/contact person)?
- Who is responsible for (parts of) the DMP?
- What is the hierarchy that relates actors to each other? Is the actor formally or informally involved in the DMP?

Initially, the assessor should draw up an organogramme based on information collected during screening and other scoping tasks. This can then be refined by categorizing types of actors and then specific organizations and contact persons on the basis of interviews and document review. It will provide useful information for Task 2B – identifying procedural and substantive criteria – particularly in relation to public participation and indicating the people who should be involved, at what stages and how.

An example of a matrix form of organogramme from the case study on Urban Planning in Spain is shown in Table 5.2.

5.3 Step 2B: Identification of Procedural Criteria





This is an important step in establishing the values or procedural criteria against which the DMP will be assessed.

In conventional SEA a mixture of objectives, indicators and environmental criteria are often used to carry out the assessment of a set of options for PPP.

Table 5.2 Example of organogramme – from the case study on urban planning in Puerto de la Cruz, Spain

Actors	Phase of the DMP			
	1. Initiative	2. Draft	3. Negotiation	4. Approval
City Council	Responsible	Responsible	Responsible Report on compliance with the Integral Territorial Plan of Tenerife	Preliminary approval
Island Authority				
Island Council				
Citizens		Inter-council co-operation	Public information	
		Collaboration in setting goals		
River Basin Authority		Participates		
Regional Government			Consultation	Final approval
Road Office			Report on compliance with the road plan	
Environment Office			EIA report	
Central Government			Does not apply	

-  Action that is indispensable and required for final approval.
-  Action defined in laws that is highly recommended, but does not always take place.

Source: TAU

Procedural criteria are prescriptions on how decisions should be taken. They are based on principles of good decision making and provide a basis for assessing the quality of the process in a particular decision window. They can be used *ex ante* as prescriptions, or *ex post* as evaluation criteria.

Usually, these tend to refer to substantive environmental issues, for example the impacts of PPP on urban air quality standards, climate change, noise, water quality or biodiversity. While environmental values are also integrated in the ANSEA approach, the main difference to conventional SEA is that the ANSEA approach assesses these substantive values in terms of wider criteria for good decision making. For instance, having established what environmental values need to be taken into account, the ANSEA approach then assesses whether each step of the process has been sufficiently:

- **comprehensive** in terms of the scope of environmental issues covered at each step;
- **timely**, in terms of when environmental information has been collected, made available and incorporated in the analysis;
- **transparent** in terms of the way the analysis has been undertaken and the environmental information taken into account;
- **participative** in terms of including the relevant organizations and individuals who may express different views on the inputs, analysis or outputs of a given step in the DMP; and finally
- **credible** in terms of the quality, robustness and consistency of the inputs, analysis and outputs of each step in the process.

Thus the use of criteria in the ANSEA approach differs from more common strategic environmental assessment by focusing on the entire breadth and depth of the decision-making process rather than on the expected environmental outcomes of a final decision.

It is worth noting that by incorporating a different set of societal values – such as sustainability, gender and health – the ANSEA approach could equally be applied to integrating wider sustainability values or narrower health and environment values into strategic decision making.

Step 2B involves two distinct but interlinked tasks:

- defining substantive values, namely environmental dimensions and public participation requirements for the specific DMP; and
- defining generic procedural criteria for good decision making.

Defining substantive values for the DMP

Environmental values Each scoping task – identifying the legal and institutional context and stakeholders – should be carried out with a focus on their environmental dimension. The aim is to develop a list of environmental values which need to be incorporated at different points in the DMP. There is likely to be a hierarchy of values depending on whether they reflect:

- **Statutory requirements.** Some of these values are likely to reflect legislation at the EU or national level, particularly in relation to air and water quality, management of waste or conservation of protected areas.
- **Policy requirements.** Others will be drawn from European and national policies, but may not be legally binding – such as limiting the emissions of greenhouse gases and protection of biodiversity.
- **Other targets.** Others may reflect the objectives of non-statutory targets set out in national or sectoral sustainable development strategies that are monitored against national indicator sets.

Guidance on the identification of the environmental dimension is presented below. It focuses on:

- the **environmental issues** within the objectives and overall strategies of the PPP (drawing on the experiences of SEA);
- the **consideration of alternatives** and the opportunities to assess environmentally friendly alternatives within the SEA; and
- the **environmental consequences** of each decisional step leading to the overall outcome of the DMP.

The work of Canter (2000) provides a useful checklist for the issues that may be relevant. This should not be viewed as a prescriptive checklist but as an aide-memoire for the identification of key environmental considerations. The EU's Vademecum on strategic environmental assessment in regional policy also provides useful guidance.

The broad set of environmental issues should be agreed with the project proponents and key stakeholders to be involved in the early stages of the ANSEA process. The ANSEA approach will not necessarily involve the ANSEA assessors in assessing the impact of the PPP on each of these factors (although in some cases this might be required). However, the ANSEA approach will ensure that each key factor is addressed at the appropriate stage of the DMP in a timely fashion; based on adequate information; and using credible techniques for analysis.

The environmental values or factors identified at this stage will be used for

BOX 5.4 LIST OF PROMPT QUESTIONS FOR IDENTIFYING ENVIRONMENTAL DIMENSIONS

- Vulnerability of resources, ecosystems and human communities to changes (stresses);
- Compatibility with (other) land use policies and plans;
- Compliance with environmental standards for air, surface water, ground water and soil quality;
- Thresholds and carrying capacities for resources, ecosystems and human communities;
- Effect on protected areas;
- Compatibility with sustainable development principles;
- Disagreement among experts as to the significance of anticipated effects;
- Level of public concern regarding the effects;
- Added value of information to decision making (if addressed).

elaborating procedural criteria (see below), for identifying decision windows (step four) and for assessing each decision window (step five).

Guidance on identifying environmental dimensions The identification of the environmental key issues should provide a prioritized set of key environmental objectives, alternatives and consequences to be further considered at later stages of analysis.

Table 5.3 shows a matrix to assist in identifying and recording the environmental dimensions of a PPP. The first step is to identify the scale (transboundary, national, regional or local) and the spatial units (administrative boundaries, natural resources-related areas, PPP-related areas) to which impacts are addressed. Based on this background, the next step should be to identify the key environmental issues (for example air quality or energy efficiency) that are likely to be affected by the PPP (for example, using criteria such as those from Canter 2000 quoted above).

The final outcome will be a set of key environmental issues, objectives and indicators identified, as in the example in Table 5.3.

Public participation values The Aarhus Convention 1998 and the EU Directive on Environmental Assessment (2001/42/EC) both introduce a legal requirement for public participation in environmental decision making.

Table 5.3 Example – identification of environmental issues

Scale	Spatial unit	Environmental key issues	Baseline objectives
National	Administrative boundaries	Biodiversity	Maintenance
		Rural sustainable development	Improve the capacity of lands
	Administrative boundaries	Climate change	Reduction of greenhouse gas emissions
		Air quality	Maintenance

Source: Universidad Politécnica de Madrid

However, both the definition of the public (see Box 5.5) and how and when the public is expected to participate are open to wide interpretation. There can be many interpretations of the term ‘the public’ within the context of public participation.

At the very least, strategic decision making requires the involvement of the institutions that are key to the successful implementation of the PPP. Furthermore, it is widely agreed that early participation of the wider public is valuable in building a sense of ownership of a strategy and making any resulting plans and projects easier to implement. However, good quality participation can be complex, time consuming and expensive. Furthermore, for many PPPs, which are abstract and where both the activities and their likely environmental and social impacts are unclear, effective techniques have yet to be tried and tested. As a result, public participation values vary greatly between different countries and indeed between different PPPs within a given country. Public participation values therefore need to be agreed with the project proponents at an early stage and then, as with environmental values,

procedural criteria can be used to assess how they have been applied in each decision window.

BOX 5.5 DIFFERENT INTERPRETATIONS OF THE PUBLIC FOR PARTICIPATION

The Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters 1998 (the Aarhus Convention) defines the public as 'one or more natural or legal persons and in accordance with national legislation or practice, their associations, organisations or groups'. Furthermore the Convention states 'the public affected or likely to be affected by or having an interest in, the environmental decision making' and that for the purposes of this definition 'non governmental organisations promoting environmental protection and meeting any requirements under national law shall be deemed to have an interest'.

At the EU level, the SEA directive (2001/42/EC) specifies that it is up to the Member States to designate the public to be consulted and the detailed arrangements for information and consultation in SEA.

In practice, a broad interpretation is generally applied for public participation, covering:

- all affected individuals or groups,
- all individuals or groups who have views on the environmental values which should be taken into account; and
- those with a direct or indirect interest in the results of the decision-making process.

This can include, but is not limited to, government bodies and agencies, at international, central, regional and local levels, industry, local communities, NGOs, professionals, academic institutions or individuals. Thus, in many cases, the public identified will not be a homogeneous group of people. Indeed, it is likely to represent a wide range of values. If, on the one hand, this is exactly the aim of an open process, on the other hand, it is to be expected that a well-differentiated group of people or organizations will lead to different opinions, unpredictable outcomes and potential conflict.

Within most PPPs where the ANSEA approach might be used, the public could potentially be involved in each of the following decision moments:

- defining the problem to be addressed by the PPP;
- contributing to the definition of environmental and/or sustainability values, objectives and goals;
- contributing to the identification and definition of alternatives;
- contributing to the identification and definition of the key environmental issues and environmental assessment criteria which are relevant to the alternatives;
- contributing to the selection of alternatives;
- review and follow-up.

The characteristics of these decision moments will differ, with the requirements for inputs becoming, accordingly, considerably more concrete in the later stages. As a result, the nature of the public who may be involved, and the role that any individual or group takes throughout the DMP will also change. These aspects of public participation should be discussed and clarified at the earliest possible stage of decision making in order to plan the involvement of the public, to maximize its effectiveness and, where necessary, provide sufficient resources, capacity building and time to allow relevant parties to contribute in an optimal way.

Developing procedural criteria (PC)

The ANSEA approach involves the development of procedural criteria by identifying broad decision-making principles that facilitate the incorporation of these values. A generic set of five principles that will facilitate effective incorporation of the core values is presented below. This set of principles is not theoretically derived, but based on historically accepted norms and values related to public decision making and assessment. The list is not exhaustive and in any specific society or decision there may be additional values that are relevant, or those that are not. For instance, transparency and participation may be considered less relevant in some countries or for specific PPPs such as national defence strategies.

The following paragraphs illustrate a set of five criteria which has been used in the eight case studies for the ANSEA project and provide illustrations of how some of these might be assessed throughout the decision-making process.

Each of the PC should be defined according to the values and culture of the leading authority, the wider decision-making context and stakeholders. The PC should reflect the environmental and sustainability dimensions that are being identified in parallel (see above). Ideally, each criterion should be linked

to key documents, guidance, and – where appropriate – reference should be given to legislative requirements in support of the criterion.

Suggested procedural criteria

1. **Comprehensiveness:** This implies that all relevant environmental (and sustainability) considerations are made throughout the DMP. The aim of a DMP should be to consider a broad range of potential (direct and indirect) environmental effects, all potential geographical impact areas, all potential stakeholder groups subject to exposure, a wide range of potential alternatives and all potential mitigation measures. This broad principle will be of relevance at many stages in the DMP and should be considered accordingly. For example,
 - are environmental (or wider sustainability) goals included in the goal formulation?
 - are environmentally friendly alternatives included when selecting from among PPP alternatives?

This principle is very likely to be in conflict with time and financial resources allocated to the DMP, and the assessors will need to determine where to draw the boundaries on available information. This potential trade-off should be dealt with at the beginning of the DMP. It is the task of the ANSEA assessment to assess if this trade-off was appropriately made.

2. **Timeliness:** Performing various steps in the DMP in a timely way is a prerequisite for providing opportunities to consider environmental values. Timeliness relates to receiving critical information inputs and producing outputs in time, as well as allocating sufficient time for specific tasks and decisions. For example, timeliness may relate to the availability of information to prepare the participation of particular stakeholders or to ensure that an environmental assessment report or environmental study of different alternatives reaches the decision maker well in advance of the decision. As with comprehensiveness, improved timeliness may conflict with the amount of resources made available for the DMP, and any such trade-offs must be considered in the ANSEA approach.
3. **Transparency:** Transparency in the DMP improves the opportunities for both internal and external parties to promote or ensure incorporation of environmental values. There are several dimensions to transparency: explicit and clear formulation of PPP objectives and terms of reference for studies, public access to information, explicit recognition of assumptions and limitations of models and analyses, and so on. It should be easy for an outsider to understand what is being decided in the DMP, on what basis it

is decided and by whom. For example, is the environmental report (if there is one) open to the public? Is the uncertainty associated with modelling results clearly communicated? Improving transparency may require more time allocated to the DMP, due to increased documentation. The assessor should look at and assess the balance between transparency and expediency in the DMP.

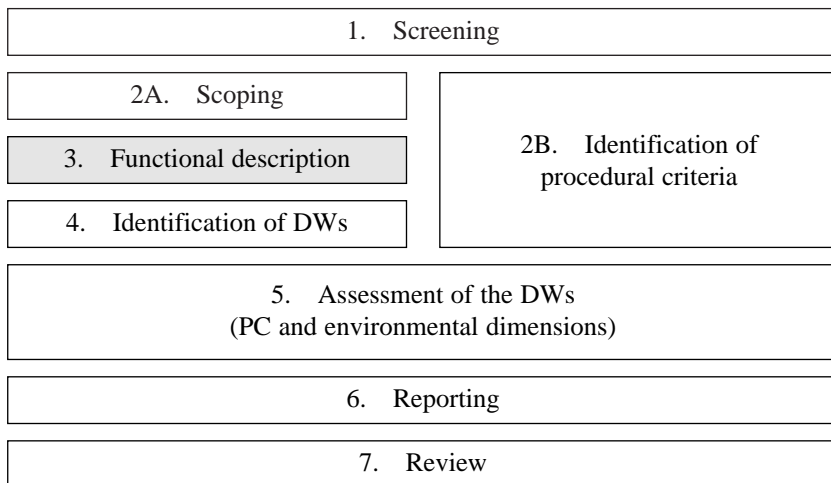
4. **Participation:** There are two major reasons why consultation with stakeholder groups, environmental experts and the general public improves the quality of decision making: the decisions will be better informed; and decisions may be more socially acceptable. The more proactive (as opposed to reactive) consultation is, the easier it will probably be to obtain these two benefits. For example, was environmental expertise involved in identifying alternatives? Were stakeholders consulted when formulating the objectives? Active participation by stakeholders in the decision making is one step further and can improve the quality further. As with the other principles, there may be a trade-off between consultation and time and financial resources. The assessor may need to consider further complications, including the potentially conflicting opinions and values expressed between and within different stakeholder groups. Values are relative and environmental values may not always be prioritized. The challenge for decision makers is to use the consultation input in a balanced and constructive way.
5. **Credibility:** The quality of the decision making will be improved by ensuring credibility in terms of the robustness and consistency of inputs, analysis and outputs. The alternatives contemplated in a decision should be considered on an equal basis, in order to reduce potential bias against more environmentally friendly or sustainable alternatives. For example, is there any sign that information sources are partial towards a certain alternative? Is the same set of objectives, assumptions, limitations and parameters used when considering the different alternatives? Are previous decisions that incorporate environmental or sustainability values contradicted? Evaluating the credibility of a completed process may be hard to define since it will require a high degree of insight into the DMP and this can be difficult when the process is not sufficiently transparent. However, this puts emphasis on the detailed understanding of the DMP that the assessor must gain, as well as an understanding of actors and stakeholders and their motivations and potential biases. Table 5.4 provides a list of generic criteria and prompt questions, which reflects the IAO framework. It is a non-exhaustive list that may be used for both an integrated or *ex post* evaluation, by changing the way that prompt questions are phrased (for example, using affirmative rather than interrogative phrases).

Table 5.4 Examples of specific procedural criteria for integrated or ex post assessment

Generic procedural criteria	Examples of specific procedural criteria		
	Inputs	Analysis	Outputs
Comprehensiveness	<p>Was the ‘right’ data collected, for example:</p> <p>Were comprehensive sources of information considered?</p> <p>Were alternative sources of information considered?</p> <p>Were the environmental/ sustainability values identified as key to the PPP during scoping covered?</p>	<p>Has an integrated approach been taken?</p> <p>Was an appropriate set of analytical tools considered for the analysis?</p> <p>Was an appropriate set of alternatives (including an environmentally friendly option) considered?</p> <p>Were the boundaries of this decision appropriately defined in relation to other DMPs and institutional responsibilities?</p>	<p>Have the ‘right’ issues been considered (for example, sustainability, including social and economic development issues)?</p> <p>Was the outcome of the decision appropriate in scope?</p>
Timeliness	<p>Was information available in a timely fashion?</p>	<p>Was analysis undertaken in a logical sequence (for example, compared to the timing of other relevant stages in the DMP)?</p>	<p>Was the decision taken in a logical sequence?</p>
Transparency	<p>Are information sources transparent?</p> <p>Is the supporting material in the public domain?</p>	<p>Is it obvious what assumptions have been used in the analysis?</p> <p>Is it obvious what techniques, models and tools have been used?</p>	<p>Are reports and peer reviews available for inspection?</p> <p>Was the outcome of the decision and how stakeholder views fed into this clearly communicated?</p>

Participation	<p>Were the appropriate stakeholders involved (at the right time and in an appropriate way) in providing information, generating options or defining the scope?</p> <p>Were the appropriate stakeholders involved (at the right time and in an appropriate way)?</p>	<p>Were the appropriate stakeholders involved (at the right time and in an appropriate way) in interpreting the results of the analysis?</p>	<p>Were the appropriate stakeholders involved in the deliberating stages leading to the final decision?</p>
Credibility	<p>Does the quality of the input information reflect the scope of the decision and resources available (time and money)?</p> <p>Are any gaps or difficulties in information clearly highlighted?</p>	<p>Was the tool or method used in the analysis appropriate for the level of decision?</p> <p>Does the quality or complexity of the analysis reflect the scope of the decision and resources available (time and money)?</p> <p>Has risk been fully considered in the analysis (including technical risk and risks in implementation such as changes in project management, difficulties of stakeholder involvement and so on)?</p> <p>Have the analysis, reports and outcomes been reviewed by peers?</p>	<p>Does the reliability and quality of the decision reflect its potential environmental and sustainability outcomes (timing, transparency, clarity, involvement and so on)?</p> <p>Was uncertainty incorporated into the analysis (for example through appropriate tools, such as sensitivity or scenario analysis)?</p>

5.3 Step 3: Functional Description of the Decision-making Process



Role of the functional description within ANSEA

This stage of the ANSEA approach draws on the information gathered during scoping to produce a detailed overview of all the individual steps or decision moments which make up the DMP. The DMP is taken here to include:

- all decision-making activities (deliberation and outputs – including any related planning documents) which appear to be a crucial part of the overall planning process;
- consultation and public participation procedures; and
- all types of data gathering research, assessments, evaluations and means of collecting expert opinion which are planned and carried out during the long planning process – in other words, all major sources of input to the DMP.

The functional description of the DMP is an essential step in the ANSEA approach. It is the basis for an identification of the unit of analysis of the assessment. To carry out an exhaustive description of the decision-making process it is necessary to take account of the functional description of the process. A functional description:

- allows the identification of the functional relationships in play between all sub-decisions or tasks in a decision-making process;
- at the same time, it provides a detailed description of the content of each in terms of its inputs, analysis and outputs.

This general description will in turn be translated into decision windows (step four). The level of detail of the DMP description will depend on the type and complexity of the DMP (as outlined during scoping, step 2A) and the amount of resources and time to be committed to the ANSEA approach (as determined during screening, step one). DMPs may be described at a fairly high level with only six to ten major decision moments, or in great detail involving hundreds of decision moments. In general, an *ex ante* assessment of any PPP or an *ex post* assessment of a simple or very abstract PPP will involve less detail. However, integrated or *ex post* assessment of a complex transport or spatial plan involving many different actors, large areas and many different alternatives, will need to be described in much greater detail. For instance, in the Swedish case only eight distinct steps were involved, while in the German case study each of the major steps has a number of sub-steps and it is therefore necessary to describe the hierarchy of steps in some detail.

As a general rule, an *ex post* evaluation or integrated assessment of a simple or very abstract PPP will involve less detail. Contrariwise, an integrated assessment of a complex PPP which will provide a framework for many other specific projects (for example a transport plan, a land use plan or a coastal defence strategy) will involve many steps, including the detailed environmental assessment of alternatives and will require much more detailed description.

How to develop a functional description

The development of a functional description of the steps of the DMP is the backbone for the ANSEA process and analysis. The completion of this task should involve representatives from all parties involved in the planning and assessment procedure and can either involve individual interviews (as for the scoping stage) or a short workshop, building on the agreed description of the process from step 2A (scoping).

The involvement of key stakeholders in the detailed mapping of the DMP could lead to an early identification of moments where critical, environmentally relevant choices need to be made. It will also highlight the importance of informal or non-explicit decision-making moments. In order to describe the DMP, a flow chart providing a graphic description of the DMP should be developed. It is intended as a quick reference and summary of the DMP, to be used and updated throughout the whole planning and assessment process. It provides the basis for discussions leading to the identification of DWs (step 4) (Figure 5.4).

Interviewing stakeholders directly is one of the most frequently used methods for getting the necessary information for the functional description. Interviews with actors involved in the decision-making process helps to

FACTORS OF INFLUENCE

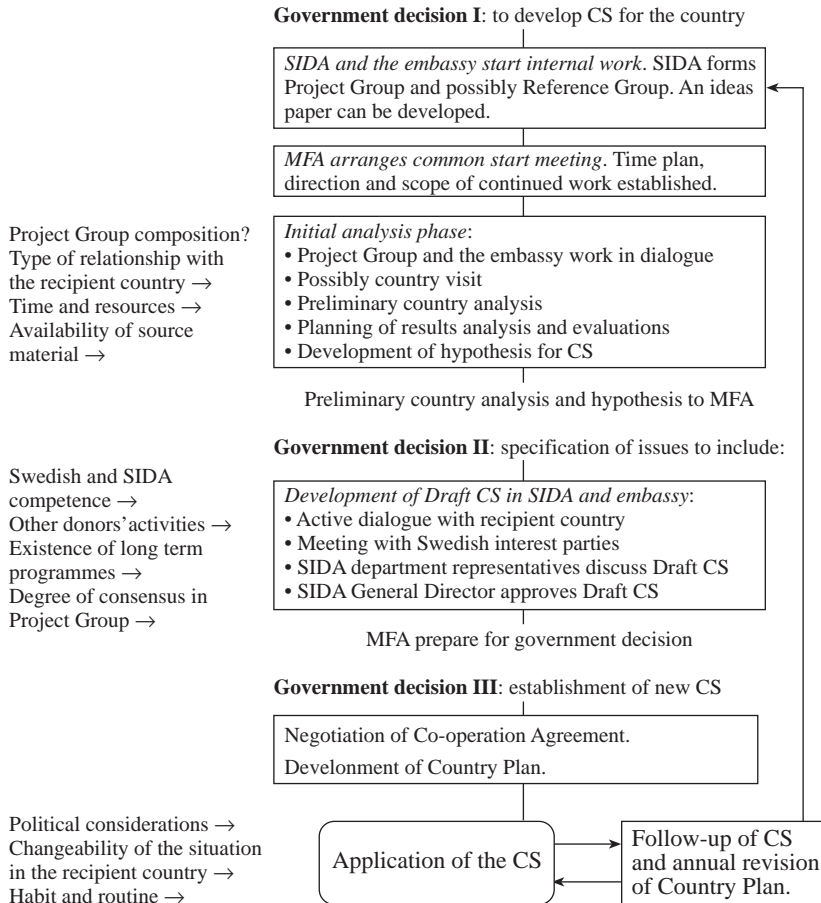


Figure 5.4 Example of a functional description flowchart – the country strategy process in Sweden

identify the key points in the DMP for the integration of relevant environmental information. When interviewing, a semi-structured questionnaire should be used as a tool and the following two topics should be discussed:

1. A description of the PPP to support the functional description of the decision-making process; and
2. The 'potential for optimization' as a basis for the identification of decision windows.

Interviews could be carried out by public administrators, technical experts, NGO representatives, consultants or representatives of the general public involved in the definition of the PPP. Also, stakeholders could be interviewed, whether the PPP is in the planning stages or has already been approved (evaluation mode).

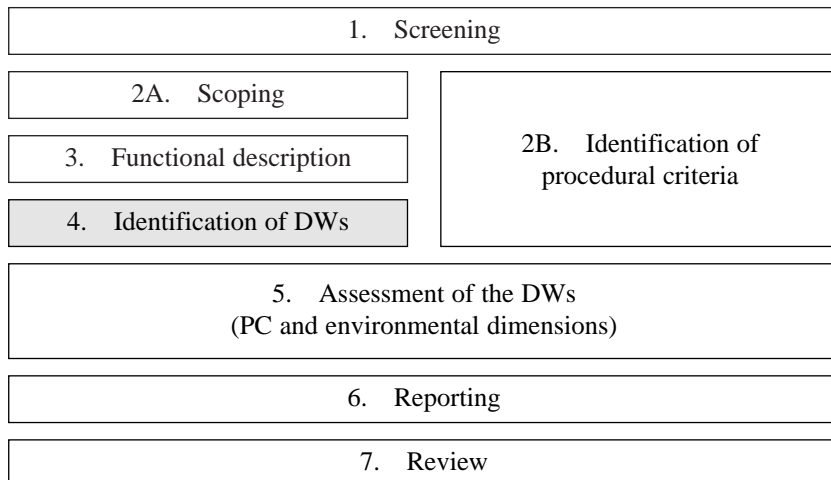
The DMP description through a flowchart diagram and relevant notes should explain:

- the stages or 'elements' of the DMP;
- the feedback between elements;
- the inputs to the process (information, public participation and so on); and
- the information operations or analytical moments at each stage.

The objective of the functional classification of the DMP is to provide an analytical description of the DMP. This comprises the following sub-elements:

- describing the whole DMP as constituted by basic decision units connected in a logical functional network;
- establishing a hierarchical nomenclature of the DMP, for example into stages or phases, tasks, subtasks, elements and sub-elements; and
- description of the content of each basic decision unit in order to identify its possible environmental dimension.

5.3 Step 4: Decision Windows



Identifying decision windows (DWs) within ANSEA

Decision windows are the assessment unit of ANSEA's methodology and its differentiating feature from other environmental assessment approaches.

Decision windows are moments in the decision-making process where critical choices are made, which have an environmental implication.

The critical choices which identify a decision window may relate to the inputs, the analysis or the outputs of that specific step in the DMP and highlight the importance of looking at the whole process, rather than just the likely outcomes of a given decision as in more conventional SEA approaches.

The functional description of the DMP (step three) helps the assessor to break down even very complex decision-making processes and identify the moments where critical choices are being made. The use of the procedural criteria and environmental values identified in step two allow the assessor to determine whether these choices may have implications for the environment. Although this can be done by the assessor or evaluator if they have a detailed knowledge of similar decision-making processes, it is likely to be far more effective to involve key stakeholders in the DMP using a workshop format.

How to identify DWs

The DW can take many forms, from a formal decision to a public debate. Expert judgement and round-table discussions can provide a useful means to identify the DWs on the basis of the DMP. This may be essential, since some decisions are simply not apparent from government publications and literature related to the DMP. Identification of DWs should follow on from the functional description of the DMP. The task for the assessor(s) is now to determine whether any of the identified moments are likely to have either direct or indirect environmental implications – that is to be decision windows (see an example in Box 5.6).

The experience of the case studies suggests that this is an iterative and largely intuitive process and that it will be necessary to involve the architects of the DMP, whether the application of the ANSEA approach is *ex ante* or *ex post*. Table 5.5 can be used as the basis for discussions with those involved in the DMP either in one to one interviews or in a workshop. Such a graphical description format for the decision windows provides a structure and outline for the information that is required in order to fully understand the decision windows and to describe each of them systematically.

In addition, a concise description of the decision windows is necessary in

BOX 5.6 IDENTIFYING DECISION WINDOWS

In the German FTIP case study, the decision windows could be defined on the basis of the functional description. Each step of the FTIP has a couple of decision windows. For example the (sub-) decision of costs in cost-benefit analysis (CBA) are identified by a logical deduction from the CBA. If the CBA is a determining tool for the incorporation of projects based on priority demand, the costs involved will have consequences for the entire plan. For example, the decision that one hour of travel time is to be valued at a specific rate has consequences for the decision on whether a new motorway is going to be built in a region.

order to understand its procedural function in the DMP. It also acts as a justification for the reason why this moment in the DMP has been identified as a DW. Furthermore, a systematic description of the DWs will facilitate the assessment against procedural criteria.

Matrix to describe decision windows The assessor(s) can use this tool at several points throughout the assessment process. The main use of this matrix is the description of DWs, but it should be emphasized that more DWs may be discovered at later stages in the assessment. The descriptions may also be revised if the assessment is undertaken before or concurrent with the DMP itself. Providing a comprehensive, yet concise description of the DWs involves several tasks:

1. Describing the potential direct or indirect environmental implications of the outcome of the decision window. The environmental dimension is what defines a decision window and this has to be explicitly described in order to understand and demonstrate to the decision maker how the procedures should be improved. The key task for the assessor in doing this is to relate the environmental values relevant to the decision.
2. Identifying the actors and stakeholders involved in the decision window. Often it is also important to ask which actors and stakeholders are not involved, and if any groups are deliberately excluded. Also, the relationships between different actors and stakeholders and the means of interaction are relevant for the outcome of the DW. Many of these issues are addressed at the scoping stage, when the institutional context is analysed. However, describing them in a concrete way for each DW will provide a direct link to the decision at hand.

Table 5.5 Definition of decision windows in the FTIP

STEP	Decision windows
Agenda Setting/ Goals (0)	<ul style="list-style-type: none"> ● Decision to start the process ● Decision about main issues (1992: German unity / 2002: Modernization of methods) ● Decision about objectives <ul style="list-style-type: none"> ➤ Decision about kind of target system <ul style="list-style-type: none"> • Decisions about targets • Decisions about indicators ● Decision about leading authority/department <ul style="list-style-type: none"> ➤ Decision about persons involved in the leading department ● Decision about general procedure and incorporated stakeholders (for example, based on last FTIP) ● Decision about incorporated stakeholders (for example, involve environmental authorities in step 2, modernization of methods) ● Decision about range of the FTIP
Forecasts/ Scenarios (1)	<ul style="list-style-type: none"> ● Decision about structure of forecast (objectives and boundaries) <ul style="list-style-type: none"> ➤ Decision about link to transport policy strategy (demand or goal orientation) ➤ Decision about evaluated scenarios (political frameworks) ● Decision about incorporation of environmental authorities in scenario decision ● Choice of consultants ● Choice of scenario
Modernization of Methods (2)	<ul style="list-style-type: none"> ● Decision about co-operation with environmental authority (FEA) ● Decision about objectives of assessment

- Decision about project or network/programme appraisal
 - Decision about incorporated assessment tools
 - Decision about integration of external costs in CBA
 - Decision about kind of external costs and benefits in CBA (such as assessment of the impacts of climate change)
 - Decision about incorporation of induced traffic
 - Decision about real costs (costs of noise)
 - Decision about result of CBA (Benefit–Cost Ratio or range of likely Benefit–Cost Ratios (linked to scenarios))
 - Decision about integration of environmental effects in Ecological Risk Analysis (ERA)
 - Decision about range of ERA (for example, landscape, water)
 - Decision about result of ERA (recommendation, project sheets)
 - Decision about evaluation of interdependencies between transport modes
 - Decision about result of evaluation of interdependencies
 - Coordination of consultants

Project
Proposals (3)

- Decision about procedure of proposals (for example, programmes or projects)
 - Decision about information incorporated in proposal procedure (for example, analysis of accessibility, bottlenecks)
 - Decision about indicators (for example, cars per day)
 - Decision about incorporation of environmental assessment in proposal procedure
 - Decision about kind of projects incorporated (reconstruction of roads)
- Decision about number of proposed projects (assuming Länder share)
- Decision about assumed costs
- Decision about bilateral or multilateral negotiation between stakeholders

Table 5.5 continued

STEP	Decision windows
Valuation of Projects (4)	<ul style="list-style-type: none"> ● Decision about assessment of projects <ul style="list-style-type: none"> ➢ Decision about criteria for incorporation in the assessment procedure (minimum length 10km) ➢ Decision about unavailable demand ➢ Pre-assessment of environmental authority
Priority Rating (5)	<ul style="list-style-type: none"> ● Decision about investments in transport modes ● Decision about priority levels ● Decision about relation of valuation tools in the priority rating (for example, the main aspect is Benefit–Cost Ratio of CBA)
Consultation (6)	<ul style="list-style-type: none"> ● Decision about Länder share ● Decision about consultation of environmental authorities ● Decision about consultation of interest groups and NGOs ● Decision about consideration of consultation results
Decision of Government (7)	<ul style="list-style-type: none"> ● Decision of environmental minister to accept the PPP in cabinet
Legislation (8)	<ul style="list-style-type: none"> ● Decision about exchange of projects (1:1 exchange of single projects) ● Decision about the participation of the environmental committee

3. Describing the procedures used in each DW in greater detail than during step three in terms of inputs, analyses and outputs.
 - Inputs – identify and briefly describe the information sources that are used (documentation, consultation, and so on). It is useful to distinguish between formal and informal sources, as well as documents and oral information, since there can be differences in how influential they are on the decision outcome.
 - Analysis/deliberation – identify and describe the ways in which the information inputs were considered. Analysis in the ANSEA approach is used in a broad sense; the types of analysis range from environmental assessment exercises, computerized models and deliberation with stakeholders to professional judgement. In some cases there may be no analysis at all, nor any information input, if the decision is solely based on habit and routine.
 - Output – identify and describe the outputs of the DW. These include the actual decision and any associated reports, documents or statements.

The DWs identified are described in a common format specifying the actors involved in each DW, its environmental dimension and the activities grouped, applying the IAO framework as shown in Table 5.6. This example illustrates one DW from a Swedish case study relating to the development of country strategies for channelling bilateral aid.

5.3 Step 5: Assessment of Decision Windows

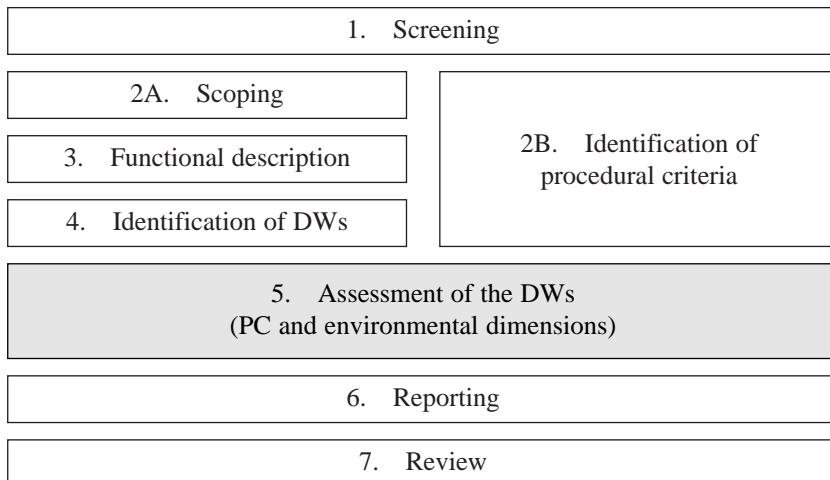


Table 5.6 Example – description of decision windows in the Swedish country programmes

DW # 1 – Background/context

Environmental dimension	Depending on how much and what type of environmentally relevant information is present at this earliest stage in the DMP, the premises and priorities for the DMP, in terms of process design (including or excluding some kind of environmental assessment) and objectives (including or excluding environmental objectives) may be differently set.
Actors	<ul style="list-style-type: none"> ● SIDA is responsible for its system of evaluations and information management. ● General and close co-operation with the embassies and the Ministry for Foreign Affairs suggests that they can make direct and indirect contributions to this DW. ● Contacts with recipient country representatives and Swedish interested parties may contribute to the continuous monitoring and understanding of the situation.

Input	Analysis/Deliberation	Output
<ul style="list-style-type: none"> ● Issues emerging from past CS and co-operation ● Country dialogue ● Formal reporting, for example, project evaluations, mid-term reviews ● External events (outside SIDA's sphere of activity) 	Professional judgement: writing reports, discussions, and so on	More-or-less commonly shared understanding of the development situation in the country and SIDA's role and activities

Assessment is the key task in the ANSEA approach: it is based on all the preceding steps, specifically bringing together the procedural criteria with each decision window.

How to develop an assessment

For each DW, step one involves elaborating prompt questions using Table 5.7 as the basis. Other questions may be relevant, while some may not be applicable to a given DW, as demonstrated by Table 5.8, drawn from the case study of country strategies for bilateral co-operation from Sweden. It is also important to note in the final column any environmental implication of poor decision making in relation to each procedural criterion (PC) for this decision window.

Each decision window is assessed in the same way and the information recorded in a standard matrix. This involves a two-step process as follows:

- Step 1. Elaborating a full set of detailed procedural criteria or questions against which the process will be assessed for each decision window. This includes identifying the likely environmental implications against each of the main procedural criteria. For instance, in relation to the PC of comprehensiveness, the assessor should note the likely environmental implications of less than full coverage of all the environmental issues identified during scoping. Or in relation to timeliness, the assessor should identify the likely implications for the environment of major analytical tasks being carried out before environmental baseline data is available. This effectively becomes the assessment questionnaire.
- Step 2. In a second matrix, the questions elaborated in step one should be answered with either quantitative or qualitative analysis.

The timing of the assessment varies according to the modes of assessment. Step one is relevant for all modes of the ANSEA approach while step two is only relevant for *ex post* evaluation or during the review stage of an integrated assessment.

Assessment Matrices The first matrix (Table 5.7) provides a checklist to help the assessor elaborate questions for the assessment. This can be developed either independently or in collaboration with key stakeholders and those involved in designing or implementing the DMP. The level of detail of the questions will depend on the scope of the ANSEA approach as agreed during screening. Every DW should be assessed, whether there are only a handful or hundreds.

The second matrix (Table 5.8) involves answering the questions posed in

Table 5.7 Matrix for the assessment of DWs against PC: Step 1

DW no. x – (Name of DW)			
Environmental dimension			
Actors			
DW Action(s)	Input	Analysis	Output
Procedural criteria			
Comprehensiveness	Were comprehensive sources of information/input considered?	Has an integrated approach been taken?	Was the outcome of the decision appropriate in scope?
Timeliness	Were inputs available in a timely fashion?	Was analysis undertaken in a logical sequence?	Was the decision taken in a logical sequence?

Transparency	Are information sources transparent?	Is it obvious what techniques, models and tools have been used?	Was the outcome of the decision and how stakeholders' views fed into this clearly communicated to all stakeholders?
Participation	Were appropriate stakeholders properly involved in a timely manner in providing information, generating options and defining the scope?	Were appropriate stakeholders properly involved in a timely manner in interpreting the results of the analysis?	Were appropriate stakeholders involved in the deliberating stages leading to the final decision?
Credibility	Does the quality of the input information reflect the scope of the decision and resources available?	Was the tool or method used in the analysis appropriate for the level of decision?	Does the reliability and quality of the decision reflect its potential environmental and sustainability outcomes?

Table 5.8 Example – matrix for the assessment of DWs against PC: Step 2. From the case study on country strategies in Swedish bilateral development co-operation

DW # 2 – Specifying the issue			
Environmental dimension	If the main development problems and opportunities in the country in question are (partly) understood in terms of the environment and if they are related to environmental opportunities and constraints, there is a greater chance that later studies and the final country strategies (CS) proposal will focus on or consider environmental impacts.		
Actors	<ul style="list-style-type: none"> ● Ministry for Foreign Affairs is responsible for arranging a start meeting, in which Swedish International Development Co-operation Agency – SIDA – representatives participate. ● Embassy staff contribute. ● A SIDA Project Group is appointed, which may elaborate the issue specification. 		
Procedural criteria	Input	Analysis	Output
Comprehensiveness	Comprehensive inputs depend on the decision window on Background/context.	Not applicable	Ensure that the environment as an issue and/or as an aspect of other issues is part of the understanding.
Timeliness	Ensure that the initiation of the CS process is well planned in advance. Due to the regularity	Consider whether more time is needed for initial discussions and deliberation, since the	While this stage must necessarily take place early to guide the process, there is also the risk that

of the CS process, this should be no problem.

outcome generally influences the rest of the process to a large extent, for example, what studies to make and what SIDA activities to propose.

it may be difficult to depart from the agreed specification and objectives as new information enters the CS process.

Transparency

See DW Background/context.

Consider how to document discussions and underlying assumptions.

Consider how to make the understanding of the development situation public, directly after it has been reached, for example, through web publication or web newsletter.

Participation

Consider how to get information from stakeholders and experts more actively.

Consider how to involve stakeholders and experts more actively.

By increasing transparency (see above), stakeholders and experts can give more feedback.

Credibility

Consider how to deal with potential bias towards traditional Swedish understanding of the country's development, if such a bias is negative for the environmental profile if the CS.

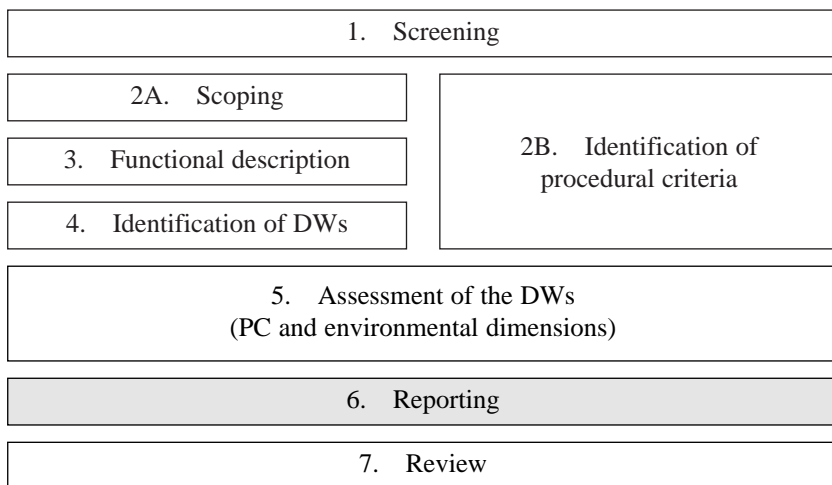
Not applicable

Not applicable

matrix one and recording them in a common format to aid comparison across DWs.

The completion of this task should involve representatives from all parties involved in the planning and assessment procedure. Its effectiveness, in terms of enhancing the quality of the DMP from an environmental perspective, will be maximized if both the promoter and the relevant environmental authorities are involved.

5.3.7 Step 6: The ANSEA Report



The reporting stage in the ANSEA approach is typical of any assessment or evaluation and involves synthesizing the findings of scoping and individual assessments of decision windows in order to:

- draw conclusions about the overall quality of the decision-making process;
- identify specific parts of the process and aspects of individual decision windows which could be improved (particularly for an integrated assessment of a PPP); and
- make recommendations for the future development of the DMP and identify any really significant issues to be monitored during implementation of the PPP.

The ANSEA report is the final output of the ANSEA approach. The main difference between the ANSEA report and the SEA report is that in integrated assessments it is crucial to have several reports during the

DMP. This will ensure the feedback of the assessment into decision making.

The report presents the results of scoping, the functional description, the identification of decision windows and procedural criteria and the results of the assessment of decision windows. By publishing the results of the assessment process, the environmental implications of the decision-making process (DMP) are set on the political agenda. In addition, the report provides a basis for review (step seven).

How to develop the reporting stage

The format, length and coverage of the report will depend on the type of assessment being carried out (integrated or *ex post*) and the resources which have been committed to the assessment. The type of document produced and the extent to which the ANSEA approach is integrated into the conventional DMP will depend on:

- the political culture of decision making;
- whether the ANSEA approach is undertaken by the proponent organisation or by an external, objective assessor; and
- the extent of public participation in the process and therefore, the type of documents needed for wider circulation.

For an integrated assessment, the initial ANSEA report will effectively be a plan for the implementation of the decision-making process. Further reports will also be required during or after the DMP to review how the prescriptions in the plan are being put into practice (see step seven, review). The frequency and format of reports will have been discussed and agreed during screening, step one and scoping, step two.

In general, the reporting stage of the ANSEA approach will involve:

- synthesizing the assessment of the decision windows;
- identifying the opportunities and threats in the decision-making process for an integrated assessment;
- identifying the strengths and weaknesses in the DMP for an evaluation or review of a partially or wholly completed process; and
- identifying the levers to improve the consistency of the DMP and to integrate the environmental issues better within the process. This is likely to take the form of recommendations and a review plan to inform step seven.

See Box 5.7 for suggested content of the report.

BOX 5.7 PROPOSED CONTENTS OF AN ANSEA REPORT

DMP implementation Plan

For an integrated assessment, the report will be integrated into the planning of the whole DMP and may include elements of public involvement and other DMP process description, in particular:

- information gathered during scoping and functional description stages;
- core environmental issues and implications to be covered;
- the likely decision windows at a relatively high level;
- what needs to be taken into account in planning tasks within each decision window;
- the indicators (reflecting specific procedural criteria) which will be used to review the success of the DMP; and
- a review plan.

Review during DMP

As the decision making progresses, a short review or report on each decision window or group of decision windows would also be useful. This will then feed into the main decision-making process and become integrated into the final assessment document (below).

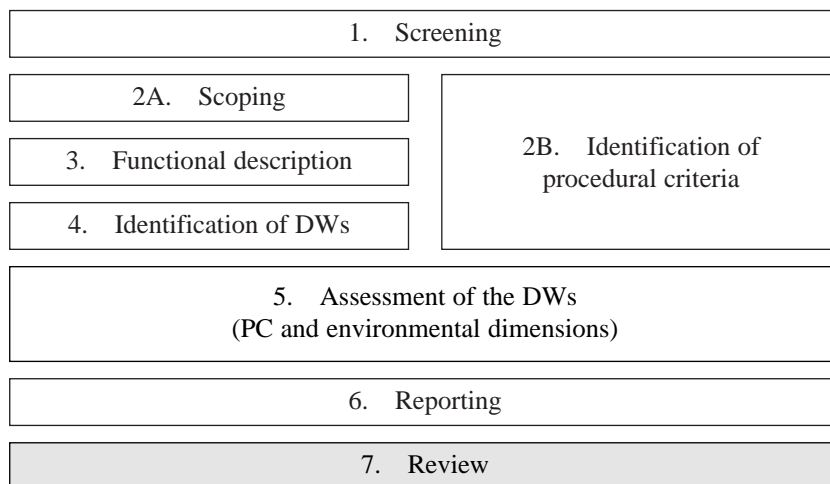
Each DW report will be a brief stand-alone document:

- describing the DW in detail (including its context, position in the DMP, and so on);
- presenting the core environmental issues and dimensions of the DW;
- emphasizing the results of the assessment against the PC and any recommendation for action, especially in relation to the remaining DWs.

Evaluation Report for a Completed DMP

The evaluation report will cover all the background elements of an integrated assessment and will also include an assessment of the overall quality of the decision-making process. Such a report may be a stand-alone evaluation report of the whole decision-making process.

5.3.8 Step 7: Review



Review is a common task in environmental assessment procedures. In the case of an SEA, this would normally take the form of monitoring whether any mitigating measures identified during the strategic environmental assessment had been implemented and whether the anticipated environmental consequences of the PPP have actually materialized as the PPP was implemented. Within the ANSEA approach, the role of review varies according to whether the assessment has been integrated or is an evaluation of a completed DMP.

In the case of an integrated ANSEA approach, the review stage involves ensuring that the DMP is progressing according to plan, as laid out in the ANSEA report. In the case of an evaluation of a completed DMP, the review will analyse critical assumptions underlying the alternatives considered in the PPP and the most critical environmental consequences of the final decision to be monitored during the plan life cycle. Review may also be carried out after the PPP life cycle to draw some lessons from past experience.

How to carry out the review step

An integrated ANSEA review Within an integrated ANSEA approach, the review stage will focus on whether the prescriptions for the process (that is, the procedural criteria against each decision window) have been followed. Review can be carried out against the ANSEA report in respect of the decisional boundaries and context, each of the main steps in the process and the decision windows (DWs) and their specific procedural criteria (prescriptions) in the report. Where the process has diverged from that

envisaged in the report, the reviewer will identify why this has happened and with what implications.

The review stage will be important in establishing whether the DMP is more consistent because it has helped those involved to focus better on good decision-making criteria (comprehensiveness, timeliness, transparency, participation and credibility) than might otherwise have been the case. By focusing on these procedural criteria, at each point where critical choices need to be made, the review stage should therefore determine whether environmental (or sustainability) values have been fully taken into consideration in the DMP.

An ANSEA evaluation review Within an ANSEA evaluation approach, the review stage will focus on the recommendations and lessons learnt in the ANSEA report. Where the evaluation has been carried out by a team including the PPP proponents, it would make sense to build the ANSEA review stage into a periodic review of the PPP. Where the evaluation has been carried out by independent assessors, then the review stage probably needs to be planned for separately.

Review of the PPP implementation would focus on three key points:

- whether the key assumptions (for example driving forces underlying the PPP such as population or demand-related assumptions in the case of a transport plan) are still valid during the PPP implementation;
- whether the measures identified on the basis of these assumptions are still valid; and
- the relationship between the environmental objectives identified for the PPP and the real achievements reached in each of its development phases. This might involve assessment against a set of indicators identified during the reporting stage.

5.4 CONCLUSION

The above-presented guidance and the application of the ANSEA approach to the case studies show that an *ex post* assessment of a decision-making process with the developed tools is possible. There is an added value for the decision maker in using the information in the forthcoming plan or programme.

The ANSEA approach thus delivers the benefits of SEA by providing a process-oriented analytical framework in which to carry it out. In addition, we consider that the systematic ANSEA approach could be used for other types of assessment including sustainability, health and gender impact assessment.

Furthermore, it could be assumed that the tools developed might be used for

an integrated assessment, even though there should be a further discussion on the application of an ANSEA approach. The tools have to be established and further developed and the role of the steps should be reviewed. There is a need to test the ANSEA approach in a real decision-making process.

6. Relating ANSEA to the European Directive on SEA

Olivia Bina

6.1 ANSEA's PRINCIPLES AND THE OBJECTIVES OF THE EUROPEAN SEA DIRECTIVE (2001/42/EC)

This section proposes a way of understanding the role of ANSEA's principles in relation to the new European Directive: Directive 2001/42/EC of the European Parliament and of the Council on the Assessment of the Effects of Certain Plans and Programmes on the Environment (hereafter 'SEA Directive').³

The ANSEA approach shares an overall remit, certain procedural steps and the increasing focus on decision-making processes with the more commonly known forms of SEA. It differentiates itself from SEA in terms of the central object of the assessment, which is the decision-making process itself, and focuses on an extended concept of assessment that merges the following dimensions:

- guidance for more transparent and informed decision making;
- on-going evaluation throughout all environmentally critical planning stages; and
- overall procedural auditing.

Hence, the ANSEA approach is presented as a methodology which takes forward some of the more recent developments in SEA practice and theory, as well as providing an innovative analytical scope, process and tools. It proposes a wider analytical scope to ensure a coherent overall decision-making process (DMP), including all significant stages with direct or indirect implications on the environmental dimension of strategic decisions. This leads to the consideration of many tasks and assessment processes, including some (for example, cost–benefit analysis) which are not specifically environmental.

Given these characteristics, the ANSEA approach can propose a set of principles and tools, which can enhance and strengthen the impact of SEA and hence, of the SEA Directive. In particular, the ANSEA approach could

provide support and effectiveness to the achievement of the following three crucial objectives of the Directive:

- the general strengthening of environmental policy, the integration of environmental protection requirements and the promotion of sustainable development (Preface §1 and Article 1);
- the emphasis on integrating environmental protection and promoting sustainable development during the preparation, as well as in the final phases before adoption of PPP (Articles 1, 4 and 8);
- the requirement for effective and appropriate consultation and public participation (Article 6).

These aspects are discussed in detail in the next paragraphs. Table 6.1 provides a summary of the potential benefits of adopting some of the principles and tools developed in the ANSEA approach, when implementing the SEA Directive.

6.2 OVERALL REMIT

Like SEA, ANSEA aims to contribute towards the systematic integration of environmental protection objectives and measures in strategic planning (policies, plans and programmes) and – given due consideration to the overall context of the application – ANSEA will contribute to the promotion of sustainable development. The principles and tools proposed here can potentially complement some of the activities required by the directive and strengthen its effectiveness in the light of its objectives.

Focus on Decision-making Processes

The DMP is the focus of the ANSEA approach. This reflects the belief that to secure integration of environmental concerns into sectoral PPP and, furthermore, to promote sustainable development in such sectors, it is necessary to have a systematic assessment and review of the DMP. Thus, the whole process of planning and decision making, including its information flows, analysis, deliberation and decision moments, should be the object of an assessment that can be conceived in different dimensions: guidance, ongoing evaluation and overall procedural auditing. This effectively shifts the emphasis away from the focus on assessing impacts or effects, towards a more holistic approach which increases opportunities for environmental integration during the many instances of information, deliberation and decision which lead to the formulation of ideas and proposals for development.

Table 6.1 Potential benefits of the ANSEA approach in implementing the SEA Directive (2001/42/EC)

European Community Directive on 'SEA' (2001/42/EC)	Relevance of the ANSEA approach	Contribution of the ANSEA approach to certain benefits expected from the application of SEA ⁴
Focus on Articles 174 and 6 of the Treaty referring to environmental policy, integration of environmental protection requirements and promotion of sustainable development (Preface §1)	Focus of the ANSEA approach is on the DMP and the institutional and organizational context (scoping, functional description and decision windows steps) can lead to gradual change in the overall context of policy making, towards long-term integration and sustainable development.	Institutional issues and long-term change
Emphasis on 'integration' of environmental protection into the preparation and adoption of PPPs and the promotion of sustainable development (Art.1)	The principal role of the ANSEA approach is to act as an advocate of environmental (and sustainability) values throughout a DMP, starting from the earliest possible phase of planning and/or policy making. In doing so, all steps in the ANSEA approach will contribute to a more general awareness-raising process, the effects of which can go beyond the specific boundaries of the PPP under assessment, to influence the wider organizational and institutional structures.	Advocacy and awareness raising
Emphasis on consultations and public participation (Art.6)	Emphasis of the ANSEA approach on the organizational structure and the decisional boundaries (including what preceded and what will follow the decision on the PPP under assessment) is aimed at maximizing co-ordination and integration across strategic planning levels, down to single projects (scoping stage).	Collaboration, co-ordination and communication

By calling for a clear overview of the organization and stakeholders involved, it aims to promote collaboration and effective and transparent communication. The interaction between different parts of the organization(s) involved and the stakeholders should lead to mutual learning.

Emphasis on ‘integration’ of environmental protection into the preparation and adoption of PPPs and the promotion of sustainable development (Art.1)

The input and subsequent utilization of information and data during various stages of the DMP is at the centre of ANSEA’s methodology. Information is part of one of the three key dimensions of the IAO framework: Input-Analysis-Output, at the centre of several steps of the ANSEA approach. The aim is to ensure that the quality of the information and the manner in which it is introduced and used in the DMP are the best available and the most consistent with environmental values.

Information on environment and sustainable development

Emphasis on the need to carry out the assessment ‘during the preparation’ of a PPP, ‘before its adoption’ (Art.4 and 8)

When applied as an integrated assessment, the main contribution is in terms of the provision of recommendations and detailed guidance on the procedure, which should secure the integration of environmental and sustainability values throughout the DMP.

Guidance

Emphasis on the need to carry out the assessment ‘during the preparation’ of a PPP, ‘before its adoption’ (Art.4 and 8)

The two modes of assessment – integrated and *ex post* can be used to maximize the impact of the ANSEA approach, but also the transparency and accountability of the DMP under assessment. The initial recommendations and guidance and the results of the DW assessments (integrated mode) and the final audit-type evaluation of the entire DMP (*ex post*) provide substantial auditable material.

Transparency and accountability

The Directive clearly stresses the need to carry out an assessment during planning, rather than towards its end or even just before its approval. However, its emphasis is on the assessment of likely effects of plans and programmes, rather than on ensuring a systematic integration of environmental concerns and values throughout the whole process, as proposed by the ANSEA approach.

There is now a significant body of SEA literature that devotes increasing attention to the need to focus on the planning processes leading to the definition of PPPs. Here the ANSEA approach can make an important contribution, proposing a way of structuring such a ‘systematic assessment and review’, designing a framework through which the DMP can be interpreted, analysed and hence improved.

The ANSEA approach devotes four stages to the description and analysis of the DMP:

- scoping;
- functional description of DMP;
- identification of decision windows (DWs); and
- identification of procedural criteria (PC).

These stages are discussed in more detail below. They help to disaggregate the DMP into inputs, analysis/deliberation and outcomes, with the aim of identifying decision windows, which are the object of the assessments (before, during and after a decision has taken place) that can be carried out through the ANSEA approach. These steps and the emphasis on decision windows and procedural criteria are the contribution to the increasing call for an integration of the planning and assessment processes, central in the directive, as well as common in recent SEA literature.

6.2 Approaches that can Complement the Activities Required in the Directive

Taking a good look at the decision-making process

Scoping is becoming a crucial stage in SEA. The ANSEA approach builds on this trend and ensures scoping as the central part of the process. The scoping includes:

- a description and analysis of the legal and institutional context;
- the decisional boundaries (including the background policies and plans that precede the current initiative and the plans or programmes which may derive from it in the future);
- the organisational framework (actors, stakeholders);

- a description of the environmental dimension of the decision and related PPP.

The first three activities establish the foundations for understanding and mapping out the broad character of the DMP as it can be envisaged during the very early stages of planning. Hence, the effort during ANSEA's scoping is centred around the need to provide a framework within which to integrate the environmental protection and sustainability dimensions, called for in Article One of the Directive. This can be effectively combined with some of the more traditional activities required by the Directive, which target the substance of the proposed plans and programmes from an environmental point of view (Article 5 and Annex 1):

- identification of the range of potential significant effects;
- identification of the range of reasonable alternatives;
- relevant aspects of the current state of the environment;
- identification of the environmental characteristics of areas likely to be significantly affected;
- identification of any existing environmental problems which are relevant to the plan or programme;
- identification of the environmental protection objectives which are relevant to the plan or programme.

The nature of the activities during scoping will require a consistent process of consultation, as well as the involvement of the public, to ensure comprehensiveness, accuracy and transparency of the findings.

Translating the DMP into a framework that facilitates its systematic assessment

The scoping stage leads to three further stages: functional description, identification of decision windows and identification of procedural criteria. Each of these three new steps further contributes to the ANSEA approach by producing a framework for the systematic analysis of the DMP based on decision windows.

The functional description stage helps to breakdown complex DMPs into key moments or actions according to the IAO Framework. See section 5.2.1 (p. 54) for details. The description also highlights the feedback loops between various stages of a DMP and the hierarchy of decisions that will need to be taken throughout. It flags the potential environmental dimension, opening the way to the identification of decision windows, the focus of all assessments.

Decision windows (DWs) are the 'tool', which provides a systematic

framework through which one can operate to integrate environmental concerns during planning activities. They are defined as ‘moments in the DMP where critical choices are made that have environmental implications’. Critical choices may relate to: inputs, analysis or outputs (IAO Framework) which could have a direct or indirect effect on the environment. For example, the various moments and choices involved in specifying the issues and focus of a future aid strategy for country X:

- Input dimensions:
 - the formal Government’s assignment to prepare a strategy for country X (for example Foreign Ministry)
 - available background studies on country X
 - other considerations or objectives expressed by interested ministries
- Analysis/Deliberation dimensions:
 - Professional judgement (project group meetings)
- Output dimensions:
 - Common understanding of the development problems and opportunities in country X: the issues to be addressed by the strategy.

DWs are selected from the results of the functional description for their potential direct or indirect effect on the environment. Given the importance of DWs, a high level of consultation and public participation is recommended during their discussion and selection, which is likely to be an iterative process. This again can be seen to complement the Directive’s emphasis on consultation and public participation over the draft plan or programme and the accompanying environmental report (Article 6). Through the identification of DWs, the ANSEA approach expands the scope of consultation and public participation to the analysis of the DMP structure itself.

Defining ‘procedural criteria’ for on-going assessments of the DMP

Finally, the ANSEA assessment requires the formulation of procedural criteria (PC): prescriptions on how to facilitate the incorporation of environmental values throughout planning and decision making. The final report suggests five broad categories of criteria which should be applied systematically to all DWs identified (that is: before, during and after a DW is completed, see Figure 6.1). Details of the criteria can be found on p. 80. The five categories should be adapted and operationalized taking into consideration the type of DMP, the nature of the plan or programme and the general institutional and cultural context in which it is being developed. The identification and detailed definition of the PC should, again, result from consultation and public participation.

In practical terms, it is recommended that the criteria should be translated

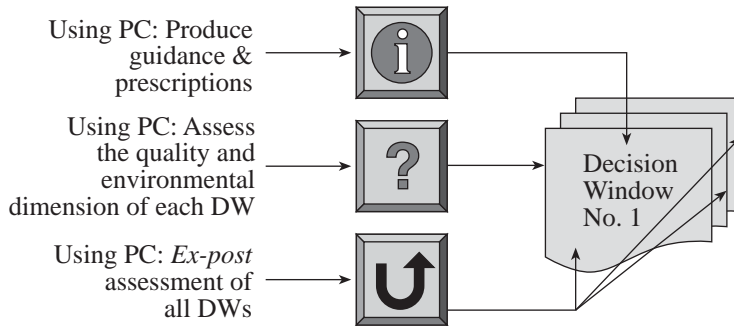


Figure 6.1 Using PC and DWs to assess the DMP

into a series of simple questions prompting the consideration of the values they represent whenever this is relevant in a DW. For example:

- For an input-type activity in a DW, the PC can be expressed thus: *Were comprehensive sources of information considered?*
- For an analysis-type activity: *Has an integrated approach been taken?*
Or: *Was an appropriate set of analytical tools considered for the analysis?*
- For an output-type activity: *Was the outcome of the decision appropriate in scope (for example sustainability, including social and economic development issues)?*

While the applications of SEA have varied significantly in the last six to eight years, the assessment phase of an SEA is invariably focused round the proposed PPP objectives and strategy, and not necessarily on the design of the plan. The Directive stresses the need to report on ‘the likely significant effects on the environment of implementing the plan or programme’ and to identify, describe and evaluate ‘reasonable alternatives’ (Article 5). Hence, an SEA based on such requirements will predict and evaluate the potential environmental effects of the proposed PPP.

In the ANSEA approach the assessment targets the whole DMP (through its critical decision windows). It aims to ensure maximum consideration of the environmental and sustainability dimension of all the components of decision windows (inputs, analysis/deliberation and outputs) through the use of procedural criteria (PC). In this sense, the scope of the ANSEA approach will be wider than that required by a strict interpretation of the Directive, thus complementing and strengthening the impact of the Directive’s requirements.

The actual assessment of potential environmental effects, crucial in the Directive, will be one of the decision windows identified in the earlier stages (scoping, functional description and identification of DWs). It will therefore be itself subject to an assessment using PC, together with the other DWs. The ANSEA approach can be used in two forms:

- as a fully integrated assessment during planning: used *ex ante* to develop recommendations and guidance on opportunities for better integration in all decision windows (and related IAO activities). Once a DW is completed, its performance can be assessed against procedural criteria;
- as an *ex post* evaluation: used to assess the quality of the DMP once completed (treated as a combination of all DWs identified) and to provide recommendations and lessons learned for the benefit of future processes.

PART III

Illustrating the ANSEA approach in practice

7. Practical illustrations of the ANSEA approach

Pietro Caratti

The third part of the book is specifically aimed at planners, environmental assessors and authorities responsible for PPP development who need some more practical illustrations of the ANSEA approach in order to carry out or assess a decision-centred Strategic Environmental Assessment. For this purpose, the following sections are aimed at illustrating, by means of two explanatory examples, how the ANSEA concepts and tools developed may be applied. These examples, analysing the significant environmental implications of specific decision-making processes through step-by-step application of the ANSEA approach, are based on information collected and processed in two of the eight case studies developed within the European Analytical Strategic Environmental Assessment project. An overview of the role of the case studies in the evolution of the ANSEA approach is outlined in the next paragraph in order to underscore the difference between the present explanatory purpose of the proposed two examples and the original aim of all the case studies developed during the project.

7.1 THE ROLE OF CASE STUDIES IN THE DEVELOPMENT OF THE ANSEA APPROACH

The aim of carrying out the case studies during the project was to give a clear profile to the ANSEA methodological elements and to verify that such elements could be embodied in reality through an *ex post* analysis of different PPPs. The case studies were used as a ‘learning by doing’ exercise to review the ANSEA concepts and improve the approach with a view to making it more operational.

Eight case studies and two SEA reviews were carried out in eight EU countries on different planning scales in a broad range of policy areas (see Table 7.1).

Box 7.1 describes the eight case studies and two SEA reviews.

Table 7.1 Case studies and SEA reviews undertaken for the ANSEA project

	Plans and programmes	Country	Scale	Sector
1	Country strategies in Swedish bilateral development co-operation	Netherlands	Regional	Development Strategies
2	Afforestation Plan of Agricultural Lands in Spain	Spain	National	Agriculture
3	Expansion Plan for the Electric System for Public Service	Portugal	National	Energy
4	The Federal Transport Infrastructure Planning	Germany	National	Transport
5	Waste Management Plan of Liguria Region	Italy	Regional	Waste
6	Humber Estuary Shoreline Management Plan	UK	Regional	Water
7	Aeolian Plan in Castilla and León	Spain	Regional	Energy
8	General Urban Plan of Puerto de la Cruz	Spain	Urban	Territorial Planning
9	Spatial Planning in Ijburg	Netherlands	Urban	Territorial Planning
10	Valladolid and surroundings Territorial Planning	Spain	Urban	Territorial Planning

BOX 7.1 CASE STUDIES AND SEA REVIEWS DEVELOPED WITHIN THE ANSEA PROJECT

Plans and Programmes Considered in the Case Studies

- **General Urban Plan of Puerto de la Cruz (TAU Consultora Ambiental. Madrid, Spain)**

According to Spanish legislation, every municipality is obliged to plan the use of its territory with specific urban tools and legislation, delimiting built areas and indicating how the rest of the territory must be occupied and used and, if pertinent, where and how the town will expand. The formal output of this planning activity is the General Urban Plan. The case study is focused on urban planning in a coastal city, Puerto de la Cruz (Tenerife, Canary Islands).

- **Country strategies in Swedish bilateral development co-operation (Stockholm Environment Institute (SEI). Stockholm, Sweden)**

The Swedish International Development Co-operation Agency regularly formulates country strategies for the main recipient countries in order to improve coherence and effectiveness in bilateral development co-operation. The country strategy outlines priority development areas, forms of co-operation and collaboration partners.

- **Spatial Planning in Ijburg (Netherlands) (International Institute for the Urban Environment (IIUE). Delft, Netherlands)**

This case study concerns the choices and development of the planned housing location Ijburg (Amsterdam). The rapid population growth and changing family membership in the Netherlands requires building new houses. Amsterdam has an outline plan to build 40 000 houses, to be realized between the late 1990s and 2015.

- **Humber Estuary Shoreline Management Plan (Environmental Resources Management (ERM). London, UK)**

This plan provides the strategy for investment in flood defences. The estuary is located on the East coast of England

and is one of the principal estuaries of the United Kingdom. Its river basin covers 24 000 square kilometres, a fifth of the land area of England, and has a population of about 11 million people, of which over 300 000 live on the tidal flood plain and are protected by flood defences.

The flood plain is of great importance for social, economic and environmental reasons. It contains much industry and agricultural land of high quality. It also features historic buildings, landscapes and archaeological sites of great importance for the local identity. The estuary itself is internationally recognized for its natural conservation value, as well as its network of ports, which are vital for the country's economy.

- **Afforestation Plan for Agricultural Lands in Spain (Escuela Técnica Superior de Ingenieros de Montes, Universidad Politécnica de Madrid (UPM). Madrid, Spain)**

The Plan is the national implementation of one of the accompanying measures of the EU Common Agricultural Policy (CAP) which promotes the conversion of agricultural land to forest land. The Plan promotes afforestation as an alternative use of agricultural land and development of forestry activities on farms in order to achieve the agricultural and sustainability objectives of the CAP. It tries to contribute to forms of environmentally and economically sustainable rural management.

- **Expansion Plan for the Electric System for Public Service (Foundation of the Faculty of Sciences and Technology of the New University of Lisbon (FFCT). Lisbon, Portugal)**

The main objective of the plan is to establish the expansion strategy for the National Electric System for Public Service in the period 2000–2020, taking into consideration various restrictions imposed by the national energy policy, including those relating to the environment.

- **The Federal Transport Infrastructure Planning (Wuppertal Institute (WI). Wuppertal, Germany)**

The Federal Transport Infrastructure Planning is a long-range plan for German long-distance transport infrastructure (railways, inland waterways and motorways). It provides the financial framework of long-distance roads and motorways. It is called an integrated transport plan combining the goals for

different transport modes. It is a planning process with a long time horizon of 20 years.

- **Waste Management Plan of Liguria Region (Fondazione Eni Enrico Mattei (FEEM). Milan, Italy)**

The main objectives of the waste management plan for the Liguria Region consist of reducing waste, achieving re-use and waste separation targets, minimizing environmental impacts, optimizing costs, developing work opportunities and ensuring transparency in decision making.

The most innovative aspect of the regional waste management plan consists of its systemic and integrated approach to waste disposal. This plan considers waste management not as a sum of separate issues (production, collection, transport, recycling and disposal), but as a whole system of different integrated steps constituting a coherent waste system.

Plans Considered in SEA Reviews

- **Review of SEA on the Aeolian Plan in Castille and León (TAU Consultora Ambiental, Madrid, Spain)**

The SEA of the Aeolian Plan is the answer to the normative demand set by this Spanish Autonomous Region, which states that plans and programmes having effects relating to the environment should carry out an SEA. The Castille and León Aeolian Plan is the result of selecting areas with bigger Aeolian improvement potentiality through cartography, thus selecting the most economically and technically useful areas. Different alternatives depending on environmental sensitivity, technical viability, energy alternatives and development of the area were also given. It aims at structuring the heavy demand for the authorization of installations for wind power production.

- **Valladolid Area Territorial Planning Guidelines (TAU Consultora Ambiental. Madrid, Spain)**

The SEA of the Valladolid Area Territorial Planning Guidelines fulfils the Spanish Autonomous Region's normative demand, which dictates that plans and programmes having relevant effects on the environment should carry out an SEA. The territorial planning guidelines are made in order to solve the conflicts linked to the land use

in Valladolid (capital city of Castille and León, Spain) and the neighbouring villages.

The area is characterized by a largely central congestion, derived from a very compact urban structure and dispersed surroundings with low population density. This generates an increase in urban mobility (residence–workplace) between the highly congested centre and surroundings. The main guideline objective is to introduce rationality criteria, balance and efficiency in the Valladolid urban system without repealing the urban planning that is in force.

Even though the aim of the case studies was not to test the practical feasibility of the ANSEA approach, but to gain an insight into its self-consistency, a few conclusions can be reached as a result of this exercise. Positive comments were expressed by some planners interviewed and some authorities responsible for SEA, in particular on the usefulness of the functional description and the central decision window concept. Moreover, some tools developed were considered to be easily applicable in common practice. Specifically for iterative and periodically reviewed PPPs, the *ex post* ANSEA assessment was recognized as a valuable source of information in view of a forthcoming renewal of PPPs.

However, despite this encouraging, but still preliminary feedback on the *ex-post* implementation of the ANSEA approach, the viability of a decision-centred SEA still needs to be tested in reality.

8. Case study – the German Federal Transport Infrastructure Planning (FTIP)

Holger Dalkmann and Daniel Bongardt

8.1 OVERVIEW

The subject of this case study is the German Federal Transport Infrastructure Plan (FTIP). The FTIP is a long-term plan for German long-distance transport infrastructure (railways, inland waterways, motorways). It provides the financial framework of the transport infrastructure owned by the Federal Republic of Germany. It is called an integrated transport plan, combining the goals for different transport modes.

Even though mentioned in publications of the ECMT (ECMT 2000), no regular Strategic Environmental Assessment (SEA) was carried out for the 1992 FTIP (Bundesverkehrswegeplan 1992). Yet different tools such as cost–benefit analysis and ecological risk analysis exist to support decision making and incorporate environmental aspects. In relation to other strategic plans of the federal government, the 1992 FTIP is methodologically one of the most advanced planning processes because it uses scientific forecasts and valuation methods. The long-term character of the FTIP, its large, environmentally relevant impacts and its advanced valuation tools make this plan an interesting subject for the application of the ANSEA approach.

This case study provides an example of an ex post assessment. Due to the fact that it was carried out mainly based on desk research and not on a real assessment process, the output provided is limited. The objective is to give an example of what an assessment could look like. Due to the summary character of this document, the focus will be on examples that show how to implement the developed tools at a specific stage in an ANSEA assessment. In a real assessment process, every step has to be developed as the given ones are.

8.1.1 Background of the Case Study

The Federal Transport Infrastructure Plan provides a good example of planning in the federal structure of the German governmental system, which

might have unique opportunities and problems in implementing SEA in relation to other Member States of the European Union. There are several publications concerning a possible SEA implementation in the FTIP (for example Hoppenstedt 1997). In 1995, there was a study of the feasibility of SEA for the FTIP by Wagner, Jansen and Kleinschmidt for the European Commission (Wagner, Jansen and Kleinschmidt 1995).

The last FTIP was updated in 1992 and the government was expected to present a new FTIP in 2003. Thus, an ongoing discussion is taking place about extensive changes to the FTIP, especially concerning environmental issues. This will supply a current context for the case study.

Due to the renewal of the FTIP, the case study makes a distinction between the finalized FTIP 1992 process and the ongoing FTIP 2003. Taking into account the same planning subject and a lot of similarities, it is necessary to distinguish between 1992 and 2003. The improvement of environmental valuation methods and some changes in organizational structure are important differences when evaluating the ANSEA capability.

8.1.2 ANSEA as a Process Assessment

The ANSEA approach can be applied to a decision-making process when the process is ongoing or after its conclusion. If the process is iterative and periodically renewed, like the FTIP, there is an option of assessing a completed process *ex post* as a basis for a forthcoming *ex ante* assessment. Thereby a review of the assessed processes could have an added value.

The following paragraphs describe the seven steps of the ANSEA procedure in detail. It must be mentioned that, apart from the expert interviews, the results are based on desk research and provide suggestions as well as possible outputs for the ANSEA process. To test the instrument in detail, an implementation must be carried out.

8.2 SCREENING

In this first step it must be clarified whether the decision-making process of a PPP has a significant environmental impact. Screening in ANSEA is similar to screening in a regular SEA. Hence, the usefulness of the assessment has to be proven, so a decision can be made on whether to carry out an ANSEA assessment. Therefore, the recommendation of the EU in the SEA directive is the basis for screening. In this context, it is emphasized that ANSEA is not only for plans and programmes, but it also has comprehensive possibilities in assessing policies as well.

In the screening phase it is necessary to declare whether there is any similar

regular plan which could be evaluated *ex post* to integrate the input for a forthcoming *ex ante* analysis. This is likely in iterative PPP. Furthermore, the relation to a regular SEA has to be defined. An ANSEA assessment could be carried out alone, but could also be a part of SEA.

The FTIP is affected by the EU Directive and, following the recommendation, this plan should apply for an ANSEA approach. It establishes a framework for projects affected by the EIA Directive 85/337. In addition, there is a clear connection to Article 3 (2a) of the SEA Directive, where transport is identified as one of those sectors.

In the description of the background and aim of the FTIP, the environmental dimension was clearly stated. Future transport infrastructure development causes broad environmental effects like noise, habitat fragmentation, further emissions and greenhouse gases. So it is quite obvious that there is a need for ANSEA.

Furthermore, the FTIP can be interpreted as an iterative process, which implies the option to assess a former FTIP like the 1992 FTIP *ex post* as a basis for the integrated assessment of a future planning process. The *ex post* evaluation offers the option that ANSEA analysis could be undertaken during the agenda-setting phase, before the official FTIP process starts, so that the results are already accessible in early phases of the FTIP. As a consequence, the review process could be carried out before the final decision about the FTIP is taken.

8.3 SCOPING

In the scoping phase, the objective and boundaries of the assessment are defined. In addition, the framework of the assessment has to be described. As stated previously, it is crucial for an ANSEA assessment to remain on the strategic level and define the scope of the assessment. Like the SEA, the analytical strategic environmental assessment is positioned within a tiered planning system and the assessment has to focus on the environmental effects of the PPP which are adequate to the level of PPP.

Because the decision-making process is the object of assessment, some background information about the process assessed is needed. Within this scope the following must be identified:

- history of the FTIP;
- environmental impacts of planning;
- institutional framework;
- stakeholders; and
- objectives.

Based on this information, the range of analysis and a suitable methodology will be defined. This is crucial for further steps of the assessment, especially the functional description.

8.3.1 Background of the FTIP

History

The first German integrated national transport infrastructure plan (FTIP) was drawn up in 1973. Financial deficits of the German Federal Railways (*Deutsche Bundesbahn*) and the discussion about the efficiency of planning brought up the idea of an integrated planning procedure for all transport modes. In 1976 a co-ordinated investment programme updated the first FTIP. The 1980 FTIP replaced this programme and established a general planning procedure. In 1985, methods and instruments were improved.

The regular five-year renewal of the FTIP has not been carried out since 1990 because the unification of Germany caused a special situation for transport planning. Rail, road and water links between West and East made up the so-called 'Transport Projects of German Unification' (*Verkehrsprojekte Deutsche Einheit*) and came to be the focus of planning. They are systematized in the latest, 1992 FTIP. The plan is a finished planning process with a long time horizon of 20 years.

In 1998, the extensive rise in costs for projects of the 1992 plan required two *ad hoc* investment programmes (*Investitionsprogramm 1999–2002* and *Anti-Stau-Programm*) in which the number of projects in the 1992 FTIP was reduced. The programmes are not independent plans with scientific valuation procedures or forecasts, but tend more to bridge the gap leading up to a new FTIP in 2003.

Environmental impacts of the FTIP

Transport infrastructure construction has a broad range of environmental impacts. Besides the direct impacts (such as separation effects) on landscape, the use of transport infrastructure causes additional problems. There are harmful direct and indirect emissions from motor vehicles and trains like CO or NO_x. Moreover, noise and greenhouse gases like CO₂ influence the environmental situation. In Germany, 21 per cent (BMVBW 2000a) of total national CO₂ emissions in 1998 was caused by transport.

The CO₂ emission brought about by building new infrastructure is hard to measure. In Germany there are still differences between transport infrastructure in East and West. Where the FTIP is concerned, large projects in eastern Germany may change driving and living conditions of the people, while in the main parts of the former West Germany, the transport infrastructure has been established since the 1970s. Noise emissions are another environmental

impact connected to transport infrastructure. Within this field, projects can change the local situation drastically.

Institutional framework

In Basic Law (*Grundgesetz*), the constitution of the Federal Republic of Germany, the Federal Government is recognized as the owner of the federal highways and Autobahns and the federal railways (Art. 89/90 GG). This assignment is specified in the Federal Trunk Road Act (*Bundesfernstraßengesetz*) and the Railway Act (*Allgemeines Eisenbahn Gesetz*). According to paragraph three of the Federal Trunk Road Act, the Federal Government is responsible for building, maintaining and improving national roads (Rink 1997). The Federal Government plans, builds and finances the federal transport infrastructure.

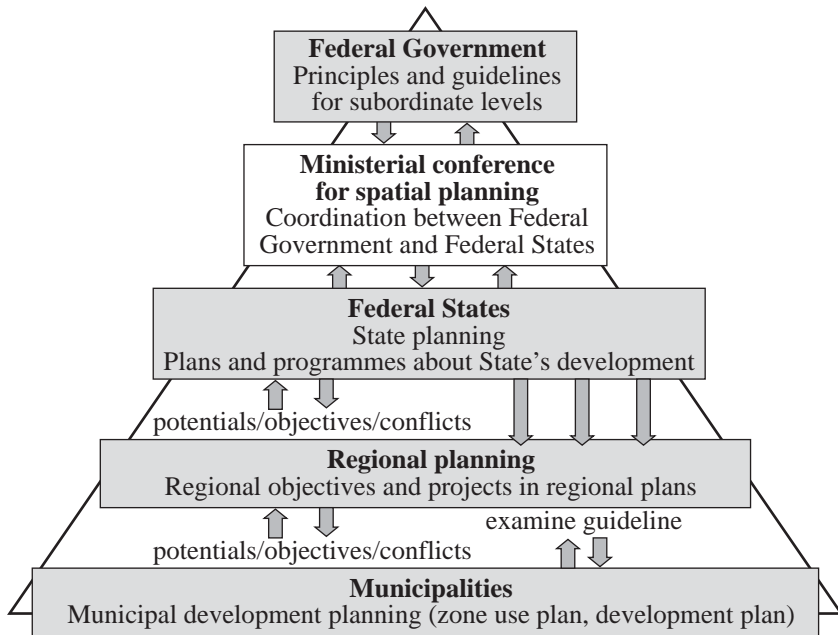
Therefore the Trunk Road Extension Act (*Fernstraßenausbaugesetz* – FStrAbG) and, similarly for railways, the Federal Railway Extension Act (*Bundesschienenwegeausbaugesetz* – SchwAbG) regulate planning in respect of transport demand. A demand plan, which ranks the need for the incorporated projects, is attached as an annex to each of these extension acts. The demand plans have to be reviewed after five years. For realizing the demand plans, the transport minister has to set up a five-year development programme.

Within this planning system, the FTIP can be defined as a long-range investment plan for federal transport infrastructure. It is an instrument to coordinate and prioritize transport infrastructure investments of the Federal Government. The FTIP incorporates new roads and railways and reconditions existing transport infrastructure as well.

The FTIP is the basis for single-mode demand plans (*Bedarfspläne*) defining the needs of transport infrastructure construction. These follow-up plans become law through the Federal Parliament as transport infrastructure extension acts (*Fernstraßenausbaugesetze* and *Schienenwegeausbaugesetze*). These laws must be renewed every five years. In general, a new FTIP will form the basis of this renewal, but it is not formally required.

Transport infrastructure planning must be seen in the context of national transport policy as well as in that of the federal structure of the German planning system. Executive power is shared between the Federal Government, the states (*Länder*), administrative districts and municipalities. The German planning system can be described by the term counter-current principle (*Gegenstromprinzip*). It is an important feature (Fischer 1999a) of the spatial planning system. It is neither organized in a top-down nor a bottom-up manner – instead, frameworks are developed at national and state (*Länder*) level taking into consideration inputs from lower decision-making units. The final decisions are made at the lower levels, but higher-tier authorities always check

them. Transport planning is to a certain degree incorporated in this system of demand plans (*Raumordnungsverfahren*) and plan determination procedures (*Planfeststellungsverfahren*). Furthermore, transport planning has a special role due to the ownership characteristics of the transport infrastructure. The constitution (Art. 89/90 GG) states that the Federal Parliament (*Bundestag*) is responsible for national trunk roads and motorways. Figure 8.1 visualizes the vertical integration of different planning levels in Germany.



Source: Wuppertal Institute

Figure 8.1 Vertical integration of planning levels in Germany

The task of the FTIP can be seen as the choice of projects within a defined budget for transport infrastructure. These projects are worked out among the conflicting economic, spatial and environmental goals and interests that are represented by different stakeholders. Therefore, the FTIP is a negotiation process and the final product is closely related to the organization of the process and the degrees of influence of the various stakeholders.

The FTIP is embedded in this planning system and focuses on up to 100 railway projects, 1500 to 2000 road projects and a number of inland waterway projects. It has a time horizon of 10 to 15 years. The 20-year horizon of the

1992 FTIP was an exception and must be seen against the background of German reunification.

The link between general transport policy and infrastructure construction as part of the policy decision-making process (and other transport policy instruments like fuel taxes or road pricing) is relatively weak. The current decision-making process concentrates on implementing a single project proposed by the Länder. In most cases there is no general network-level perspective.

Objectives

In 1990, the reordering of transport infrastructure investments due to reunification was stated to be the most crucial goal. There have been five important areas of objectives: mobility, environment, investment and financing, participation and acceleration of planning. It exists as a general target system (see Table 8.1) in which structural goals derived from the

Table 8.1 Target system of the FTIP 1992 – structural and performance goals

Structural goals	Performance goals
Reduction of transportation costs	Reduction of vehicles standing and operating costs
Reduction of travel time	Reduction of travel time; shortening of routes
Improvement of safety	Reduction of casualties, injuries and material losses by accidents
Improvement of spatial structure	Improvement of accessibility, improvement of job supply in weak areas
Relief of environment	Reduction of noise, air pollution and separation effects of traffic
Saving of nature and landscape	Less consumption of land which can be used in other ways; avoidance of water pollution as well as dangers for flora and fauna
Use of other benefits outside the transport system	Such as improvement of the value of natural areas for recreation; use of inland waterways for water supply

national transport policy are allocated to specific performance goals. A further development of the different targets into substantive indicators is missing. Those indicators could be a basis for the valuation procedure or final decision and monitoring.

Stakeholders

The federal structure of Germany allows the Länder to have a strong influence on national planning, even if the Federal Minister of Transport and the Parliament have the formal decision-making authority. In principle, the federal government is entitled to oblige the Länder and municipalities to follow instructions to build roads. Yet, in practical planning there is a need for consensus between the national and the state level.

Therefore, the 16 German Länder have wide-ranging responsibilities in road and rail planning. On the one hand, they are responsible for state roads and on the other, they plan and build national roads as defined in the FTIP and financed by the central government. When the FTIP has passed the federal institutions, the Federal Minister of Transport delegates the final determination of routes back to the Länder. A third aspect is that the Länder collect proposals on the need for new roads and inform the federal government. Finally there is power of the Länder through the Länder Parliament, the *Bundesrat*, where the laws relating to the FTIP must be approved.

Beside a vertical need for consensus, a horizontal need for consensus between the different ministries can be stated to exist. The governmental divisions have to agree on the FTIP. Correspondingly, different authorities represent economic, spatial and environmental interests. In addition, the Ministry of Transport strives for an FTIP on which the different parties agree. So far, all trunk road extension acts have been approved by strong majorities.

8.3.2 Range of Analysis

The main objective of the ANSEA approach is to assess the decision-making process. For this assessment, a definition of the boundaries and the level of detail is necessary. Therefore the range of analysis deals with the general question of which level of (sub-) decision should be recognized in the analysis. In general, it depends on the level and the kind of PPP as well as on the time horizon, spatial level and financial budget.

In this case study the environmental impacts, the institutional background, the objectives and the stakeholders of the planning procedure provide a basis for this definition. In a real assessment process, there should be an agreement on the level of analysis. For the chosen example, the range of the analysis could only be defined on a broad scale.

The environmental implications of the FTIP are comprehensive and recognized at different levels. To integrate an ANSEA analysis in a tiered assessment approach and to remain on a suitable route of analysis, the focus of the assessment should be on long-range effects like climate change, large-scale separation effects and induced traffic. It will be impossible to consider all the noise effects of the proposed roads and railways.

In the functional description it has to be decided at which level of sub-decision the examination ends. Because the case study is an *ex post* assessment, this can be rather detailed. Due to the fact that the FTIP has a long history and is highly documented and well-structured, this task can be achieved. Whether this detailed analysis is necessary in all phases of the FTIP has to be clarified during the functional description.

8.3.3 Methodology

There are a lot of publications dealing with the formal process of federal transport infrastructure planning and the pros and cons of the valuation methods used. However, there is almost no information about co-operative decision-making processes within the FTIP. The different influences of the stakeholders' interests and the consideration of valuation instruments cannot be found in the literature. Due to the lack of information about environmental decision-making in the FTIP process, further examination such as interviews and the use of primary sources was necessary.

To supply additional information about decision-making in the FTIP process, ten expert interviews were carried out during February 2001. The interview partners consulted were chosen from the organizations involved in the FTIP process. Besides the representatives of the Federal Ministry of Transport (BMVBW), members of the administrations of the Länder (Ministries of Transport), consultancies and environmental and spatial planning authorities were interviewed.

Three basic subjects were covered in all interviews:

1. a 'description of the FTIP' to support the functional description of the decision-making process;
2. 'potential for optimization' as a basis for the identification of decision windows; and
3. 'the ANSEA approach', given that the ANSEA project was in an early stage.

The conclusion reached was that the method of carrying out expert interviews has an added value for an ANSEA assessment.

8.4 IDENTIFICATION OF PROCEDURAL CRITERIA

The next step of an ANSEA approach is the identification of procedural criteria (PC). The task at this stage was to specify the PC in such a way that they matched the assessed PPP and the FTIP.

The PC presented are likely not to be the only criteria to be developed for decision-making processes. These criteria provide principles of ‘good decision making’. The five PC used in the ANSEA assessment so far are presented in Table 8.2.

Table 8.2 Questions related to the procedural criteria

Comprehensiveness	<ul style="list-style-type: none"> ● Were comprehensive sources of information/input considered? ● Has an integrated approach been taken? ● Was the outcome of the decision appropriate in scope?
Timeliness	<ul style="list-style-type: none"> ● Were inputs available in a timely fashion? ● Was analysis undertaken in a logical sequence? ● Was the decision taken in a logical sequence?
Transparency	<ul style="list-style-type: none"> ● Are information sources transparent? ● Is it obvious what kind of techniques, models and tools have been used? ● Was the outcome of the decision and how stakeholders’ views fed into this clearly communicated to all stakeholders?
Participation	<ul style="list-style-type: none"> ● Were appropriate stakeholders involved in a timely and appropriate manner in providing information, generating options and defining the scope? ● Were appropriate stakeholders involved in a timely and appropriate manner in interpreting the results of the analysis? ● Were appropriate stakeholders involved in the deliberating stages leading to the final decision?
Credibility	<ul style="list-style-type: none"> ● Does the quality of the input information reflect the scope of the decision and resources available? ● Was the tool or method used in the analysis appropriate for the level of decision? ● Does the reliability and quality of the decision reflect its potential environmental/sustainability outcomes?

In a completed ANSEA assessment, PC are presented as basic principles in the methodology. Based on the five suggested criteria, more specific criteria need to be developed. The PC were thus transformed into general questions. By relating these questions to the specific context of the FTIP, questions emerged that represent the specific criteria of the FTIP. These specific PC will be used in the assessment of decision windows (DW) to reflect what is relevant for a specific decision window in a given decision process. Table 8.3 provides a list of the specific criteria by prompting questions, using IAO framework. Even if the specific criteria are related to the FTIP, these questions are still on a general level. In the assessment of DWs, these questions will be further specified and directly related to the implications of the DW.

8.5 FUNCTIONAL DESCRIPTION OF THE DECISION-MAKING PROCESS

During the functional description, the main steps and tasks of the FTIP are portrayed as a basis for the analysis of decision windows and procedural criteria. This step is crucial in ANSEA to the understanding of the decision-making process of the PPP assessed. As a result, it is closely related to the scoping phase.

Based on the agreed objective during the screening phase, the functional description is realized for the completed PPP. The range of description depends on the assessed PPP and the level of analysis that is agreed upon during ANSEA scoping. Due to the fact that the FTIP is a comprehensive and well-structured planning process, the level of analysis was carried out in detail. In order to remain within a readable number of pages, this case study contains only the part ‘valuation of projects’ from the entire functional description. The other phases are described briefly.

The FTIP is an iterative planning process. It is therefore possible to relate the functional description to former processes like the 1992 FTIP. In the scoping phase, it was established that an analysis of documents and publications does not provide full information on the process, so that expert interviews were necessary. These interviews supplemented the functional description by providing missing information and were a suitable basis for the identification of decision windows.

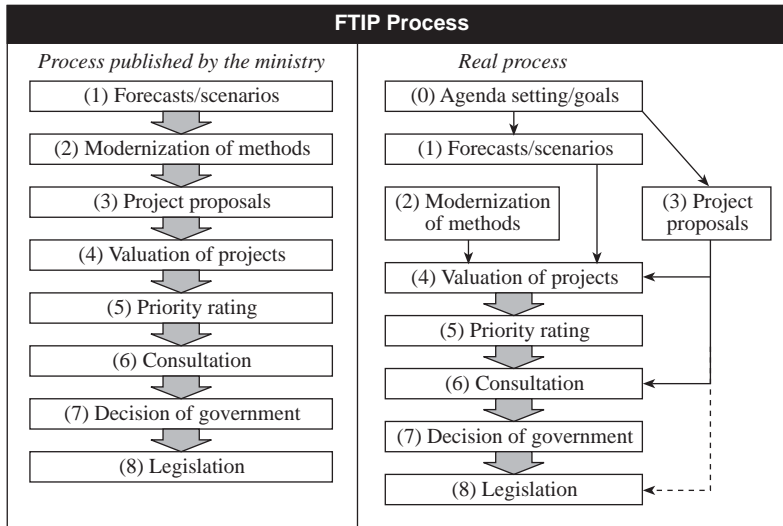
8.5.1 Process of the FTIP

The FTIP is the result of a decision and planning process. The description using steps is to simplify the outline, but in fact there are a large number of

Table 8.3 *Specific procedural criteria of the FTIP*

Generic procedural criteria	Specific procedural criteria		
	Inputs	Analysis	Outputs
Comprehensiveness	<p>Was the ‘right’ forecast carried out and were the ‘right’ costs assumed?</p> <p>Were comprehensive sources of information considered?</p> <p>Were alternative valuation tools considered?</p> <p>Were the environmental/sustainability objectives of the federal government considered?</p>	<p>Has an integrated approach been taken?</p> <p>Was an appropriate set of alternatives (including an environmentally friendly option) considered?</p> <p>Were the effects of transport projects as well as transport networks assessed?</p>	<p>Have the ‘right’ issues been considered (for example, sustainability, including social and economic development issues)?</p> <p>Was the outcome of the decision appropriate in scope?</p>
Timeliness	<p>Were forecasts and costs available in a timely fashion?</p>	<p>Were the assessment tools used at the ‘right’ stage of planning?</p>	<p>Was the decision taken in a logical sequence?</p>
Transparency	<p>Are forecasts and assessment tools transparent?</p> <p>Is the supporting material in the public domain?</p>	<p>Is it obvious what assumptions have been used in the forecast and the assessment tools?</p> <p>Is it obvious what kind of techniques have been used in the forecast and the assessment tools?</p>	<p>Are reports and peer reviews available for inspection?</p> <p>Was the outcome of the decision and how stakeholder views fed into this clearly communicated?</p>

Participation	<p>Were the environmental authorities involved (at the right time and in an appropriate way) in providing information, generating options and defining the scope?</p> <p>Was the public involved (at the right time and in an appropriate way)?</p>	<p>Were the environmental authorities involved in interpreting the results of the analysis?</p>	<p>Were the environmental authorities involved in the deliberating stages leading to the final decision?</p>
Credibility	<p>Does the quality of the input information reflect the scope of the decision and resources available (time and money)?</p> <p>Are any gaps or difficulties in forecasts and assessment tools clearly highlighted?</p>	<p>Was the tool or method used in the analysis appropriate for the level of decision?</p> <p>Does the quality and complexity of the analysis reflect the scope of the decision and resources available (time and money)?</p> <p>Has risk been fully considered in the analysis (including technical risk and risks in implementation such as changes in project management, difficulties of stakeholder involvement and so on)?</p> <p>Have analyses, reports and outcomes been reviewed by peers?</p>	<p>Does the reliability and quality of the decision reflect its potential environmental and sustainability outcomes (timing, transparency, clarity, involvement and so on)?</p> <p>Was uncertainty incorporated into the analysis (for example, through appropriate tools, such as by using sensitivity or scenario analysis)?</p>



Source: Wuppertal Institute

Figure 8.2 The FTIP process

parallel processes and feedback loops. Figure 8.2 gives an overview of the planning process. On the left side of the figure, the steps of the FTIP can be seen as described by the Ministry of Transport based on official publications. This kind of description is helpful to outline the general procedure. The real process is even more complex. So the term ‘real’ emphasises that PPPs have an informational dimension as well as a conflict dimension.

While the process provided by the Ministry of Transport is linear, the first steps of the real process could be described as relatively independent and parallel. The project proposals made by the Länder and external organizations (associations and railways) are an especially critical point in the entire FTIP process. As previously stated, only some steps could be described in a detailed manner. Step four, the valuation of projects, will be used for a detailed functional description. In the following paragraphs, the other steps are briefly described, showing the context of the example.

Agenda setting and goals (step 0)

The first step in the planning process is the decision to devise a new plan. For the FTIP, there is a framework by law that the transport infrastructure extension acts must be revised after five years as a final output of the FTIP process. The goals of the FTIP are presented in paragraph 8.3.1.

Forecasts and scenarios (step 1)

After the official agreement for the preparation of a new FTIP, the next working step for the Ministry of Transport was to commission studies for a transport forecast. For the 1992 FTIP, the time horizon 2010 was defined, and propositions other than transport related areas were assumed (for example, economic development).

Modernization of methods (step 2)

The basic valuation methods of the 1992 FTIP were a cost–benefit analysis (CBA) and an ecological risk analysis (ERA). The tools of the 1992 FTIP were also used for the 1985 FTIP and only a few changes were made. The current FTIP process (estimate for the year 2003) contains a comprehensive modernization of instruments and methods for the project valuation.

Project proposals (step 3)

Developing the project proposals is relatively independent from the steps ‘forecasts’ and ‘methods’, because the Länder and not the Federal Ministry of Transport are the main players in this step. The aim is to get a list of transport projects (such as roads, railways and inland waterways) where investments are needed. The reasons for realizing the project as well as the estimated costs are incorporated in a proposed list which forms the basis for the next step, the valuation of projects.

Valuation of projects (step 4) (example of a detailed functional description)

The ‘valuation’ step is the first phase of the FTIP in which the different procedures of forecast, project proposal and modernization of methods are integrated. The proposed projects (‘project proposals’ step) are assessed in valuation procedures (‘modernization of methods’ step) based on forecast data (‘forecasts/scenarios’ step). Figure 8.3 provides a structure for the valuation.

In 1992, not all proposed projects were evaluated. Projects carried out for the 1985 FTIP which were not realized until 1992 were automatically defined as unavailable which means that these projects were directly considered in the 1992 FTIP without any further assessment (BMV 1992). Another exception was the ‘German Unity Transport Projects’, which were assigned high priority. All in all, the so-called ‘unavailable demand’ of the 1992 FTIP covered 65 per cent (BMV 1992) of total investments.

The aim of the valuation was to make the effects of the projects comparable for the final choice of financing projects. The valuation was differentiated into four procedures, presented in the ‘Modernization of Methodology’ step (CBA, ERA, urban development criteria and additional criteria).

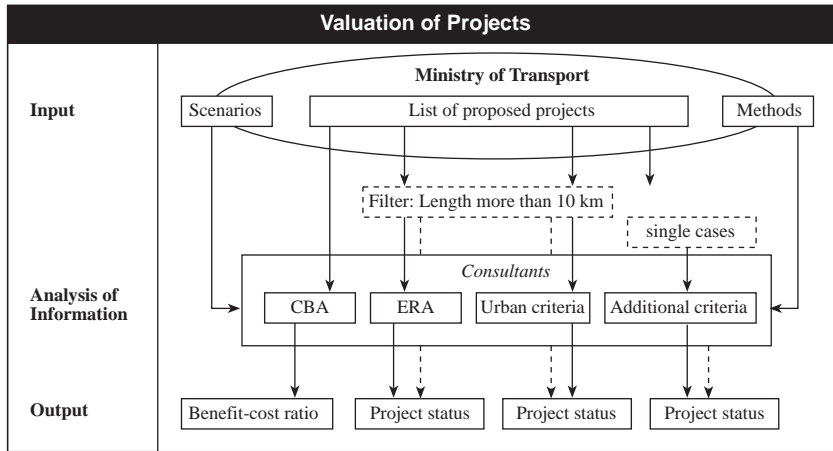


Figure 8.3 Valuation of projects

Commissioned by the Ministry of Transport (MoT), external consultants carried out the valuation for each project. The valuation procedure for the FTIP focused on the project level instead of the network level. While the CBA was carried out for each available project, the ecological risk analysis and urban development criteria focused only on large-scale projects (with a road length of more than 10 km). A valuation of projects by additional procedures was carried out in individual cases only.

The outcome of the valuation procedure provided four different kinds of result. In 1992 the findings of the CBA were aggregated in a benefit–cost ratio (BCR). The results of the ecological risk analysis were presented in tables, maps and figures and are easy to understand. The assessed projects were given a project status: no effects/effects/major effects to the environment. The urban development criteria were presented similarly to the ERA with the project status: positive effects, no effects and negative effects. Within the additional criteria, the projects assessed were defined as positive, neutral or negative.

In the 2003 FTIP, the spatial valuation of projects is a new feature of the valuation procedure. It is likely that the results will be presented similarly to the ERA. The 10 km filter of the ERA was replaced by a pre-assessment of projects through the Federal Agency for Nature Conservation (FANC). Projects that are likely to affect the environment are assessed by the ERA.

Priority rating and financial planning (step 5)

The priority rating is an important step in the FTIP. Prioritization of projects is mainly based on the result of the cost–benefit analysis (CBA) and the benefit–cost ratio (BCR). By relating the costs of the projects to the budget for

infrastructure construction, those projects with the highest BCR will be considered in the FTIP.

Consultation (step 6)

The first draft of the FTIP forms the basis for consultation with Federal Ministries, the Länder Ministries and interested associations (such as NGOs). Negotiations take place when there is a need for consensus because the Parliament of the Länder, the *Bundesrat*, must agree on the proposed FTIP. Associations and NGOs are informed about the draft plan and they give their opinions.

Decision of government (step 7)

Finally, the Federal Cabinet decides on the FTIP and develops drafts of the Transport Infrastructure Extension Acts which have to be approved by Parliament. There are only a few deviations within this phase. By accepting the FTIP, the Government recognized the road part and the railways part as extension acts (FStrAbG and SchwAbG).

Legislation (step 8)

The legislation procedure does not form part of the planning process. The Cabinet decides about the FTIP. Yet, in fact, legislation is closely related to the plan. It is possible to implement major changes within this last phase. The members of the Transport Committee of the Federal Parliament are especially important stakeholders.

8.5.2 Results of the Functional Description

The functional description is an empirical basis for the following steps in ANSEA. All relevant decisions in the FTIP are described. In the next step, the decisions which have an environmental implication must be identified as the decision windows of the FTIP. To simplify the findings of the functional description, a concluding flowchart summarizes this step of ANSEA. Figure 8.4 gives an example of what such a graphical summary could look like.

This figure is based on the graphical summary of all steps. The summary was carried out to clarify the complex relationship in a simplified manner. In the single flowcharts, the input for the FTIP step is shown at the top, the transformation of inputs and the relationships between relevant stakeholders is shown in the centre and the final output is shown at the bottom. By combining such flowcharts, a detailed graphical description of the entire process and the stakeholders involved emerges.

Step 4, the valuation of project proposals, was chosen in the description above as the detailed example. Based on this step, further examples to identify decision windows will be given.

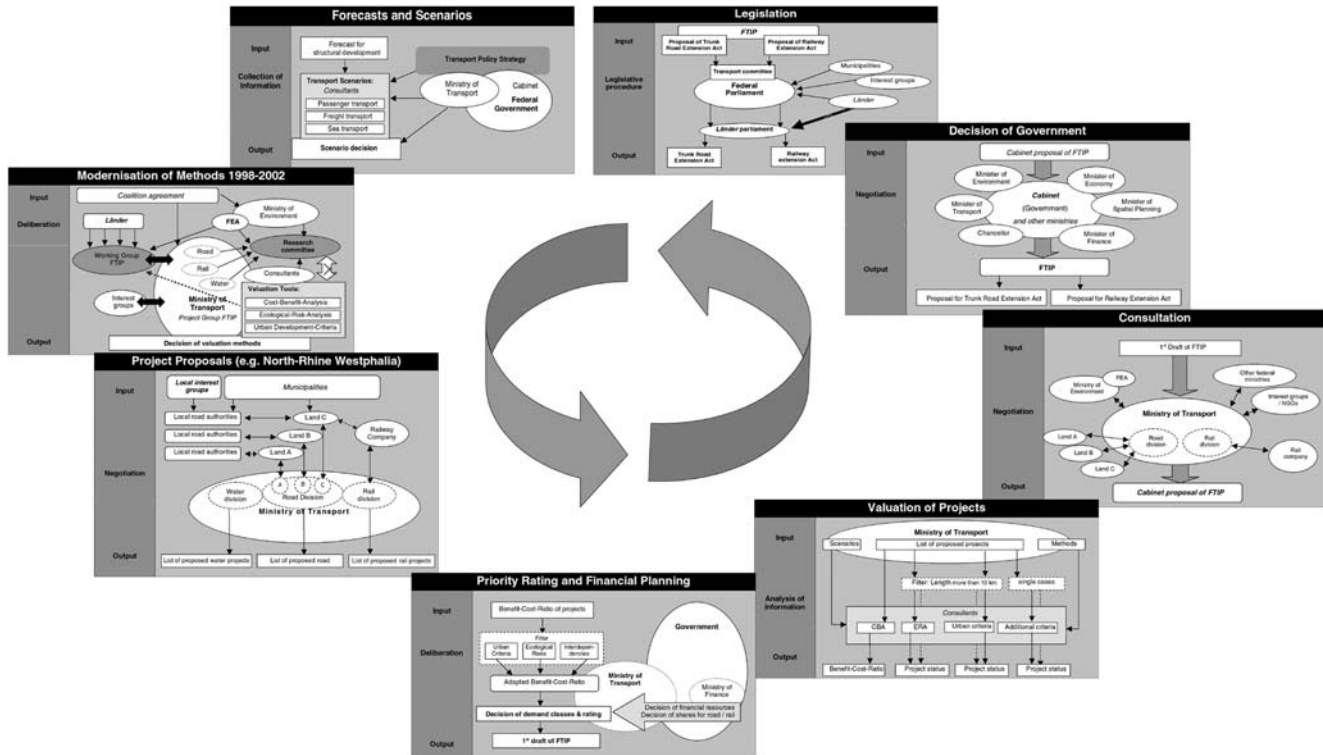


Figure 8.4 Functional description of the FTIP

8.6 IDENTIFICATION OF DECISION WINDOWS

The functional description is the basis for the identification of decision windows (DWs) in the decision-making processes. The DWs, as stages of the decision-making processes when decisions with implications for the environment are taken, have to be described and proved by formulating the environmental implications of the DW. In this way, cumulative, synergetic, induced and direct as well as indirect effects must be considered. The range of analysis, which is already identified in scoping, has to be specified at the level of (sub-) decisions.

Decision windows (DWs) are not only to be found in information processes but also in the organization of the procedural course of the PPP and in the involvement of stakeholders. If the functional description is too fragmented to identify the DWs, a feedback loop to the functional description should be established. By repeating the description later in the decision-making process, missing information can be completed.

According to the ANSEA concepts, several decision windows (environmentally relevant decisions) were found in the FTIP process. In Table 8.4, the results of the analysis are presented and the DWs are related to the FTIP flowchart. On the right of the table, the DWs are ordered at the level of sub-decisions. The identification of DWs visualizes the level of sub-decision that is analysed. While DWs of the first level could be described as more general decisions, the DWs of lower levels are more specific. The distinction between these levels is useful to show the importance of a detailed analysis of the decision-making process. The level of analysis cannot be determined in general because every decision-making process has to be assessed individually. The agreement about the level of analysis should be part of the 'scoping' phase of an ANSEA assessment.

The DWs were identified in the functional description. Every step was tested as to whether there was any direct or indirect environmental implication based on this decision. Each step of the FTIP had a couple of DWs. For example, the (sub-) decision of costs in CBA is identified by a logical deduction from the CBA. If the CBA is a determining tool for the incorporation of projects in priority demand, the costs used will have consequences on the entire plan, for example, one hour of travel time valued with a specific amount of money has consequences on the decision whether a new motorway will be built in a region.

The use of interviews to describe the decision-making process in detail is useful for an ANSEA assessor. In fact, a lot of DWs are described by literature and documents, but in the case of the FTIP there have been some DWs which were hardly to be identified without interviews. For example, a 60 000 cars per day criterion for a project proposal and the 'Decision about the

Table 8.4 Decision windows in the FTIP

STEP	Decision windows
Agenda Setting/ Goals (0)	<ul style="list-style-type: none"> 0.1 Decision to start the process 0.2 Decision about main issues (1992: German Unification/2002: Modernization of Methods) 0.3 Decision about objectives (Example) <ul style="list-style-type: none"> 0.3.1 Decision about kind of target system <ul style="list-style-type: none"> 0.3.1.1 Decision about targets 0.3.1.2 Decisions about indicators 0.4 Decision about leading authority/department <ul style="list-style-type: none"> 0.4.1 Decision about persons involved in the leading department 0.5 Decision about general procedure and incorporated stakeholders (e.g. based on last FTIP) 0.6 Decision about incorporated stakeholders (e.g. involve environmental authorities in step 'modernization of methods') 0.7 Decision about range of the FTIP
Forecasts/ Scenarios (1)	<ul style="list-style-type: none"> 1.1 Decision about structure of forecast (objectives and boundaries) <ul style="list-style-type: none"> 1.1.1 Decision about link to transport policy strategy (demand or goal orientation) 1.1.2 Decision about evaluated scenarios (political frameworks) 1.2 Decision about incorporation of environmental authorities in scenario decision 1.3 Choice of consultants 1.4 Choice of scenario

- Modernisation of Methods (2)
 - 2.1 Decision about co-operation with environmental authority (Federal Environmental Agency)
 - 2.2 Decision about objectives of valuation
 - 2.3 Decision about project or network/programme valuation
 - 2.3.1 Decision about incorporated valuation tools
 - 2.3.1.1 Decision about integration of external costs in cost–benefit analysis (CBA)
 - 2.3.1.1.1 Decision about kind of external costs and benefits in CBA (e.g. valuation of climate change impacts)
 - 2.3.1.1.2 Decision about incorporation of induced traffic
 - 2.3.1.1.3 Decision about real costs (costs of noise)
 - 2.3.1.1.4 Decision about result of CBA (benefit–cost ratio or range of likely benefits cost ratios (linked to scenarios))
 - 2.3.1.2 Decision about integration of environmental effects in ecological risk analysis (ERA)
 - 2.3.1.2.1 Decision about range of ERA (e.g. landscape, water)
 - 2.3.1.2.2 Decision about result of ERA (recommendation, project sheets)
 - 2.3.1.3 Decision about valuation of interdependencies between transport modes
 - 2.3.1.3.1 Decision about result of valuation of interdependencies
 - 2.4 Co-ordination of consultants
- Project Proposals (3)
 - 3.1 Decision about procedure of proposals (e.g. programmes or projects)
 - 3.1.1 Decision about information incorporated in proposal procedure (e.g. analysis of accessibility, bottlenecks)
 - 3.1.1.1 Decision about indicators (e.g. cars per day)
 - 3.1.2 Decision about incorporation of environmental assessment in proposal procedure
 - 3.1.3 Decision about kind of projects incorporated (reconstruction of roads)
 - 3.2 Decision about number of proposed projects (assuming Länder share)

Table 8.4 continued

STEP	Decision windows
	3.3 Decision about assumed costs
	3.4 Decision about bilateral or multilateral negotiation between stakeholders
Valuation of Projects (4)	4.1 Decision about assessment of projects (Example) 4.1.1 Decision about criteria of incorporation in the ecological risk analysis (minimum length 10 km) (Example) 4.1.2 Decision about unavailable demand 4.1.3 Pre-assessment of environmental authority
Priority Rating (5)	5.1 Decision about investments in transport modes 5.2 Decision about priority levels 5.3 Decision about relation of valuation tools in the priority rating (e.g. main aspect is benefit–cost ratio of CBA) (Example)
Consultation (6)	6.1 Decision about Länder share 6.2 Decision about consultation of environmental authorities 6.3 Decision about consultation of interest groups and NGOs 6.4 Decision about consideration of consultation results
Decision of Government (7)	7.1 Decision of environmental minister to accept the PPP in Cabinet
Legislation (8)	8.1 Decision about exchange of projects (1:1 exchange of single projects) 8.2 Decision about the participation of the Environmental Committee

relation of valuation tools in the priority rating' are not published in any official document. Therefore, the use of interviews with stakeholders is a useful asset in the identification of a comprehensive set of DWs in ANSEA.

The analysis of the decision-making process by the concept of DWs requires a description of the environmental implications, which is the criterion to call a decision moment a DW. To gain additional information about the DW the main actors and the input and output of the DW should be described. The matrices in Table 8.5 provide four examples of a detailed description of DWs in the FTIP.

These four examples were chosen out of Table 8.4. The first example is a very general one that takes place at the beginning of the process. The second and third examples are chosen from the 'valuation of projects' step which has been described in detail in the functional description (step 4). They are the DWs 'Decision about assessment of projects' and 'Decision about criteria of incorporation in the ecological risk analysis'. The fourth is a DW closely related to the valuation tools: 'Decision about the relation of valuation tools in the priority rating'. The examples show that there are major implications for the environment in the DWs presented and that several actors are involved in these decisions. If all DWs are described in the way presented above, an assessment of the decision-making process will be possible.

8.7 ASSESSMENT OF DECISION WINDOWS (DWS)

Carrying out the assessment involves a reflection on each detailed description of the DWs and the application of the specific procedural criteria developed in the earlier assessment process. For each procedural criterion, questions are raised to specify the criteria for the process assessed. The results can be documented in a matrix format such as in Table 8.6. They will take the form of statements about performance as opposed to procedural criteria. It will be useful to add specific recommendations for future decision-making processes in a similar context.

In addition, a picture of the structural failures of the decision-making process will become visible from the assessment of the major DWs. The questions arising from the general procedural criteria that were listed in paragraph 8.4 are helpful in identifying the specific criteria of the FTIP.

The assessment of DWs will be presented using the example of the DW 'Decision about the assessment (valuation of projects)'. Within the assessment, the analysis of DWs comprises three steps:

1. The first step is to transform the questions related to the procedural

Table 8.5 Description of decision windows

DW 0.3 – Decision about the main objective (agenda setting/goals)

Environmental implication Depending on how much and what type of environmentally relevant information is present at this earliest stage in the decision-making process, the premises and priorities for the decision-making process, in terms of agreeing on the main objective (including or excluding environmental objectives), may be set differently.

- Actors
- The main responsibility lies with the Ministry of Transport (MoT)
 - At the MoT an FTIP project group is set up
 - Contacts with the Federal Environmental Agency exist
-

Input	Analysis/deliberation	Output
<ul style="list-style-type: none"> ● Issues emerging from past FTIP ● Extension Act ● Formal revision 	Acceleration of planning procedures	<ul style="list-style-type: none"> ● Reconstruction of roads/railways ● Revision of projects

DW 4.1 – Decision about the assessment (valuation of projects)

Environmental implication The decision about the assessment tools is crucial for the path of integration and use of environmental information.

- Actors
- Ministry of Transport
 - Consultants and further external experts
-

Input	Analysis/Deliberation	Output
<ul style="list-style-type: none"> ● Scenarios provided as a general background ● The existing list of projects proposed by the Länder ● Existing methodology 	<ul style="list-style-type: none"> ● CBA ● ERA (length more than 10 km) ● Urban criteria (single cases) ● Additional criteria 	<ul style="list-style-type: none"> ● Benefit–Cost ratio ● Project status

DW 4.1.1 – Decision about criteria of incorporation in the Ecological Risk Analysis (valuation of projects)

Environmental implication The decision to exclude all road projects of less than 10 km from the ERA has an environmental implication, because there might be projects shorter than 10 km that also have negative effects on the environment.

Actors

- The main responsibility lies with the MOT's FTIP project group
- Consultancies were involved in the decision

Input	Analysis/Deliberation	Output
High number of projects	Feasibility	10 km criterion

DW 5.3 – Decision about the relation of valuation tools in the priority rating (priority rating)

Environmental implication The macroeconomic evaluation (CBA) was the central element of the priority rating and the decision as to whether a project would be financed. The findings of the ERA were presented in addition to the benefit–cost ratio. If major environmental impacts were found, the relation to the benefit–cost ratio had not been defined and led to non-transparent decisions.

Actors

- The main responsibility lies with the MOT's FTIP project group
- The Länder participate in the ongoing working circle for the FTIP methodology
- The Federal Environmental Agency and consultants are contacted in a scientific board

Input	Analysis/Deliberation	Output
<ul style="list-style-type: none"> ● Results of evaluation ● Länder share ● Financial resources 	Evaluation procedure	Priority rating

Table 8.6 Matrix for the assessment of DWs versus procedural criteria

DW 4.1 – Decision about the assessment (project valuation)			
Environmental dimension	The decision about the assessment tools is crucial for the path of integration and use of environmental information.		
Actors	<ul style="list-style-type: none"> Ministry of Transport Consultants and further external experts 		
Actions	Input	Analysis/Deliberation	Output
	<ul style="list-style-type: none"> Scenarios provided as a general background The existing list of projects proposed by the Länder 	CBA ERA (length more than 10 km) Urban criteria (single cases) Additional criteria	Benefit–Cost ratio Project status
Procedural Criteria			
Comprehensiveness	Are the tools related to the objectives of the FTIP? PARTLY – CBA is a tool to identify the priority projects and only relates to the overall goals. There is no detailed goal system. ERA cannot assess net effects.	Were the environmental tools parts of the assessment? YES → ERA Is environmental information integrated in economic tools (CBA)? PARTLY (e.g. noise) Is there a comprehensive network analysis of all projects? NO	Does the outcome of the assessment describe the environmental consequences of the projects and the entire plan? Only at project level.

Procedural Criteria

Timeliness	<p>Can the existing tools be used or is it necessary to develop new ones?</p> <p>There are several tools related to transport planning. A comprehensive network analysis is missing.</p>	<p>Are the consequences of the evaluation with the tools discussed from the beginning?</p> <p>There is no information available regarding this step, but it could come out during the process that there is no general procedure to integrate the different outputs of the evaluation.</p>	<p>Can the outcome of the evaluation be relevant to the result of the FTIP?</p> <p>YES, the result is based on the evaluation of projects.</p>
Transparency	<p>Who introduced the tools discussed?</p> <p>The MoT, consultants and the FEA; there is no further public involvement.</p>	<p>Is the process of tool development documented?</p> <p>NO</p>	<p>Are the reasons for the choice of tools known?</p> <p>NO</p>
Participation	<p>Were the appropriate stakeholders involved in the tool development?</p> <p>YES, the FEA</p>	<p>Was the public informed about the possible tools and the discussion about them?</p> <p>NO</p>	<p>Were the appropriate stakeholders involved in the deliberations leading to the final tools?</p> <p>Partly the FEA</p>
Credibility	<p>Are any gaps/difficulties in the tools clearly highlighted?</p> <p>Partly by the FEA</p>	<p>Where all tools discussed in the same way?</p> <p>YES</p>	

criteria into more specific questions directly related to the real decision-making process.

2. In a second step, these questions have to be answered.
3. If the real process is not in line with the procedural criteria, a recommendation for the PPP should be formulated.

The example in Table 8.6 is not a detailed and final analysis of the DW because of the limited availability of information for this case study. In the matrix, the questions and answers related to the procedural criteria are stated. The illustration given focuses on steps comparable to the previous DW. Again, it has to be stated that a real assessment for all DWs has to be undertaken in this way.

Based on the matrix in Table 8.6, main recommendations will be made. The following suggestions for each of the procedural criteria could be made:

- **Comprehensiveness:** Tools should be directly related to the objectives of the FTIP.
- **Timeliness:** Introduce a network perspective and tools to assess net effects at this stage.
- **Transparency:** Documentation of the results should be available.
- **Participation:** The public should be informed about the tools and a broader scientific community should take part during development.
- **Credibility:** There should be a detailed analysis of the tools to assess their usefulness.

Due to the fact that the FTIP is a very complex planning process with a high number of DWs, it is crucial for a process assessment to define the most important ones. This step is highly problematic and has to be further developed by a real assessment process. The importance of a sub-decision to the entire decision-making process could not be fully analysed during this study. Therefore, in a real assessment process the environmental implication of the DW should be compared and information should be provided by literature analysis, and stakeholder interviews should be integrated into the valuation of DWs.

8.8 ANSEA REPORT

The ANSEA report, resulting from the assessment, is the final output of the ANSEA process. How the report is considered in the decision-making process has to be defined at the beginning of the ANSEA assessment. The significant environmental effects identified by the analysis of the DWs have to be summarized.

Generally speaking, for a final ANSEA report on the FTIP, the main parts of this case study could be used for the report. In the report introduction, the aims and objectives of the assessment must be defined. For the FTIP, this means that the focus of analysis is on the decision-making process, which is described in the Ministry of Transport flowchart. In the second part, environmental effects identified by the FTIP and key issues of the assessment are described, such as habitat fragmentation and greenhouse gases. Those effects are described in scoping.

The ‘identification of procedural criteria’ and the ‘functional description of the PPP’ carried out in this chapter should be summarized in the ANSEA report. The identification of DWs and the related results of the ‘assessment of decision windows’ can be presented along the steps of the FTIP flowchart in a way similar to the steps proposed earlier in this case study. The FTIP might therefore include rebuilding of transport infrastructure as a new task. Based on the result of the assessment in the final conclusions, it is possible to recommend changes for the FTIP: for single steps as well as for the whole decision-making process.

The main results of the assessment are summarized in Table 8.7. For the FTIP, these DWs seem to have the highest environmental implication. The recommendations are based on the specific criteria drawn up during the assessment of DWs and are related to the different steps in the FTIP process. The results are based on the assessment of each DW.

The recommendations on DWs provide some structural suggestions for designing a renewal of the FTIP. For example, the development of scenarios should be integrated into the development of the project at the Länder level. In general, it could be said that there should be some more feedback procedures during the FTIP process.

The results are qualitative and represent the stage of considering the IAO analysis covering the procedural criteria at the specific DW. For an integrated assessment, specific criteria have to be developed during the planning process and should provide a direct feedback to the decision maker.

8.9 REVIEW

Reviewing an ANSEA assessment is primarily useful for *ex ante* or integrated assessments because the procedural changes can be evaluated before the final decision about the PPP or before a renewal of an iterative PPP. It can be described as a repetition of the *ex ante* assessment. Thereby the result of the assessment can become obvious.

In this *ex post* case study, a review cannot provide useful information before a new FTIP planning process is started. But, if a renewal of the FTIP were to

Table 8.7 Recommendations for the FTIP

Decision windows	Recommendation
(DW 0.3) FTIP objectives	<ul style="list-style-type: none"> ● Introduction of a detailed target system and development of indicators. ● Establishment of a monitoring procedure based on the target system to provide information on whether the objectives are met.
(DW 1.4) Choice of scenario	<ul style="list-style-type: none"> ● Introduction of a feedback procedure between the development of the scenarios at the federal level and the development of project proposals at the Länder level.
(DW 2.2) Objectives of valuation	<ul style="list-style-type: none"> ● There should be an integrated assessment of the projects to consider net effects. ● Introduction of a risk analysis in the valuation (e.g. CBA) to point out the uncertainty of valuation on the strategic level.
(DW 2.3.1.1) Integration of external costs	<ul style="list-style-type: none"> ● The assumed costs in the CBA, the external environmental effects should be internalized.
(DW 4.1) Assessment of projects	<ul style="list-style-type: none"> ● The tools should be directly related to the objectives of the FTIP. ● Introduce a network perspective and tools to assess net effects at this stage, e.g. taking the resulting traffic into account.
(DW 5.3) Relation of valuation tools in the priority rating	<ul style="list-style-type: none"> ● There is no established transparent procedure for evaluation of the different outputs of the valuation tools. A logical procedure should be developed.
(DW 6.1) Länder share	<ul style="list-style-type: none"> ● The system that every state must have a budget based on a defined ratio should be revised. A system which is based on ideas of least cost planning would be one suggestion.
(DW 8.1) Exchange of projects	<ul style="list-style-type: none"> ● The opportunity to exchange some of the projects during the legislation process should be linked to additional assessment requirements.

consider the results of the ANSEA assessment, a later review would be a very useful exercise.

8.10 CONCLUSIONS AND OUTLOOK

The case study of the German Federal Transport Infrastructure Plan is an appropriate example of the evidence for the need for a procedure assessment as an added value for a Strategic Environmental Assessment.

It is shown that by describing the decision-making process there is an opportunity to identify environmentally relevant stages. Valuable methods are the document analysis and qualitative stakeholder interviews. The general framework for ANSEA, which is based on the concepts of the functional description, decision windows and procedural criteria, can play a key role in a future decision-making process assessment.

The application of the ANSEA approach, which was applied in this case study, shows that there are several structural gaps in the FTIP. There is a need to redesign some aspects of the procedure and of the valuation tools of this plan to ensure a proper consideration of environmental aspects. In this way, the ANSEA approach is an important additional assessment that has an added value to SEA and is also in line with the EU Directive.

9. Case study – urban planning in Puerto de la Cruz, Tenerife Island, Spain

**Rodrigo Jiliberto, Manuel Alvarez-Arenas
and Mercedes Garcia**

9.1 INTRODUCTION

This chapter summarizes the results of the case study of urban planning in Puerto de la Cruz, Tenerife Island, Spain, which attempted to assess the methodological feasibility of the ANSEA concepts and approach.

The case study aimed to test the ANSEA approach and concepts in a concrete plan, as is the General Urban Plan (GUP) applied in many Spanish cities. The General Urban Plan of Puerto de la Cruz City (Tenerife Island) was used to develop the case study and illustrate the procedure. The presentation of the results of the case study has been carried out following the structure of the ANSEA approach, which includes the application of the following steps: 1) screening, 2) scoping, 3) functional description of the decision-making process, 4) identification of procedural criteria and 5) identification of decision windows.

The availability of information concerning the planning process in the General Urban Plan of Puerto de la Cruz has been limited, to such an extent that the sixth phase of ANSEA (assessment of the decision windows) has not been fully carried out.

The general conclusion of the case study is that the key ANSEA concepts, such as decision windows, procedural criteria and functional descriptions, are methodologically feasible when applied to this particular decision process. The steps of the ANSEA framework and their order seem to be useful in applying the ANSEA concepts. The application of the ANSEA approach to an 'actual' decision-making process could have the effect of improving its structure.

9.2 THE CONTEXT

According to Spanish legislation, every municipality is required to plan the

use of its territory with specific urban planning tools and legislation, delimiting built-up areas, defining how the rest of the territory must be occupied and used and, if pertinent, where and how the town will expand. Considering that Spain is a country with more than 8000 municipalities, urban municipal plans constitute the most extended instrument for territorial planning. Those plans may differ between municipalities, depending on their characteristics and the regional context (each regional government can develop its own urban legislation).

The case study analyses Spanish urban municipal planning and takes into consideration urban planning methods and processes that are applied when developing a General Urban Plan, the urban planning instruments for those municipalities with more than 25 000 inhabitants. The study refers to a specific municipality, Puerto de la Cruz (Tenerife, Canary Islands), to make the study easier to understand, exemplifying the problems and opportunities detected, the context implications and the environmental constraints and consequences associated with a General Urban Plan (GUP).

9.3 SCREENING

The screening stage allows the PPP proponents to determine whether the ANSEA approach would add value to the decision-making process or would help to meet the requirements for an SEA under the new EU Directive.

In this specific case, three aspects summarize the importance of GUP for ANSEA:

- **Urban planning has a key role to play in any agenda for sustainable development**

GUP classifies municipal territory (buildings,⁵ built-up land and non-built land) and at the same time, defines the main elements of the general structure adopted for the territorial planning development, establishing the programme for its implementation. Therefore, the environmental analysis of the GUP formulation is the best way to ensure the incorporation of environmental and sustainability priorities right from the beginning of the planning process. SEA would help to promote a proactive role for GUP in sustainability planning.

- **The environmental effects of a General Urban Plan**

Urban planning plays a key role in defining the urban structure of the city and therefore it plays a significant role in the definition of its sustainability and environmental profile. The transport system, with all its environmental consequences, waste production and management, the

use of water, energy and materials, the availability of green areas and the integration of the urban areas with the surrounding ecosystem and many other aspects are directly and indirectly affected by the decisions taken during urban planning.

- **Pertinence of ANSEA approach to land use planning**

In Spain, land use planning requirements have many elements that could facilitate ANSEA procedures, in the first place because planning processes are highly regulated and because there is a long tradition of proceeding in this way. This simplifies the application of ANSEA concepts during the assessment. Furthermore, some of the features of urban planning coincide with standard SEA requirements, in particular, the concern about public participation, the review of draft documents and the adherence to a policy-regulated decision-making process.

9.4 SCOPING

The scoping phase of the ANSEA approach includes the following tasks: description of the institutional context, legal framework, decision boundaries, stakeholders and environmental implications of a General Urban Plan. Together, all these tasks provide a systematic overview of the decision-making process as a starting point for an analytical assessment.

9.4.1 Object of the General Urban Plan

A GUP is the basic tool for defining both the territorial (physical) model for the whole municipality and the urban management model to be applied. Its basic functions are to determine general and specific land uses and appropriate community facilities, services and infrastructures in order to ensure a good quality of life and to make local (economic) development possible by:

- planning urban growth and development, defining its relationships with other towns and with its natural surroundings;
- structuring and organizing the territory, designing general systems;
- delimiting public and private spaces within built-up areas and defining systems of public spaces;
- defining general and specific uses in each zone.

The determinations of the plan are legally binding, which implies that land classification establishes land-owner rights and duties.

9.4.2 The Relationship with Other Plans

Urban planning system

The general framework for urban planning is provided by the Central Government and currently regulated by the Land Law 6/1998, which establishes a hierarchy of integrated planning instruments (see Figure 9.1):

- At the top, we find the National Territorial Plan Coordination (which has never been designed) and other regional or supra-municipal territorial planning tools (the Insular Plan in the case of the Canary Islands). In fact, the Government of the islands has designed and passed its own laws and norms for territorial and urban planning.
- The General Urban Plans of Spain are at the next level. The Constitution of 1978 strengthened the power of local authorities to make independent decisions in land use planning matters. Central Government approval is no longer required; plans are approved by local and regional authorities. These plans must follow the broad guidelines set by the regional administration and their final approval requires the agreement of the regional government's office in charge of guaranteeing a coherent outcome from the municipal planning process.
- The executive plans are at the lowest level. They develop the resolutions stated in the GUP, which usually apply to partial municipality areas, and include special plans, partial plans and detailed studies.

Within this framework, the GUP is the key and indispensable link in the planning system. It is not necessary to design a territorial plan or any other planning instrument to formulate a GUP. On the contrary, the GUP is indispensable in elaborating the executive planning.

Any municipality with a population over 25000 inhabitants (Puerto de la Cruz had more than 24000 in 1999) is required to arrange a GUP, unless regional legislation establishes an exception.

Boundaries of the General Urban Plan

This section describes the scope of a GUP. It refers to the areas of competence in which a GUP has regulative power and it points out the level of detail of that regulation.

The main boundaries of GUP are:

- GUP is the specific instrument for classifying land, but detailed specifications about building land, special protected non-urbanizable areas and special urban areas, should be developed in derived plans.
- GUPs must comply with national and regional plans.

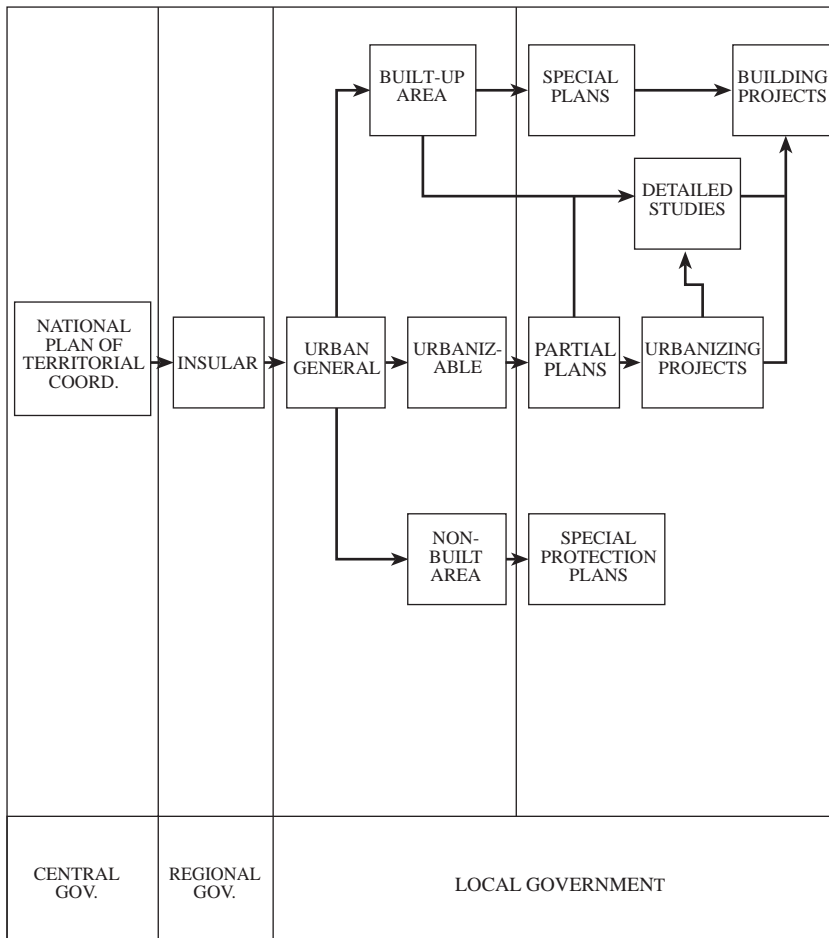


Figure 9.1 Hierarchy of urban planning instruments

- A GUP cannot define its own municipal tourism model, as this is the responsibility of tourism laws and regional tourism plans. In any case, a GUP has great influence on the materialization of the tourism infrastructure, the offer of tourism areas and their qualification as such.
- GUPs must comply with the water management model and the hydrological public domain system set in regional and insular hydrologic plans. Nevertheless, it can include measures on urbanization and building conditions in order to manage and reduce water demand (that

is, regulating gardens, limiting activities that require great amounts of water and proposing a water demand management programme).

- GUPs must comply with the regional road system set by the Regional Road Plan. Besides, GUPs have the capacity to design a coherent and appropriate urban and territorial model and road system to reduce mobility demands and reduce dependence on private vehicles. Its consistency with the regional road system will be conducive to a more sustainable communication system.

The following boundaries for the planning process have been identified in the case of Puerto de la Cruz:

- **Higher plans prescriptions**

Tenerife's Insular Development Plan (PIOT) defines the island's territorial development model and also determines, in a normative and binding way, the following issues:

- Location and structure of services, facilities and infrastructures that are of social interest and relevance for the whole island.
- Location and priority of uses and activities that are relevant for the island's economic and social development. Criteria to delimit rustic areas (non-built areas), areas assigned to agriculture and areas suitable for tourism development.
- Areas in which tourism development will not be allowed.

- **Sectoral prescriptions**

- Water: Hydrological autonomic and insular plans link administrations and private actions. Insular hydrological councils may co-operate in the GUP process.
- Roads: Canarian Road Law 9/1991 demands that regional roads be respected.
- Tourism: Decree 10/2001 regulates the standards for tourism activities.

9.4.3 Institutional Context

This section describes the institutional context in which a GUP is elaborated, including the actions and regulations of institutions other than from the city council (see Figure 9.2).

Public institutions

Insofar as the urban planning system is hierarchically structured, the role of each administration level corresponds to a different level of decision-making and planning.

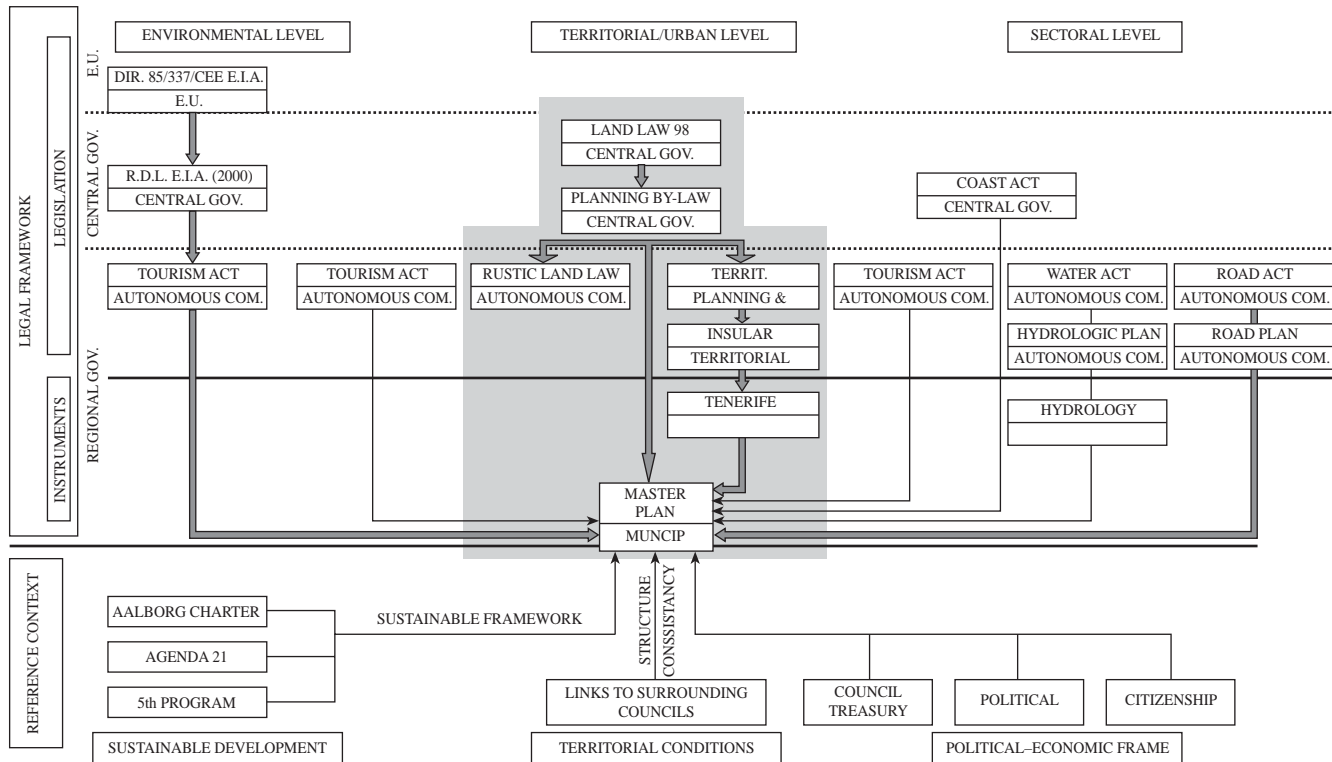


Figure 9.2 Legal and institutional framework of the GUP of Puerto de la Cruz

- **Central Government**

Its competencies are:

- Urban and territorial legislation. As explained before, Central Government elaborated the Land Law in order to regulate property rights and land uses.
- Environmental and sectoral legislation. Central government is responsible for 'basic' legislation on environmental protection, while regional governments are responsible for approving additional protection laws.

The Central Government is also responsible for the public domain of coasts and terrestrial maritime zones, ports and airports of general interest, railroads and terrestrial transportation, mountains, forest uses and cattle roads. It also has exclusive responsibility for the development and concession of water resources when these flow through the territory of more than one autonomous region. In the case of the Canary Islands, most of these responsibilities have no effect, as the islands' territories are adjacent to the boundaries of only one autonomous region.

- **Regional government**

- Urban and territorial legislation: Territorial development, urbanism and housing are the exclusive responsibility of the regional government. In the Canary Islands, the relevant legal instruments are the Law of Territorial Development and Natural Areas and the law that regulates insular territorial development plans.
- Sectoral plans: Regional governments influence territorial development as they have full or shared responsibilities in activities such as infrastructures, endowments in collective utilities, environmental protection, and so on.
- Territorial plans: Responsible for the formulation and approval of territorial plans and territorial planning directives.
- Urban planning: Final approval of GUPs depends on regional government.

- **Local administration**

- Urban Planning: Municipalities play a fundamental role in territorial planning and management. They are responsible for the formulation and preliminary approval of GUPs.

- Sectoral Plans: Municipalities can intervene through the special plans, although final approval remains in the hands of the regional administration.

9.4.4 Decisional Context

Table 9.1 synthesizes the different actors that intervene in the approval of the GUP. The initiative of formulating a GUP arises from the municipal administration, which normally entrusts its design to an interdisciplinary external team. Once the draft of the GUP has been elaborated and it includes the criteria, objectives and general planning solutions, the plans are made public and open to suggestions for at least thirty days.

Once the plan has been elaborated, the city council (or the agency in charge) proceeds to its preliminary approval. It will then be submitted to public consultation for a month, during which time pertinent comments can be presented. If the modifications imply substantial changes, a second preliminary approval is carried out, followed by a new period of public consultation. The city council is also in charge of the provisional approval, taking the plan to the respective regional agency for its final approval.

EIA Law prescribes that territorial and urban plans must be subject to an environmental impact assessment (EIA) procedure and the relevant EIA report is the responsibility of the regional environment agency.

The period during which the GUP is valid is not defined and the circumstances that would lead to a revision are specified in the GUP. The action programme must be revised every four years.

Public participation is added to the network of institutional relationships that take part in the urban planning mentioned earlier. Public participation in urban planning has a long tradition in Spain and there is a well structured and regulated participatory system.

9.5 FUNCTIONAL DESCRIPTION OF THE DECISION-MAKING PROCESS IN A GUP

The objective of the functional classification of the decision-making process is to provide an analytical description of the DMP. This comprises the following sub-elements:

- describing the whole DMP as constituted by basic decision units connected in a logical functional network;
- establishing a hierarchical nomenclature of DMPs into, for example: stages or phases, tasks, subtasks, elements and sub-elements;
- description of the content of each basic decision unit in order to identify its possible environmental dimension.

Table 9.1 Institutional participation in the GUP of Puerto de la Cruz

Stakeholder/Phase	Initiative	Draft	Negotiation	Approval
Citizens		collaboration in setting goals	public information	
City Council	responsible	responsible	responsible	preliminary approval
Island Authority			report on compliance with the Integral Territorial Plan of Tenerife	
Island Council		Inter-council co-operation		
River Basin Authority		participates		
Regional Government			consultation	final approval
Road Office			report on compliance with the road plan	
Environment Office			EIA report	
Central Government			Does not apply	



Action that is indispensable and required for final approval.



Action defined in laws that is highly recommended, but does not always take place.

9.6 THE DESCRIPTION OF THE STANDARD GUP PLANNING PROCESS

The DMP in a GUP is divided into the following stages:

Plan Initiative

During the plan initiative phase, the following decisions must be taken: the type of plan to be elaborated, the technical instruments to be used, the administrative structure and the team of experts to be involved in the process. A schedule of the planning process is also defined at this stage.

Setting of Goals

Once the city council decides to initiate the process of a GUP, it has to set its objectives. The different sectoral policies that affect the municipality have a considerable influence on this process, but the municipality does not always have a clear knowledge of the legislation and of sectoral restrictions.

Likewise for the elaboration of the GUP, it will be necessary to formulate and debate the regional government strategy and the city model. However, that debate rarely takes place; the municipal authorities and the planning team prefer an *a priori* model and concentrate efforts on the subsequent stages in order to satisfy the model the best way possible. In any case, it is highly recommended that the GUP articulates the interests of different stakeholders and allows for public participation.

Specific by-laws regulating environmental contents of urban plans in the Canary Islands introduce environmental objectives in the DMP and require the analysis of the effects on the environment (additional impacts, synergies or induced impacts).

Information Collection Process

At this stage, the different information needed for the DMP is collected: territorial, socio-economic, environmental, administrative and that related to other plans that could affect the present DMP. This planning phase plays a relevant role because it determines the rest of the tasks. In environmental and sustainability terms, it seems relevant that all information related to environmental and sustainability objectives, alternatives and criteria are properly collected and analysed.

Diagnosis

Several reports stating the current trends and situation of the city are elaborated. These are based on the information collected at the previous stage,

the experience of the planning team and the opinions and reports from the experts. The reports refer to territorial aspects, socio-economic situation, urban environment and restrictions and determinations derived from other plans, as well as the diagnosis of the role of local administration and its management capacity.

Diagnosis is a central cognitive element in the planning process. It provides the formal understanding and explanation of the urban dynamics and determines the orientation of the future territorial initiatives contained in the General Urban Plan. Diagnoses are not neutral; their results and insights depend greatly on their conceptual basis and structure. Reactive urban diagnoses are less capable of producing sound information and changing unsustainable urban patterns than proactive diagnoses are.

Defining General Spatial Structure

The GUP determines the general and organic territorial structure. The programme that defines the general spatial structure is conditioned by a previous diagnosis and by the consideration of environmental values.

At the stage of defining general spatial structure, decisions on the following aspects are taken: classification of land use (demand for built-up area, projections of urban growth and delimitation of building and non-built land), definition of territorial structure and general systems (general uses of each area, municipal facilities and communication systems, green areas systems, and so on), the measures for protecting natural and man-made environment and the programme for plan implementation.

Usually, non-built land is given less attention and the GUP only includes specifications about the areas that should be protected. In the Canary Islands, the Rustic Land Planning Law (Law 5/1987) recognizes that the land law referring to that land which will not participate in the urbanizing process as 'non-built' land implies a negative condition and a residual character that is neither desirable nor appropriate to the important role played by rustic land in the natural equilibrium of the islands.

As GUPs are oriented to urbanization, the rest of the territory is subordinated to the objectives and growth expectations of the town area. However, this growth is not always based on adequate criteria for population and economic forecasting.

Proposals for Urban Structure Alternatives

Based on the framework defined in the previous stage, concrete alternatives for land use are proposed in this phase. These alternatives are about: built-up areas (establishing objectives, uses, use intensity, green areas and parks,

facility sites, and so on), building land (area subdivision for further planning, facility sites, and so on) and non-built land (delimitation of special protection areas and protection measures).

Selection of Alternatives

At this stage, the alternatives for urban structure are assessed and selected. The result is a draft GUP which will be submitted to public consultation and undergo the approval process.

Figure 9.3 shows the main elements of the DMP in the elaboration of a GUP. At certain stages, key decisions have been specified.

The plan approval process that takes place after the elaboration of the draft plan has not been included in Figure 9.3 as it is less relevant for testing the ANSEA approach. The small text inside each decision step represents each key decision taken at each step.

9.7 FUNCTIONAL CLASSIFICATION OF THE GUP DECISION-MAKING PROCESS

For analytical purposes, a detailed functional description of the DMP of a GUP was developed. Table 9.2 is a shortened version.

9.8 IDENTIFICATION OF PROCEDURAL CRITERIA

Procedural criteria (PC) are prescriptions on how decisions should be taken. They are based on principles of good decision making and provide a basis for assessing the quality of the process in a particular decision window (DW). They can be used *ex ante* as prescriptions or *ex post* as evaluation criteria.

Procedural criteria are a key element in ANSEA methodology. They need to be developed *ad hoc* for each case, starting from past experience and from general lists or models.

In this case study, the way to develop the PC was as follows:

- First, the link between final environmental effects (or key environmental issues) and some negative urban dynamics stimulated by urban planning was identified.
- Second, the procedural criteria for the specific DMP which could address the production of the negative urban dynamics stimulated by urban planning were identified.

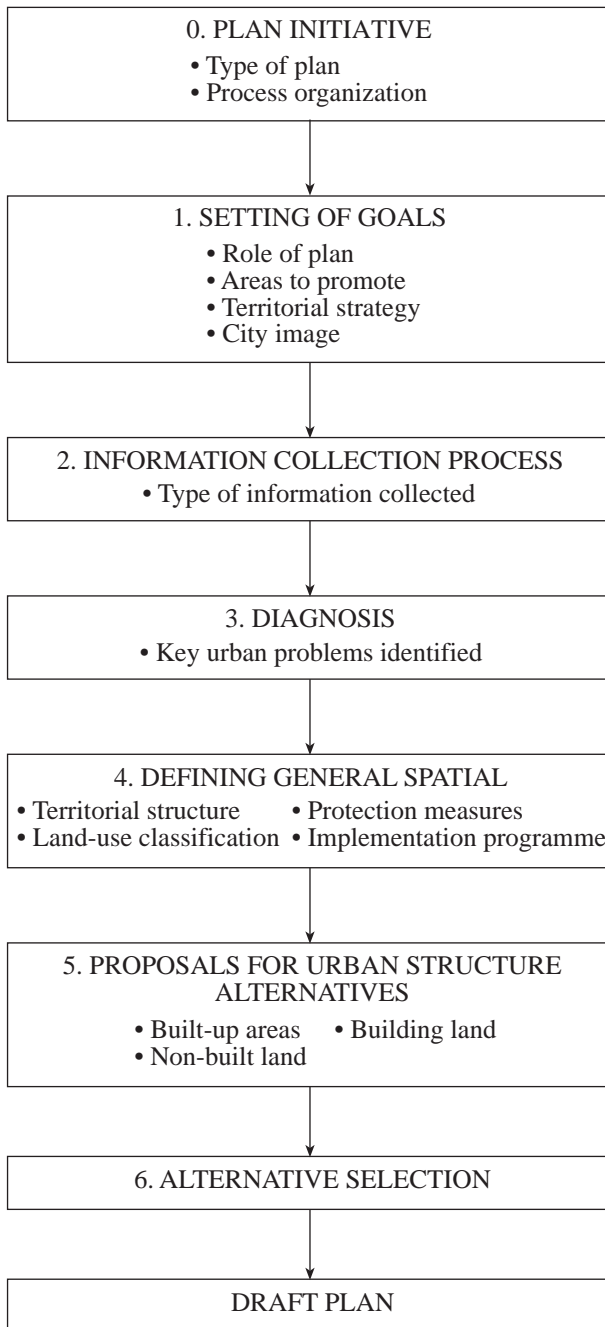


Figure 9.3 Decision-making process

Table 9.2 General urban planning stages and tasks classification

STAGE 0	PLAN INITIATIVE
Task 0.0	Initiate planning process
Task 0.1	Selection of the type of plan to be developed
Task 0.2	Select planning team
Task 0.3	Define planning process
STAGE 1	SETTING OF GOALS
Task A	Examine economic and social development policies and plans
Task B	Examine other plan determinations affecting municipal territory
Task C	Identify urban and territorial development objectives
Task D	Prioritize objectives
STAGE 2	INFORMATION COLLECTION PROCESS
Task E	Municipal territory
Task F	Socio-economic information
Task G	Urban environment information
Task H	Restrictive determinations of other plans affecting GUP
Task I	Local administration frame
STAGE 3	DIAGNOSIS
Task J	Municipal territory report
Task K	Socio-economic report
Task L	Urban environment report
Task M	Restrictive determinations of other plans affecting GUP report
Task N	Local Administration Frame diagnosis
STAGE 4	DEFINING GENERAL SPATIAL STRUCTURE
Task O	Land-use classification
Task P	Territorial structure and general systems
Task Q	Plan implementation programming
Task R	Protection measures
STAGE 5	PROPOSALS FOR URBAN STRUCTURE ALTERNATIVES
Task S	Built-up area proposal
Task T	Building land (land to develop) proposal
Task U	Non-built land proposal
STAGE 6	ALTERNATIVE SELECTION
Task V	Analysis of alternatives
Task W	Selection of alternatives

The idea behind this approach is that the final environmental effects of urban planning cannot be easily identified, given the long causal chain between decisions taken in urban planning and actual environmental changes. The effects produced by urban planning on the environment are the result of certain territorial and non-territorial dynamics, which are induced by urban planning. Therefore, it makes sense to attempt to shape urban planning in such a way that these dynamics are not promoted by decisions taken within urban planning itself.

Procedural criteria should then help to shape DMPs in a way that minimizes the possibility that environmentally negative dynamics are induced.

Figure 9.4 is aimed at providing a visual explanation of the idea developed above.

9.9 ENVIRONMENTAL EFFECTS OF ENVIRONMENTALLY NEGATIVE URBAN DYNAMICS STIMULATED BY URBAN PLANNING

The first methodological step is to link certain dynamics stimulated by urban

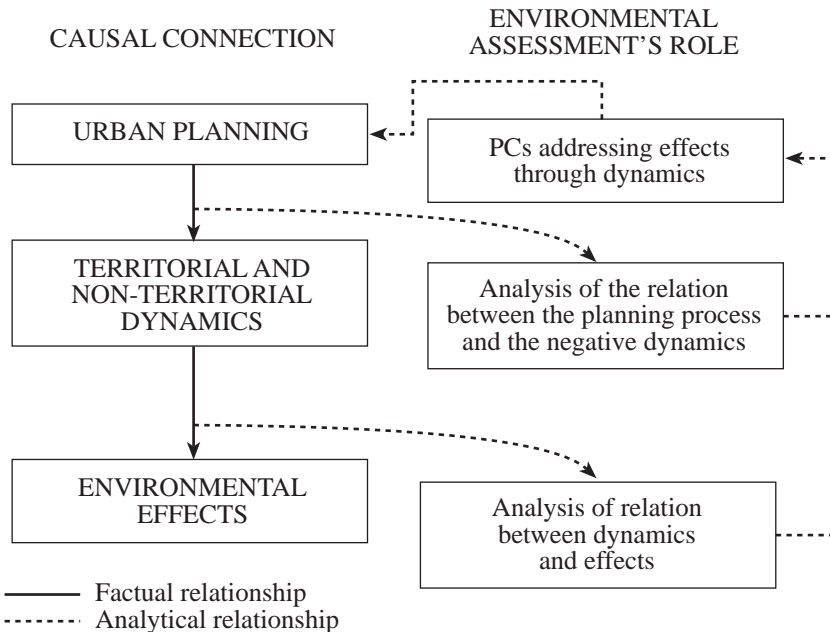


Figure 9.4 Environmental assessment's role and urban planning DMP

planning with certain environmental effects. This study focuses on the GUP of Puerto de la Cruz in order to identify and describe the urban dynamics stimulated by urban planning, which might have a negative environmental implication. The Table 9.3 summarizes the link between urban dynamics associated with urban planning in Puerto de la Cruz and their environmental implications.

9.10 IDENTIFICATION OF PROCEDURAL CRITERIA THAT ADDRESS THE MAIN ENVIRONMENTALLY NEGATIVE URBAN DYNAMICS

Once the main environmentally negative urban dynamics have been identified, the next step is to identify the procedural criteria which could address or minimize their production. The procedural criteria identified are:

Incorporate Environmental Objectives and Variables

To avoid environmental problems such as pressures on fragile ecosystems and lack of equilibrium in land-use classification, it is necessary to establish environmental objectives and variables that allow environmental considerations to be taken into account during all the DMPs.

Reduce Discretion when Classifying Built-up Areas

When classifying built-up areas, discretion tends to generate a built-up area supply which is not normally justified by any urban planning criterion. This could imply an imbalance in land uses and pressure on fragile ecosystems.

Incorporate Sustainable Strategic Urban Development Scenarios in the DMP and Ensure the Availability of More Than One of these Scenarios

In the definition and selection of planning alternatives, it is fundamental to consider the sustainability of the decisions made. The non-incorporation of sustainable strategic urban development scenarios in the DMP is the prevalent reason for the following environmental problems: imbalance of land use classification, pressure on fragile ecosystems, congestion, depletion and pollution of water sources and dependence on tourism.

Incorporate Proactive Environmental Urban Planning in Built-up Areas

Urban planning must analyse trends in order to anticipate the measures to be

taken to tackle these problems. This proactive behaviour is especially important in built-up areas. The non-incorporation of proactive environmental urban planning in built-up areas in the DMP results mainly in the following environmental problems: imbalance of land use classification, pressure on fragile ecosystems, congestion, depletion and pollution of water sources and dependence on tourism.

Incorporate a Proper Selection Process for Sustainable Strategic Urban Development Patterns

A proper selection process for sustainable strategic urban development patterns implies the incorporation of sustainable criteria and the availability of information and the technical and financial resources needed. The lack of a proper selection process mainly causes the following environmental problems: imbalance of land use classification and pressure on fragile ecosystems, congestion, depletion and pollution of water sources and dependence on tourism.

Check Structure Consistency with GUPs of Adjacent Municipalities and Other Territorial Planning Instruments

A GUP is part of a regional development strategy, thus the coherence and consistency with other municipal and territorial plans must be checked. The lack of consistency with the GUPs of adjacent municipalities and other territorial planning instruments results in imbalance of land use classification and pressure on fragile ecosystems.

Ensure Public Participation in the Definition of the Environmental Profile of Urban Development Scenarios, and in the Selection of the Sustainable Strategic Urban Development Pattern

Public participation is an essential variable in all the DMPs and even more so in urban planning where decisions directly affect population. The lack of public participation results in an imbalance in land use classification.

Ensure Availability of Information for a Comprehensive Understanding of the Urban System

One of the central tools to avoid a biased urban planning output and process is to ensure a comprehensive understanding of the urban system from the beginning. Most of the negative territorial and non-territorial dynamics that urban planning can induce are the result of a limited view of the urban system,

Table 9.3 Urban planning and environmental implications in Puerto de la Cruz

Dynamics	Description	Environmental implications	Actions needed
Land use not in equilibrium	All municipal land is classified as built-up or building. According to the current general plan the whole territory could be urbanized.	It is an indicator of the predictable urban saturation and reveals that territory, traditional use of natural resources and agriculture are under-valued and abandoned.	Introduce better balance between urban and rural areas and reconsider the real demand of urbanization and rural space for uses other than urban.
Pressure on fragile ecosystems	Expansion of dispersed urbanized areas and mobility infrastructures isolate and divide natural systems, breaking their necessary continuity. The ‘ecological footprint’ of the city increases and urban processes require increasing amounts of energy and resources, extraction of materials and disposal of waste.	Consumption of land, loss of biodiversity and fertile land and deterioration of natural and support systems. Low efficiency of building in relation to land consumption.	Change paradigm to manage the complexity of ecosystems and protect biodiversity. Incorporate recognition of nature, endowing it with its own values. Promote resource-efficient and sound settlement patterns.
Congestion	The ratio of vehicles to population is extremely high and the urban model generates	Increasing noise, atmosphere pollution and energy consumption. Bigger mobility	Specify the effects of local intervention in relation to the broader system. Promote the

	a lot of traffic. Demand for motorized mobility increases continuously, generating significant traffic jams and worsening life quality conditions.	demand by motorized vehicles produces bigger emissions of greenhouse gases and noise.	combination of uses and sound settlement patterns.
Depletion and pollution of water sources	Being an island, water is a very limited resource, and the groundwater of Puerto de la Cruz is not drinkable due to its proximity to the sea. There is neither a drainage system, nor a water treatment plant and water supply infrastructures are obsolete, losing 35 per cent of the water.	Sewage water contaminates soil and groundwater, which in the future should be restored to make it drinkable. Sewage water also contaminates marine water as it is discharged at 200 m. from the coast.	Prevention of marine and ground water contamination. Introduction of water demand management plans (that is, consumption reduction in hotels and industry, irrigation and so on). Assure reliability and quality of drinking water supplies.
Dependence on tourism	Tourism is the main economic resource and induces growing tourism land classification and associated activities. It puts pressure on the local population to move away from the centre. 75 per cent of the population works in tourism or related activities.	Consumption of resources generates vulnerable quarters on the periphery and loss of social cohesion, all of which might produce environmental degradation.	Reconsider the management models for city planning and government in order to improve the management of the tourism offer.

Table 9.4 Matrix of procedural criteria/urban dynamics

Procedural criteria	Environmental negative urban dynamics				
	Imbalance of land use	Pressure on fragile ecosystems	Congestion	Depletion and pollution of water resources	Dependence on tourism
Incorporate environmental objectives and variables	X	X			
Reduce discretion when classifying built-up area	X	X			
Incorporate sustainable strategic urban development scenarios in the DMP and ensure the availability of more than one of these scenarios	X	X	X	X	X
Incorporate proactive environmental urban planning in built-up areas	X	X	X	X	X
Incorporate a proper selection process for sustainable strategic urban development patterns	X	X	X	X	X
Check structure consistency with GUPs of adjacent municipalities and other territorial planning instruments	X	X			

Ensure public participation in the definition of the environmental profile of urban development scenarios and in the selection of the sustainable strategic urban development patterns	X	X			
Information for a comprehensive understanding of the urban system	X	X	X	X	X
Transparent information about the relevant planning stages	X	X	X	X	X

which impedes looking at the whole set of relationships between the different systems acting within a city. It is not enough to have information on valuable ecological sites or on the landscape surrounding the city. It is fundamental to understand how both systems interact and how they can benefit each other in the long term.

The demand for strategic scenarios of urban development implies in many cases new information and simulation tools to enable a comprehensive understanding of the urban system.

Provision of Transparent Information About the Relevant Stages of the Planning Process

Ensuring public participation is not enough to make a decision-making process sound. It is necessary that this participation is based on consistent information regarding the crucial details of the decision-making process, provided in a transparent and understandable manner for those who are not experts.

The relationship between the developed procedural criteria (PC) and the environmentally negative urban dynamics is depicted in Table 9.4. This shows the link between the PC proposed and the environmentally negative dynamics which the GUP should avoid. The link between these dynamics and the environment was depicted in the previous section. In this way, the procedural aspect is linked to the purely environmental side of the assessment in a practical and transparent manner.

In this sense, the application of PC should ensure that the planning process produces the best possible environmental output.

9.11 IDENTIFICATION AND DESCRIPTION OF DECISION WINDOWS

9.11.1 Identification of Decision Windows

Decision windows are moments in the decision-making process where critical choices are made, which have an environmental implication.

In this case study, the identification of DWs followed a deductive approach. That is to say, as a first step, as explained in the previous section, the specific PCs of this decision-making process were identified.

In a second step, the identified PCs were cross-checked with the functional description of the DMP elaborated before. When a decision unit was identified as relevant for the application of the selected procedural criteria, it was classified as a DW.

9.11.2 Description of Selected DW

In Table 9.5, the most significant decision windows have been identified at the different stages of the planning process (shadowed cells). The selected DWs are those considered more strategic during the urban planning process. The description level of DWs used here is optional. The DWs are considered at the second (task) level of the description of the DMP. Their content is briefly explained below.

Initiative and organization of the urban planning process

The first DW identified is the initiation and organization of the urban planning process. This DW takes place prior to the DMP, when preliminary decisions are taken, therefore it would be out of the matrix formed by the procedural criteria of the DMP. Nevertheless, this DW could be associated with the environmental decisional issue ‘environmental objectives and variables’. Even in the decisions taken before the DMP, it is necessary to take into account those environmental objectives to avoid the environmental problems mentioned in previous sections.

At that decision stage, the plan is elaborated and the team is formed. In current planning, a team of urban planners is first selected to elaborate the plan and, at the following stage, a team of environmentalists will take part to carry out the environmental impact assessment (EIA) of concrete projects. In fact, an adequate procedure would require selecting a multidisciplinary team formed by town planners and environmentalists to carry out the work jointly, for example, in the case of Xeraco, a municipality in Valencia, where the general plan and its EIA were made at the same time.

Therefore, the initiative and organization of the urban planning process is a very important DW. At this stage the city council has the option to select an environmentally-oriented team. It is the ideal moment to tackle the reluctance of land use planners to modify their existing practices and to include an independent environmental evaluation of the proposed plan.

Setting of goals

This DW takes place at the first stage of the DMP when goals are established, and it is associated with the tasks of identifying and prioritizing objectives (C, D). Therefore, it is directly connected to the environmental decisional issue of incorporating environmental objects and variables, although it is also related

Table 9.5 Identification of decision windows

Procedural criteria	Phases of the GUP planning process DMP							
	Plan initiative	Setting of goals	Collecting information	Diagnosis	General programme	Alternative proposals	Alternative selection	Approval – execution
1. Environmental objectives and variables	Initiative and organization of the DMP	Tasks C, D Identify and prioritize goals		Task J	Tasks O, P, R		Task V	
2. Reduce discretion				Tasks K, L, M	Task O, Land-use classification			
3. Sustainable strategic urban development scenarios		Task C	Task G	Tasks J, K, L	Tasks O, P	Tasks S, T, U General structure of alternative strategies		
4. Proactive environmental urban planning in built-up areas		Task C	Task G. Data collection and analysis		Task R	Task S		

5. Proper selection process of the sustainable strategic urban development patterns						Tasks S, T, U	Tasks V, W	
6. Structure consistency with adjacent municipal General Plans and others		Tasks A, B	Task I	Tasks M, N	Tasks O, P	Task T		
7. Public participation		Tasks C, D				Tasks S, T, U	Tasks V, W	Tasks
8. Ensure availability of information			Tasks E, F, G	Tasks J, K, L				
9. Provide transparent information		Task D		Tasks J, K, L	Tasks O, P	Tasks S, T, U	Tasks V, W	

 Selected decision windows to be analysed in depth

to other procedural criteria, like sustainable strategic urban development scenarios or public information.

This is also a very important DW because the current general plan has a strong physical bias and concentrates on the logic of urban architecture and on short-term planning, giving environmental considerations little relevance. Hence, it is necessary to incorporate and assess environmental objectives from the early stages of the DMP, as they will influence and condition the following steps. At this stage, urban planning only incorporates what the legal framework requires, but it should include the conditions implicitly or explicitly set by the entire institutional context.

Finally, in order to ensure public participation, it seems relevant to consider here the criteria for transparent information about a given decision, in particular task D, on the priority objectives of the plan.

Data collection and analysis

The third DW identified, data collection and analysis, is a decision taken at the second stage of the DMP when information is collected, and it is associated with task G, on urban environment information. Task G is related to the procedural criteria of incorporating proactive environmental urban planning, since it is indispensable for ensuring that this does generate or increase the environmental problems in built-up areas. It is also important that the collection of urban environment data incorporates sustainable strategic urban development scenarios in the DMP and ensures the availability of more than one of these scenarios (third procedural criteria).

In general, this task should ensure that enough information is provided for a comprehensive understanding of the urban system. This, of course, can only take place if the urban system and its interactions with the rest of the system are modelled from a systemic or holistic perspective. Therefore, it is important to incorporate a useful environmental information system and set indicators that will be decisive in monitoring the ongoing process, since information analysis and synthesis feed the rest of the process, especially the stages of generation, quantification and evaluation of alternatives.

Land use classification

This DW takes place at the fourth stage of the DMP, when defining land use classification (task O). It is directly connected to the environmental decisional issue of reducing discretion when classifying built-up areas. It is also related to other issues, like consistency with adjacent municipal general plans and other territorial planning instruments.

Land classification is a basic DW in urban planning because an unbalanced land use classification, caused by undue discretion when classifying, could

generate urban saturation and serious environmental problems, like water and energy shortages and pressure on fragile ecosystems.

Discretion when classifying tends to generate a built-up area supply which is not normally justified by any urban planning criterion, therefore part of the land can become unregulated or result in an excessive planning, with the consequent environmental problems.

The procedural criteria for reaching a balanced land use classification consists of limiting the discretionary factor when classifying built-up areas, introducing accurate demand forecasts and environmental variables, that is, land classification according to real land demand, and incorporating concepts of smart growth.

Public validation of the results of this task depends on transparency in the information provided about the work leading to the diagnosis and about its main results.

Formulation of general structure alternative strategies

The formulation of general structure alternative strategies from urban structure alternative proposals (built-up area alternatives, building land and non-built land, tasks S, T and U, respectively) has to be done at the fifth stage of the DMP. This DW is mainly associated with the procedural criteria of incorporating sustainable strategic urban development scenarios into the DMP. It is in fact necessary to take into account those scenarios in order to identify accurately the strategic alternatives and their environmental and social impacts.

In relation to this DW, other procedural criteria are the incorporation of a proper selection process for the sustainable strategic urban development patterns, consistency with adjacent municipal general plans and other territorial planning instruments, and public participation.

As well as in the previous decision window public validation of the results of this task depends on transparency in the information provided about the work leading to diagnosis and about its main results. The next table shows the specific DWs identified in the DMP, their classification according to the respective DMP activity, a brief DW description and the procedural criteria that should be followed in the DMP in each case.

9.12 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are obtained from the analysis carried out in this case study:

- The analysis of the standard GUP planning process in Spain shows the feasibility of applying the ANSEA concepts.

- It has been possible to identify precisely the complex institutional framework of the DMP.
- It has been possible to obtain a clear picture of the functional shape of the actual planning process at a very detailed level of description.
- It has been possible to identify a set of main procedural criteria, or decisional environmental issues, which are relevant in order to improve the sustainability profile of the current planning process.
- It has been possible to identify precisely the moments in the decision-making process which are crucial to the application of those procedural criteria, creating the basis for a precise environmental assessment.
- GUPs follow a standardized planning process that is deeply urban development-oriented. Decision models are frequently strongly influenced by the municipal government's discretion in defining objectives.
- The external EIA of the urban plan can be perceived in Spain, but current environmental assessment procedures and mechanisms are not capable of introducing new environmentally sound paradigms into urban planning processes. Having applied the ANSEA methodology, it is concluded that a reconsideration of urban planning assessment could lead to more favourable planning paradigms:
 - a) by applying ANSEA criteria, a new basic functional description of the DMP could be defined after identifying the relationships between the stages of the planning procedure, its deficiencies and levels of discretion and the main decision windows.
 - b) environmental assessment could be carried out in parallel to the planning process, facilitating feedback and, as it could conform to existing documents, it would not require extra document elaboration.
- It is possible to develop a guide to evaluate the assessment process and to check purposefully if the tasks have been carried out adequately from an ANSEA perspective.

Notes

1. When examining the theoretical foundations and linkages, the concept of environmental assessment (EA) will be used here rather than distinguishing between SEA and EIA. Although SEA has a different focus and a different emphasis from EIA, the basic concepts remain the same.
2. Depending on how much and what type of environmentally relevant information is present at this earliest stage in the DMP, the premises and priorities for the DMP, in terms of process design and objectives, may be differently set (including or excluding some kind of environmental assessment and environmental objectives).
3. It should be noted that the Directive itself does not refer to the expression 'SEA'; however, it is commonly referred to as the 'SEA Directive', hence the use of this term in this document.
4. The list of benefits and expected results from SEA-type procedures is based on various sources: Sheate *et al.* 2001; Bina *et al.* 1999; Therivel and Partidário 1996 and Fischer 1999c.
5. Building land is land that can be urbanized. When the General Urban Plan classifies land as building land, it also determines the land owner's rights and duties to urbanize, because in Spain, General Urban Plans are legally binding.

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