Strategic environmental assessment:

From scoping to monitoring

Content requirements and proposals for practical work

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List of figures and tables

Abbreviations

Air Quality Framework Directive	.....	Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management, OJ L 296/55 of 21 November 1996 as amended in OJ L 284/1 of 31 December 2003
1st Air Quality Daughter Directive	.....	Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, OJ L 163/41 of 29 June 1999 as amended in OJ L 278/35 of 23 October 2001
2nd Air Quality Daughter Directive	.....	Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air, OJ L 313/12 of 13 December 2000 as amended in OJ L 111/31 of 20 April 2001
3rd Air Quality Daughter Directive	.....	Directive 2002/3/EC of the European Parliament and of the Council of 12 February 2002 relating to ozone in ambient air, OJ L 67/14 of 9 March 2002

4th Air Quality Daughter Directive	.....	Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air, OJ L 23/3 of 26 January 2005
ALSAG	.....	Federal Act of 7 June 1989 on the funding and implementation of the remediation of contaminated sites amending the Act on the Environmental and Water Management Fund, Federal Law Gazette (BGBl.) No. 79/2003, the Act on Support for Hydraulic Structures, BGBl. No. 148/1985, the Act on the Environmental Fund, BGBl. No. 567/1983, and the Federal Act of 20 March 1985 on Environmental Control, BGBl. No. 127/1985 (*Altlastensanierungsgesetz* — Act on the Remediation of Contaminated Sites), BGBl. No. 299/1989 as amended by BGBl. I No. 71/2001
Birds Directive	.....	Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds, OJ L 103/1 of 25 April 1979, as amended in OJ L 236/870 of 23 September 2003
CL	.....	Check-list
EIA	.....	Environmental impact assessment
ER	.....	Environmental report
EQO	.....	Environmental quality objectives
ForstG	.....	Federal Act of 3 July 1975 regulating the forestry sector (*Forstgesetz*—Forestry Act), BGBl. No. 440/1975 as amended in BGBl. I No. 83/2004
GSwV	.....	Ordinance of the Federal Minister of Agriculture and Forestry on limit values for substances contained in groundwater (*Grundwasserschwellenwertverordnung*—Ordinance on groundwater limit values), BGBl. No. 502/1991, as amended in BGBl. II No. 147/2002
Habitats Directive	.....	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206/7 of 22 July 1992, as amended by OJ L 284/1 of 31 December 2003.
IG-Luft	.....	*Immissionsschutzgesetz-Luft* (Pollution control (air) act), BGBl. I No. 115/2003, as amended in BGBl. I No. 34/2001
IPPC Directive	.....	Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control, OJ L 257/26 of 10 October 1996 as amended in OJ L 284/1 of 31 December 2003

OzonG	.....	Federal Act on Measures to Control Ozone Pollution and to inform the public on high ozone levels, amending the Smog Alarm Act, BGBl. No. 38/2003 (*Ozongesetz* — Ozone Act), BGBl. No. 210/1992, as amended in BGBl. I No. 34/2001
PPs	.....	Plans and/or programmes
SEA	.....	Strategic environmental assessment
SEA Directive	.....	Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, OJ L 197/30 of 21 July 2001
Seveso II Directive	.....	Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances, OJ L 10/13 of 14 January 1997, as amended in OJ L 345/97 of 31 December 2003
UVP-G 2000	.....	Federal Act on Environmental Impact Assessment (*Umweltverträglichkeitsprüfungsgesetz*—EIA Act), BGBl. No. 697/2004, as amended in BGBl. I No. 153/2002
Water Framework Directive	.....	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, OJ L 327/1 of 22 December 2000, as amended in OJ L 331/1 of 15 December 2001
WRG	.....	Water Act 1959 (*Wasserrechtsgesetz*), BGBl. No. 215/1959, as amended in BGBl. I No. 112/2003

Executive Summary

The present study discusses the **content-related** and **methodological** requirements to be met when carrying out strategic environmental assessments (SEAs). This involves the following steps:

- defining the scope;
- preparing the environmental report;
- taking into account the results and decision-making; as well as
- monitoring.

In addition to presenting the requirements and framework conditions, highly concrete proposals and recommendations are made for the approach and several tools are provided to support practical work.

Working materials have been developed as guidance for the various steps. By analogy with an existing study on screening (for determining whether PPs are likely to have significant environmental effects), a procedure was selected that essentially uses a few **check-lists.** To ensure completeness and transparency, as well as to document the aspects covered and to clarify the decision-making process, several **assessment rules** have been drawn up.

The tools provided are to meet all requirements of the SEA Directive and, at the same time, reflect good practice. For the users of the tools as well as for those preparing PPs (including authorities, (local) planners, consultants and experts involved, entities adopting PPs (again including authorities), decision-makers, etc.), the main focus is on practice orientation and on providing help in the implementation of concrete SEAs. Moreover, the tools are intended to be useful both for complex and simple planning processes.

The present study is made up of **two parts:** In the first part, the framework conditions, including **requirements** and reasons are presented that constitute the basis of the proposals for the approach and the working materials developed. The Annexes A to D contain the **working materials** themselves as possible examples of SEA tools. These were designed in such a way that they can be used alone—i.e. separately from the first part of this study—for assessing the environmental effects resulting from PPs.

1. Introduction

Since July 2001, the Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (SEA Directive, OJ L 197/30 of 21 July 2001) has been in force. The Member States had to transpose (or should have done so) the Directive into national law within three years, i.e. by 21 July 2004.

With a view to the requirements for implementing the SEA Directive, not only the procedural aspects, but also the content-related and methodological aspects play an essential role. Given the experiences gathered in SEAs so far, including also several pilot projects performed in Austria, it has to be assumed that these aspects constitute quite a challenge for all parties involved.

A key aspect that is important in this context, namely the screening of PPs to determine whether they are likely to have significant environmental effects, is already covered in an existing study (A. Sommer, Assessment of the significance of environmental effects. Screening procedure and criteria applied in strategic environmental assessments; published by the Federal Ministry of Agriculture and Forestry, Environment and Water Management, 2003). In the following, this study is referred to as the **"Screening Study"** for short. The Screening Study contains proposals for the approach to be taken and the criteria to be used in assessing the significance of environmental effects in SEAs.

The present study deals with further content-related requirements beyond screening that are conceivable or necessary in the course of an SEA.

1.1. Terms: A short SEA glossary

The SEA Directive does not contain the term **"strategic environmental assessment,"** but speaks about the *"assessment of the effects of certain plans and programmes on the environment."* But as this term has meanwhile become widely accepted and also for better readability, the present study will continue to use the term "strategic environmental assessment" (SEA).[a]

For the individual steps in an SEA—which, by the way, also can be found in other procedures, such as the environmental impact assessment (EIA)—, terms that are actually not used in the SEA Directive (such as screening) have become well established, which is why some of these terms are also used in this study. With regard to detailed information on the individual terms, such as requirements deriving from the SEA Directive, the readers are referred to the relevant chapters.

[a] The United Nations Economic Commission for Europe (UNECE) also uses the term "strategic environmental assessment" in its Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context.

Screening relates to determining whether SEA is required or not, i.e. whether PPs are likely to have significant effects on the environment and whether, therefore, SEA has to be performed or not.

Scoping relates to defining the scope for the assessment of environmental effects. It always refers to a concrete plan or programme even though some aspects may well be generalisable or transferable to other PPs.

Another important term is **"monitoring,"** which is widely used in German-language literature and practice, even though the German version of the SEA Directive speaks of "Überwachung."

Another term not to be found in the SEA Directive, even though it turns up again and again in connection with SEAs is **"tiering."** This means that assessments and assessment issues are dealt with in a tiered approach, i.e. results obtained at various levels of PPs or SEAs are taken into account or taken over. This is to prevent duplication of assessment.

Additionally, this study also uses a term that has become common usage in the context of environmental impact assessments (EIAs) in Austria: **"no-impact statements."** These could also be called "nil reports" because they are relevant in cases in which it can be expected with sufficient probability that there will be no significant effects on the environment. This study uses the term "no-impact statements" in such cases.

Finally, it is worth mentioning that several terms are used as synonyms for **"alternatives."** In planning practice, for example, the terms variants and options are also used with the same meaning. As the SEA Directive speaks of "alternatives", the present study sticks to this term. The alternative that describes the development in case the PP is not implemented, will be referred to as the **"zero alternative"**.

A few more terms that are important in the context of assessing environmental effects are discussed in the relevant chapters.

2. Contents and structure of the study

Chapter 2 describes the tasks and requirements as they derive from the SEA Directive.

Starting from this basis and the related framework conditions that are dealt with in **Chapter 3,** the general approach is explained in line with the individual methodologically relevant steps in **Chapter 4.** This chapter also contains basic reflections on the check-lists as support tools, on documentation and references to the screening step.

Chapter 5 focuses on scoping and covers, among others, a discussion of the alternatives.

Chapter 6 explains the preparation of the environmental report, dealing with all the requirements that are specified in the SEA Directive in some cases also in greater detail and offering guidance.

Chapter 7 describes the steps of decision-making with account being taken of the results and their communication, while **Chapter 8** provides information on monitoring.

This part of the study is concluded by **Chapter 9** which lists the literature referred to.

Subsequently, Annexes A to D contain the working materials for the individual steps: **Annex A** for scoping, **Annex B** for the preparation of the environmental report, **Annex C** for taking into account the results and decision-making and, finally, **Annex D** for monitoring.

2.1. Scope

The SEA Directive contains specifications both for the SEA procedure and for the issues to be covered in an environmental assessment. The **central elements** of an SEA are as follows:

- assessment of significant effects on the environment
- examination of alternatives
- documentation (in an environmental report)
- consultations (of so-called “environmental authorities” and the public), if applicable, also across borders
- taking into account of results
- provision of information on the decision
- monitoring

The concrete scope of this study extends to content-related and methodological aspects and the connected requirements to be met when SEAs are performed. This

includes the steps from scoping to performance monitoring, with a focal area being the preparation of the environmental report.

It is needless to say that these two aspects—the formal procedure and the material legal aspects of the SEA Directive—cannot be completely separated from each other. This means that this study also has to consider various steps in the process or, at any rate, must not neglect them entirely. However, they are not in the foreground, and aspects, such as public participation and the consultation of the so-called "environmental authorities" (the authorities[b] *"which, by reason of their specific environmental responsibilities, are likely to be concerned by the environmental effects of implementing plans and programmes"*) do not form part of the scope of this study. On the other hand, issues, such as taking account of the results of consultations, for example, in the step of decision-making will naturally be discussed in this study. As a result, this is also reflected by the working materials.

For a study that is to be generally valid and useful for all planning cases, it also does not make sense to cover all details related to the specifics of implementing the SEA Directive in the various jurisdictions (in Austria, this concerns implementation both at the federal and regional levels). This means that the study does not interpret specific acts of law, but offers practical guidance on how to assess environmental effects of **all conceivable types of plans or programmes** irrespective of concrete implementation.

Assistance is offered for all the steps involved in applying the SEA Directive, pointing out options and potential room for manoeuvre. It is, however, utterly unthinkable to provide complete lists for individual sub-aspects, such as objectives, indicators, data sources or assessment methods. The task rather is to present the principles and criteria that are derived from the common features of all PPs and that can support the selection process. Further aspects specific to certain applications need to be decided in the context of a concrete case. Moreover, many details can be gleaned from the—partly extensive—collections contained in the literature (see References).

Taking account of the broad range of potentially affected planning processes, the study is to cover the common foundations—the "common outline"—which is the basis of all these plans and programmes. In Austria, one also has to bear in mind that planning density is relatively high and that, in particular in the field of spatial planning which is mainly affected by the implementation of the SEA Directive, a great diversity of plans and programmes are to be covered at various levels of the planning hierarchy. This also includes PPs at a local level, and it is especially here that PPs may well constitute "negligible cases" with a view to the assessment of environmental effects under the SEA Directive (which, however, must not lead to the conclusion that all PPs at this level always are "negligible").

As mentioned above, this study builds on a study on screening so that screening itself is not discussed with all its detail here. The contents are, of course, compatible with the results of the Screening Study. This is a must simply because, on principle, the content requirements for the issues dealt with in individual steps have to cover a largely identical or at least overlapping field. Consequently, the present study follows

[b] Please note that these need not be "authorities" under the Austrian legal system so that the term "entities" is preferable. Therefore, we will largely use the term **"environmental entities"** in this study.

up on the Screening Study without repeating its contents, but rather uses cross-references, wherever this is possible. In some cases, it is, however, inevitable to recapitulate specific statements in the present study to ensure that a consistent paper is made available that can provide support alone, i.e. without the Screening Study.

Because it is not required in each case that the need for an SEA be examined, the assessment of environmental effects will not always be based on screening, which means that the information gathered during screening will not be available in all cases. In those cases, it is to be ensured that, by analogy with the quoted Screening Study, a **structured** and **systematic** approach is applied, in particular, to the assessment of environmental effects.

The potential **users** of this study, including the tools developed, are all persons implementing or involved in an SEA. The SEA Directive does not specify who is to implement the SEA; it is, however, safe to assume that this will be in the responsibility of the plan-makers. This, of course, is not an obstacle to commissioning third parties with the implementation of the SEA or individual aspects thereof. Therefore, the users of the tools may include PP-makers (including authorities), (local) planners, consultants or experts involved, entities adopting PPs (again including authorities), decision-makers or other stakeholders.

Ultimately, this study and the working materials developed are to help taking speedy and (formally) correct decisions within the framework of strategic environmental assessments. A contribution to this effect is to be made by standards for taking into account environmental aspects that ensure not only a minimum quality level but also minimise the efforts involved.

2.2. Methodological starting points in the SEA Directive

The requirements for the implementation of strategic environmental assessments, including the technical and content-related requirements to be met, are defined in several articles of the SEA Directive that will be briefly discussed below. These cover the methodological starting points that can be found on the following aspects in the SEA Directive:

- scoping;
- preparation of the environmental report;
- taking into account the results and decision-making; as well as
- monitoring.

These requirements are dealt with in greater detail in the related chapters. The aspects concerning screening are not further discussed, but reference is made to the Screening Study.

2.2.1. Principles and objectives

The principles and objectives inspiring the SEA Directive are also important for implementing SEAs and, in particular, for considering environmental effects. The SEA Directive implies that a comprehensive or **integrated[c] approach** is to be used for assessing the environmental effects of PPs under the terms of the Directive, as will be explained below.

Its recitals include references to the aspects of environmental quality, human health, utilisation of natural resources, biodiversity and sustainable development:

> *(1) Article 174 of the Treaty provides that Community policy on the environment is to contribute to, inter alia, the preservation, protection and improvement of the quality of the environment, the protection of human health and the prudent and rational utilisation of natural resources and that it is to be based on the precautionary principle. Article 6 of the Treaty provides that environmental protection requirements are to be integrated into the definition of Community policies and activities, in particular with a view to promoting sustainable development.*
>
> *(2) The Fifth Environment Action Programme: Towards sustainability - A European Community programme of policy and action in relation to the environment and sustainable development(1), supplemented by Council Decision No 2179/98/EC(2) on its review, affirms the importance of assessing the likely environmental effects of plans and programmes.*
>
> *(3) The Convention on Biological Diversity requires Parties to integrate as far as possible and as appropriate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans and programmes.*
>
> _____
> (1) OJ C 138, 17.5.1993, p. 5.
> (2) OJ L 275, 10.10.1998, p. 1.

The objectives of the SEA Directives are stipulated in Article 1:

> *The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.*

[c] "Integrated" and "integral" are used as synonyms in this context.

Objectives are also described in other recitals of the SEA Directive:

> *(4) Environmental assessment is an important tool for integrating environmental considerations into the preparation and adoption of certain plans and programmes which are likely to have significant effects on the environment in the Member States, because it ensures that such effects of implementing plans and programmes are taken into account during their preparation and before their adoption.*
>
> *(5) The adoption of environmental assessment procedures at the planning and programming level should benefit undertakings by providing a more consistent framework in which to operate by the inclusion of the relevant environmental information into decision making. The inclusion of a wider set of factors in decision making should contribute to more sustainable and effective solutions.*
>
> *(6) The different environmental assessment systems operating within Member States should contain a set of common procedural requirements necessary to contribute to a high level of protection of the environment.*

2.2.2. Environmental assessment

Article 2 of the SEA Directive contains the **definitions.** The environmental assessment is defined in Article 2(b) which reads as follows:

> *For the purposes of this Directive:*
>
> *...*
>
> *(b) "environmental assessment" shall mean the preparation of an environmental report, the carrying out of consultations, the taking into account of the environmental report and the results of the consultations in decision-making and the provision of information on the decision in accordance with Articles 4 to 9;*

The issues of preparing the so-called environmental report (ER) and taking it into account in decision-making constitute central elements of the following discussions.

2.2.3. Environmental report

The environmental report is defined in Article 2(c):

> *For the purposes of this Directive:*
>
> *...*
>
> *(c) "environmental report" shall mean the part of the plan or programme documentation containing the information required in Article 5 and Annex I;*

Thus, requirements to be met by the contents of the environmental report are first specified in Article 5:

> *(1) Where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated. The information to be given for this purpose is referred to in Annex I.*
>
> *(2) The environmental report prepared pursuant to paragraph 1 shall include the information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the plan or programme, its stage in the decision-making process and the extent to which certain matters are more appropriately assessed at different levels in that process in order to avoid duplication of the assessment.*
>
> *(3) Relevant information available on environmental effects of the plans and programmes and obtained at other levels of decision-making or through other Community legislation may be used for providing the information referred to in Annex I.*
>
> *(4) The authorities referred to in Article 6(3) shall be consulted when deciding on the scope and level of detail of the information which must be included in the environmental report.*

Paragraph 1 lays down that, in preparing an ER, the likely significant environmental effects of implementing a PP as well as reasonable alternatives taking account of the PP's objectives and geographical scope are **identified, described** and **evaluated.** Paragraphs 2 and 3 contain provisions allowing for **flexibility** in environmental reports and, therefore, are important for the **efforts** involved in their preparation. Paragraph 4 contains a reference to **scoping;** the consultation of the so-called "environmental authorities" addressed here, however, does not form part of the issues to be covered in the present study. But the consultations required and public participation also justify the systematic approach and require a certain level of **transparency.**

2.2.3.1. Information to be provided

The reference to **Annex I** of the SEA Directive, which states that *"the information to be given for this purpose is referred to in Annex I,"* is of special importance for technical-methodological aspects.

Annex I of the SEA Directive reads as follows:

> ***Information referred to in Article 5 (1)***
>
> *The information to be provided under Article 5 (1), subject to Article 5 (2) and (3), is the following:*
>
> *(a) an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;*
>
> *(b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;*
>
> *(c) the environmental characteristics of areas likely to be significantly affected;*
>
> *(d) any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC[d] and 92/43/EEC[e];*
>
> *(e) the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;*
>
> *(f) the likely significant effects[(1)] on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;*
>
> *(g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;*
>
> *h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;*
>
> *i) a description of the measures envisaged concerning monitoring in accordance with Article 10;*
>
> *(j) a non-technical summary of the information provided under the above headings.*
>
> _____
>
> *(1) These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.*

All the types of information listed here are discussed in greater detail in the related chapters.

[d] Note: Birds Directive.
[e] Note: Habitats Directive.

As mentioned before, a comprehensive or **integrated approach** is to be used for assessing the environmental effects of PPs. For this reason, **Annex II** of the SEA Directive is also important in this context and not only within the framework of screening. This Annex II specifies several technical aspects having regard to assessments that also have to constitute the basis for evaluating environmental effects in the course of further steps of an SEA.

Annex II of the SEA Directive reads as follows:

> ***Criteria for determining the likely significance of effects referred to in Article 3 (5)***
>
> *1. The characteristics of plans and programmes, having regard, in particular, to*
>
> - *the degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources,*
> - *the degree to which the plan or programme influences other plans and programmes including those in a hierarchy,*
> - *the relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development,*
> - *environmental problems relevant to the plan or programme,*
> - *the relevance of the plan or programme for the implementation of Community legislation on the environment (e.g. plans and programmes linked to waste management or water protection).*
>
> *2. Characteristics of the effects and of the area likely to be affected, having regard, in particular, to*
>
> - *the probability, duration, frequency and reversibility of the effects,*
> - *the cumulative nature of the effects,*
> - *the transboundary nature of the effects,*
> - *the risks to human health or the environment (e.g. due to accidents),*
> - *the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected),*
> - *the value and vulnerability of the area likely to be affected due to:*
>   *- special natural characteristics or cultural heritage,*
>   *- exceeded environmental quality standards or limit values,*
>   *- intensive land-use,*
> - *the effects on areas or landscapes which have a recognised national, Community or international protection status.*

Please note that the requirements contained in Annex II of the SEA Directive are **examples** and do not constitute a complete and exhaustive list. This is expressed by the wording used (*"in particular"*).

2.2.3.2. Ensuring quality

The SEA Directive also contains specifications on the quality of environmental reports, namely in Article 12(2):

> *(2) Member States shall ensure that environmental reports are of a sufficient quality to meet the requirements of this Directive and shall communicate to the Commission any measures they take concerning the quality of these reports.*

2.2.4. Avoiding duplication of assessment

In addition to the requirements of Article 5 (especially paragraphs 2 and 3) that have been quoted above, Article 4(3) contains specifications designed to avoid multiple assessments:

> *(3) Where plans and programmes form part of a hierarchy, Member States shall, with a view to avoiding duplication of the assessment, take into account the fact that the assessment will be carried out, in accordance with this Directive, at different levels of the hierarchy. For the purpose of, inter alia, avoiding duplication of assessment, Member States shall apply Article 5(2) and (3).*

Article 11 of the SEA Directive also provides for preventing unnecessary efforts:

> *(2) For plans and programmes for which the obligation to carry out assessments of the effects on the environment arises simultaneously from this Directive and other Community legislation, Member States may provide for coordinated or joint procedures fulfilling the requirements of the relevant Community legislation in order, inter alia, to avoid duplication of assessment.*

2.2.5. Taking into account the results and decision-making

Article 8 of the SEA Directive contains the relevant provisions on taking into account the results and decision-making:

> *The environmental report prepared pursuant to Article 5, the opinions expressed pursuant to Article 6 and the results of any transboundary consultations entered into pursuant to Article 7 shall be taken into account during the preparation of the plan or programme and before its adoption or submission to the legislative procedure.*

Additionally, Article 9 defines the requirements for providing information on the decision taken. This Article 9 reads as follows:

> *(1) Member States shall ensure that, when a plan or programme is adopted, the authorities referred to in Article 6(3), the public and any Member State consulted under Article 7 are informed and the following items are made available to those so informed:*
>
> *(a) the plan or programme as adopted;*
>
> *(b) a statement summarising how environmental considerations have been integrated into the plan or programme and how the environmental report prepared pursuant to Article 5, the opinions expressed pursuant to Article 6 and the results of consultations entered into pursuant to Article 7 have been taken into account in accordance with Article 8 and the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with, and*
>
> *(c) the measures decided concerning monitoring in accordance with Article 10.*
>
> *(2) The detailed arrangements concerning the information referred to in paragraph 1 shall be determined by the Member States.*

2.2.6. Monitoring

As mentioned above, Annex I to the Directive demands that a description of the monitoring measures envisaged according to Article 10 be included in the environmental report and, according to Article 9(1)(c), the monitoring measures adopted pursuant to Article 10 have to be made available to the public and, if applicable, to each Member State consulted.

Article 10 of the SEA Directive on monitoring reads as follows:

> *(1) Member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, inter alia, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action.*
>
> *(2) In order to comply with paragraph 1, existing monitoring arrangements may be used if appropriate, with a view to avoiding duplication of monitoring.*

3. Framework conditions

3.1. Purpose and potential of SEA

As a contribution to precautionary environmental protection, SEA is an in-process examination of environmental effects which is to ensure that environmental issues are integrated into planning at an early stage, i.e. already during the preparation of plans and programmes. It is necessary to consider potential environmental effects of PPs early on and during the entire process, and to safeguard communication with the parties responsible, affected or simply interested. Thereby, environmental issues can already be reflected on at that time instead of having a “punitive” inspection later on.

SEA can contribute to a better—because traceable and ideally well-balanced—preparation of the basis for decision-making on plans and programmes. This may also raise **planning quality** and **planning security** and positively influence the **acceptance** of planning results. Adverse effects on the environment or environmental problems and conflicts can be recognised at an early stage, which in turn, allows for timely corrections and improvements. Hence, necessary choices may be identified early on and cost-intensive planning mistakes may be avoided.

At this strategic level, moreover, aspects may be involved that cannot be “repaired” by other instruments applied at a later stage, such as environmental impact assessments (EIAs). In this way, subsequent procedures, in particular EIAs, can be reinforced or their workload can be reduced. This may be achieved by identifying suitable alternatives optimised with a view to environmental aspects in a more appropriate planning phase or by the timely identification of possible cumulative effects.

3.2. Integration into existing procedures

There are different options for the basic approach to SEAs. Either SEA is performed as a parallel or subsequent separate procedure or SEA is **integrated** into existing procedures of planning or plan preparation. There is wide agreement among all those who have already gathered practical experiences with SEAs that, also for reasons of procedural efficiency, preference is to be given to the latter variant, i.e. the integration of SEAs into existing procedures—at as early a stage as possible.

On the one hand, it is in line with the provisions and the spirit of the Directive to perform the SEA during the preparation of plans and programmes and not as a subsequent examination. On the other hand, this is also more than obvious for practical reasons, since it makes little sense to start focusing on environmental considerations after completing potentially extensive planning processes already involving, if appropriate, various stakeholders.

There are also numerous reasons advising against a parallel procedure. If planning is a completely separate process, the precautionary, integrated assessment of environmental effects becomes considerably more difficult. It would be more complicated and would probably also require more efforts to reflect on the PPs' potential environmental effects in parallel to the planning process at an early stage, to ensure communication with the parties responsible, affected or simply interested and, for example, to exploit synergy effects.

However, one must not forget that it may be problematic or at least be seen as problematic when it is the plan-makers who also perform the SEA and, so to speak, carry out a self-assessment. Even though such a constellation should not be rejected downright, much care should be taken in such cases. In this context, the consultations are of special importance with a view to ensuring an offsetting or regulating impact.

Anyway, the present study can provide support no matter whether SEA is integrated into existing procedures or not. The working materials developed also may be used independent of this procedural choice.

3.3. Challenges

SEAs deal with the environmentally relevant contents of PPs that are sufficiently concrete in terms of space and time as well as with their underlying objectives and principles. One of the most difficult challenges faced in assessing the environmental effects of PPs certainly is the fact that one inevitably deals with blurred terms as well as fuzziness and uncertainty in general. This is also reflected by the level of detail and concreteness of the PPs' contents, measures and instruments as well as by the underlying knowledge. At the same time, the methods and tools proposed are to be applicable to all conceivable plans or programmes, including their diverse levels of hierarchy, scale and detail.

Moreover, the PPs in question frequently constitute—at least in part—an offer, i.e. they open up opportunities within certain limits, but they do not result in a binding obligation with regard to the implementation of projects. Hence, the PPs themselves may not (always) have significant environmental effects, but, at the most, determine the framework for these effects.

3.4. Requirements to be met by the approach

With a view to developing methodological aids, the content-related, structural and legal requirements[f] to be met by the approach can be summarised as follows:

- completeness and conformity with the Directive,
- adequate procedures,

[f] A detailed discussion of the specific aspects of differing transposition into national law (in Austria both at a federal and regional level), which also have to be taken into account where appropriate, goes beyond the scope of this study.

- transparency and traceability,
- ease of use and reasonable efforts,
- acceptance.

With regard to completeness and, in this context, the conformity with the SEA Directive, care is taken to take into account all the aspects mentioned in the SEA Directive. In some cases, this means that extracts from the Directive are quoted in the working materials so that the method applied also stands a formal test, if necessary, and related uncertainties and different interpretations can be widely eliminated beforehand. The conformity with the Directive also is to be reflected in the individual working documents, so to speak as a **"service"** for the users. This is to ensure that all the requirements of the Directive are indeed met by considering the aspects addressed in these materials. As a result, a certain amount of redundancy has to be accepted in some cases.

Adequate procedures cover a number of aspects which also include, for example, openness to all conceivable application cases. Moreover, the procedures and working materials proposed are to be efficient, targeted and independent of the persons carrying out the work. Furthermore, the methods have to be generally applicable and transferable, while being flexible so that individual cases can be covered and justified deviations can be permitted to a certain extent. The decisions are to be made in a transparent and traceable way to document the decision-making process.[g] Last not least, this means that the methods proposed and/or developed have to be **accepted.**

3.5. Effects on the environment

3.5.1. Terms

In spite of semantic ambiguities, which also the SEA Directive contains (or cannot resolve), the assessment of environmental effects caused by PPs requires at least a minimum of conceptual clarity since too much discretion in the interpretation of specific terms would also make it significantly more difficult to apply the working materials in a transparent and "correct" way.

The term **"environmental effect"** is used below to designate any change in the physical, natural or cultural environment (be it positive or negative) that fully or partly results from PPs or from their instruments and measures.

Even though the present study deals with issues going beyond the scope of the Screening Study and, thus, beyond an examination of the likely significance of environmental effects in order to determine whether an SEA is required or not, "significance" plays a decisive role in assessing the environmental effects of PPs in general. Naturally, it is a central aspect of the required assessment of environmental effects and therefore, is also mentioned in Article 5 of the SEA Directive. Moreover,

[g] This makes sense because environmental entities have to be consulted and because information is to be made available to the public (see Article 3(6) and (7) as well as Articles 6, 7 and 9 of the SEA Directive).

the term of "likely" effects on the environment has to be considered because it is also used in Article 5 of the Directive and, as a result, the likelihood of environmental effects is important as well. Ultimately, the demands to apply the proportionality principle to the level of detail and to ensure an appropriate scope of the SEA already are tantamount to a focus on the likely significant effects.

The following terms are found in the context of the assessment of environmental effects of PPs: in addition to "significant"[h], the adjectives "considerable" and "relevant" are used. Though partly different meanings could be identified, at least with regard to nuances, the author is afraid that these terms are frequently used as synonyms.

This study uses the term adopted in the English version of the Directive, namely **"significant."** This term is used to mean "weighty and momentous in the context studied" and, not least, has to be seen in relation with the corresponding objectives that are to be taken into account according to the SEA Directive and that are additionally relevant for concrete PPs. This necessarily implies that, in the assessment of the significance, a certain level of effects is considered to be acceptable ("tolerable level"). The significance of environmental effects must be seen in relation with the concrete environmental conditions (such as specific existing pressures and particularly sensitive areas) and the specific characteristics of plans or programmes so that the **significance has to be determined in each case individually**. This means that effects that have to be considered significant in one case need not necessarily be significant also for other plans or programmes.

Additionally, the term **"decisive"** will be used by which we understand **"determining the final decision."** This is interpreted to mean that the decision does not depend on non-decisive aspects. In other words, factors are decisive when the decision would be different if other or additional information, data, methods, etc. were used, i.e. the **result would not be stable**.

The **"likely"** effects on the environment cover the potential effects that may be **reasonably** expected, i.e. due to concrete indications and with sufficient probability.

Finally, explanations should be given on some terms used in footnote 1 of Annex I to the Directive with regard to the types of effects that may occur:

Secondary (or also indirect) effects are those which are induced through one or more intermediate stages or events and, thus, may only materialise after some time and/or in other places. These are sometimes also referred to as "consequential effects."

Cumulative effects refer to effects **building up**, while **synergistic** effects are effects **acting together.** In case of effects acting together, synergistic effects whose combined impact is greater than the sum total of the individual effects can be differentiated from antagonistic effects whose combined impact is less than the sum total of the individual effects. Both cumulative and synergistic effects may be caused by the fact that effects occur at the same **time** or at the same **place**.

[h] The English version of the Directive, for example, speaks of "significant effects."

These definitions that are important for assessing environmental effects are also included in the assessment rules in Annex A.

Basically, in any attempts at defining and delimiting these terms (as well as the characteristics used in the working materials), however, you have to bear in mind that these terms are sometimes fuzzy and marked by blurred boundaries.

3.5.2. Integrated approach

As mentioned above, the SEA Directive implies that a comprehensive or **integrated approach** is to be used for assessing the environmental effects of PPs under the terms of the Directive. First of all, the principles and objectives of the SEA Directive constitute the basis. In Annex I to the SEA Directive, which has been quoted above, letter (f) explicitly lists the **factors and interests to be protected:** *"biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors."* Additionally, the **types of effects** to be studied are indicated under letter (f): *"secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects."* If applicable, *transboundary* effects on the environment also have to be examined.

Additionally, Annex II to the SEA Directive is of significance in this context. This Annex II covers several technical aspects relevant for **assessment** (e.g. the probability, duration, frequency and reversibility of the effects) that also have to form the basis for assessing the effects in the course of an SEA (not only within the framework of screening where Annex II is referred to in the SEA Directive). Consequently, the impact **across** all environmental **media/factors to be protected** has to be assessed in a **multi-disciplinary** way (integrated approach).

This integrated approach is also reflected in the **working materials** provided in the Annex, for example by explicitly focusing on interactions and interrelationships, including cumulative effects, in the check-lists for causes of environmental effects as well as for the factors and interests to be protected.

4. Approach

4.1. Methodologically relevant steps

Several methodologically relevant SEA steps have to be differentiated. Figure 1 below gives an overview of the essential (methodological) steps defined.

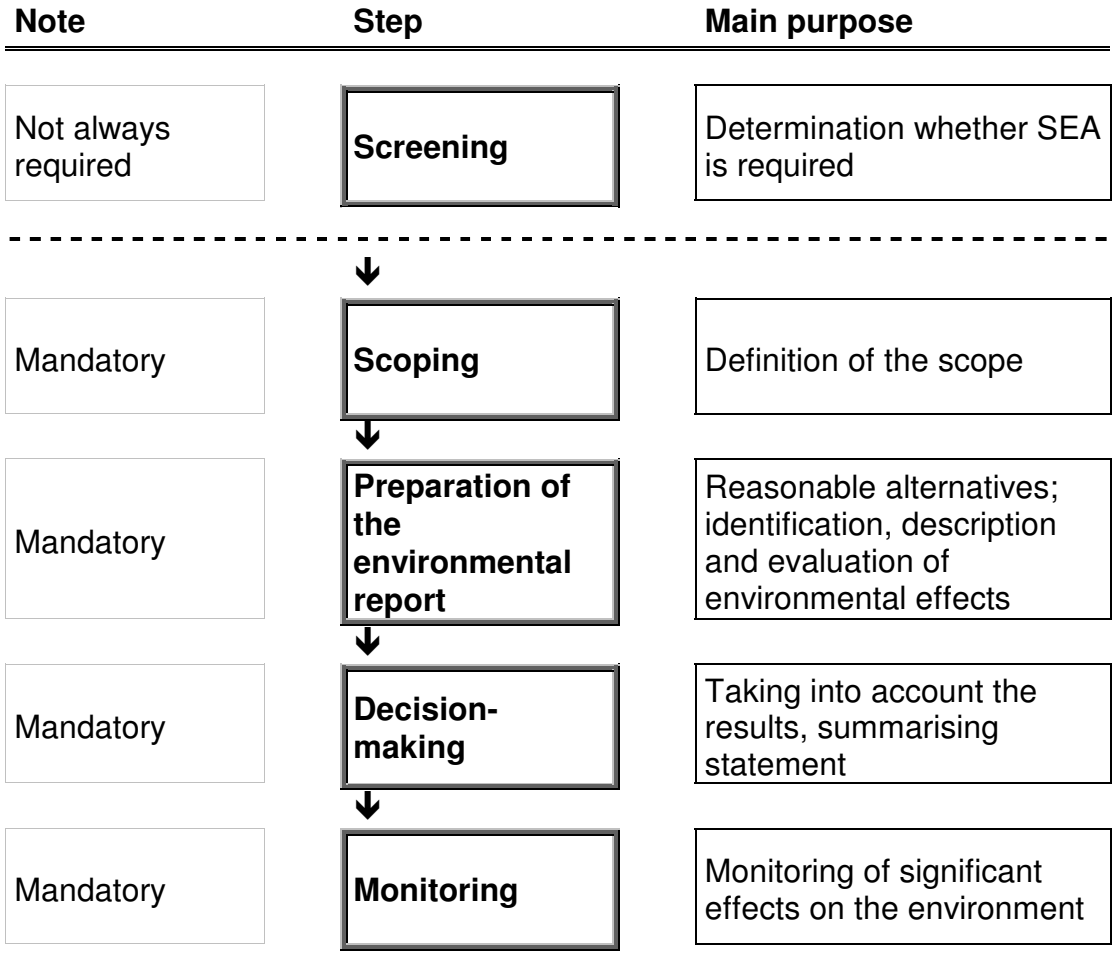


Figure 1: Overview of the key methodological steps of an SEA

Please note that this figure does not include all steps of the SEA process, but only those that are relevant for the present study.
Additional important steps are, in particular, the various consultations. Article 6(1) of the SEA Directive provides, for example, that the environmental report has to be made available to the so-called “environmental authorities” as well as the public at the same time as the draft PP in question.

Moreover, it is an **iterative process** which involves the collection of information, the definition of alternatives, the identification and assessment of environmental effects and the development of measures, etc. Reiterations are not only conceivable, but at times even inevitable. This may happen, for example, when the need for adjusting the scope arises in the course of planning. Or, consultations may result in far-

reaching modifications so that even individual work steps or essential parts thereof have to be repeated. Nevertheless, it also has to be clearly stated that there need to be "end points," so to speak, where additional repetitions or higher levels of detail do not yield further findings and do not result in progress and improvement.

4.2. Support by check-lists

The **working materials** are to provide assistance in practical SEA work. They cannot only be used to prove that the entire procedure complies with all requirements defined in the SEA Directive, but ideally are also suitable as a basis of **documentation**.

In order to achieve a transparent and, thus, traceable procedure, a common **"tool-kit plus instructions"** was developed for each step. To this effect, a basic set of tools has to be provided, which essentially are **check-lists** and, in some cases, also **assessment rules** designed to facilitate the use of the check-lists. Thereby, it is to be evidenced and documented that all the aspects and issues required by the SEA Directive and "best practice" have been covered (even if these aspects are considered to be irrelevant in a specific case). Finally, the working materials also contain examples of **matrices.**

4.2.1. Check-list design

The check-lists developed are designed in such a way that they can be used already in **preparation** of, and during, the related SEA steps and not only at their end (i.e. not only "ex post," but also **"ex ante"**). Moreover, they build on each other—like the SEA steps—and are interlinked taking account of the possibility of, or even need for, reiterations so that there is a proverbial "red thread" running through the system.

It seems important to point out that some demands cannot be met by applying the check-lists. These include the assessment of compliance with special individual legal requirements and the verification of information and its quality.

The present study contains the following working materials that are to be applied in line with the scheme outlined in Figure 2:

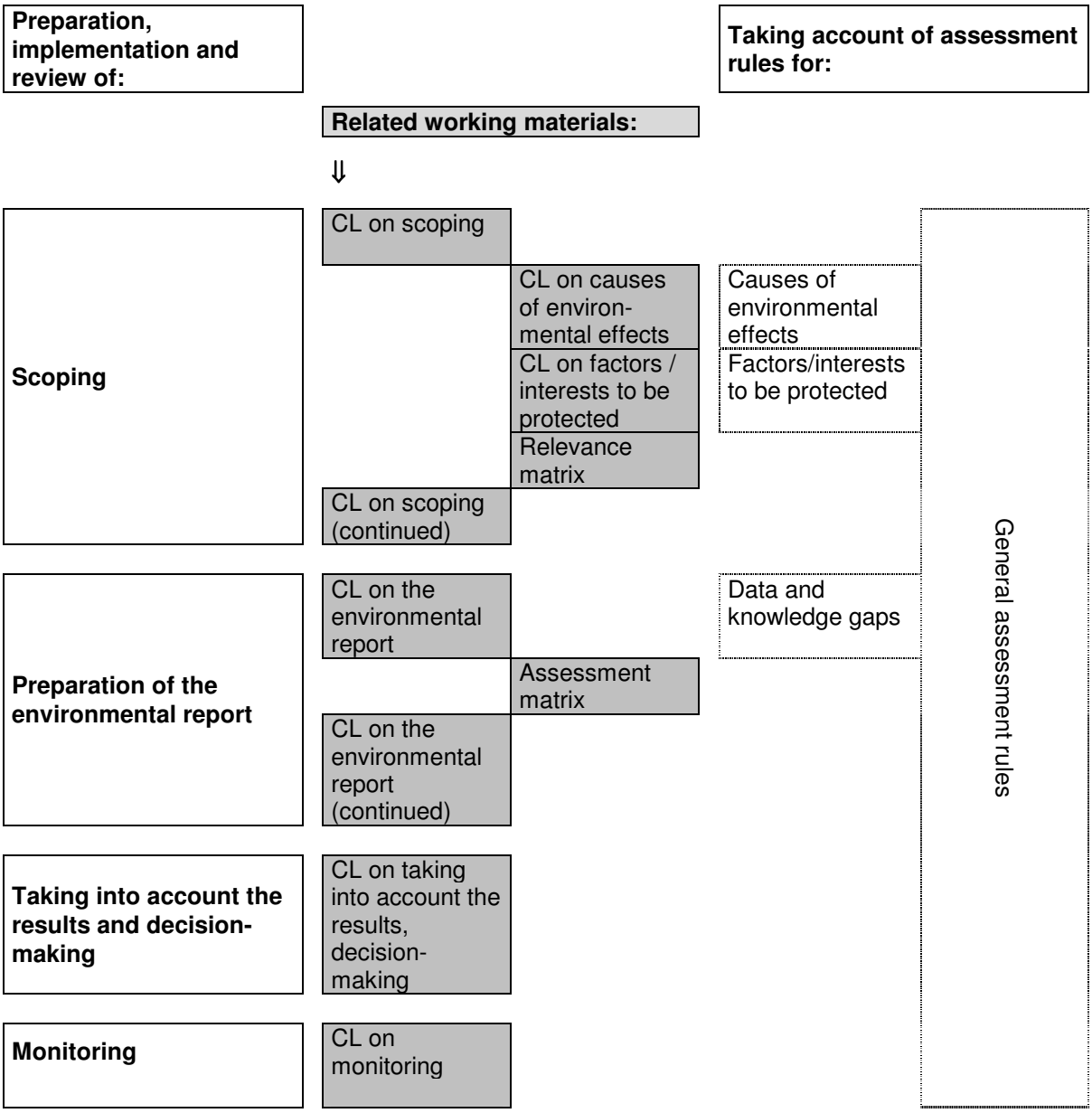


Figure 2: Overview of the application of the working materials developed (CL = check-list)

One or more check-lists (CLs), including in some cases also specific assessment rules (on causes of environmental effects, factors and interests to be protected, as well as data and knowledge gaps) and two matrices are offered for **preparing, implementing** as well as **reviewing**[i] the various steps from scoping to monitoring. General assessment rules apply to all the steps. On principle, the steps are intended to be performed in the sequence presented, though reiterations in which the check-lists are complemented or corrected are naturally conceivable and will frequently also make sense. Moreover, the working materials basically can and should be helpful also for other steps (for example, the specific assessment rules on the causes of environmental effects as well as on factors and interests to be protected also apply to the preparation of the environmental report).

[i] I.e. examining or checking in retrospective.

Let us briefly explain the approach by taking scoping as an example: Essentially, the scoping check-list is available for this step. For specific key aspects of scoping, there are additional check-lists (on causes of environmental effects as well as factors and interests to be protected), including specific assessment rules, as well as the relevance matrix. After these tools have been used (or in practice, of course, also in parallel thereto), the scoping check-list has to be complemented.

4.2.2. Application of the check-lists

The application of the check-lists is to support the implementation of the individual steps and, at the same time, they are to ensure a standardised procedure—as a quality assurance tool, so to speak—so that certain minimum standards are maintained for the consideration of environmental issues.

The working materials are intended to provide **uniform "work instructions"** covering the entire range of PPs that may require SEAs. In this context, the scope of the Directive has to be taken account of and, when using the tools, consideration also has to be given to the legislation currently in force with regard to the implementation of the SEA Directive.

Provided that the working materials are as **comprehensive** as possible, they contribute to minimising the risk of incorrect assessments. The length of the lists and, in part, their level of detail also has to be seen from this perspective—as a **service** for the users, so to speak. On principle, the aspects included in the lists only have to be taken into consideration if this is possible and relevant for a concrete plan/programme. Care has been taken to ensure that the materials proposed can be used for all the plans and programmes that may be affected. Therefore, the working materials, such as check-lists, constitute **"maximum lists"** from which irrelevant items can and should be deleted in concrete individual cases.

Although such lists may constitute a model for a common basis or a common structure, they can never fully accommodate all individual cases nor can they be exhaustive, universal "all-purpose catalogues." Therefore, the materials have to be designed as an open, expandable system and, indeed, can be **further differentiated, made more specific** or **complemented** by further aspects that are primarily characteristic of certain PPs in a concrete planning case and taking account of the PPs' nature and level of detail at any time. For this purpose, the working materials always include a field for "other" information.

The tools have been designed so that they can be used by one person or small teams—for example at a municipal level—in simple cases, which may become "routine cases" after some time. At any rate, the name of the person who used or completed the check-list should be indicated.

It is to be emphasised explicitly that the check-lists cannot relieve the users from their **responsibility.** Both the planners and other parties involved, such as the environmental entities, stay responsible for not employing the check-lists merely as a tool for a final formal examination in which items are only "ticked off" at the end. Quite on the contrary, if applied ex ante, i.e. to **prepare** the individual steps, and also

during these steps to ensure **in-process control**, they will raise the efficiency and quality of the processes and results.

4.3. Documentation

The proposed **comprehensive** and **systematic** assessment of environmental effects ensures that the decisions are well **founded** and also have been taken on the basis of verifiable criteria using the working materials. It is recommended that, after the work has been performed, the working materials are added to the PP documents forming an official part of them (they are placed on file, so to speak). This applies to all the steps for which working materials are made available. For example, the environmental report check-list could well form part of the environmental report (e.g. as an annex).

This allows for documenting the implementation of an SEA as well as the reasons for decisions taken without any gaps—in other words, making it "waterproof"—, and thereby making it traceable. Subsequently, these materials may also form the basis of the consultation of the environmental entities and of the public participation procedure. Please note that seamless, transparent and traceable documentation is important not only for the public, but also for decision-makers.

Moreover, appropriate documentations also constitute a basis for further strategic environmental assessments and all other types of (environmental) assessments. For example, monitoring results may serve as an input for other environmental reports that have to be prepared. On the one hand, this can eliminate or minimise the efforts required for own research, studies, etc., and on the other hand, this is particularly helpful in cases where knowledge and data are lacking. For actually and effectively achieving these effects of reducing the workload, it is decisive to ensure that systematic access is possible to SEA documentations, e.g. environmental reports.

4.4. Determining the need for SEA (screening)

Before implementing an SEA, screening may be necessary (see Article 3(3) and (4) of the SEA Directive) to determine whether an SEA has to carried out or not due to the PPs' likely significant effects on the environment.

This determination of the significance of the PPs' effects may be done by specifying types of PPs or through case-by-case examination (or by combining both approaches). Here, the specification of PP types means that a general decision is taken as to whether certain types of plans and programmes are likely to have significant environmental effects. Case-by-case examinations are assumed to be more appropriate and recommendable for a big majority of PPs. Therefore, it is to be expected that many PPs will be screened (a variety of terms are conceivable for designating this step, e.g. **"case-by-case examination"** or **"evaluation of environmental significance"**).

This step is discussed in the Screening Study. For all PPs that have been screened using the method presented in that Study, an essential basis exists on which further specialised assessment can build, as the results of the screening process can be taken over as an input. This may considerably reduce the work to be performed in subsequent steps. At any rate, it has to be ensured that an equivalent basis is created for PPs not submitted to such a screening exercise.[j] For this reason, important findings of the Screening Study also serve as a starting point for the further methodological procedure.

[j] For example, screening is not required in the cases falling under the so-called mandatory scope of the SEA Directive (Article 3(2)).

5. Scoping

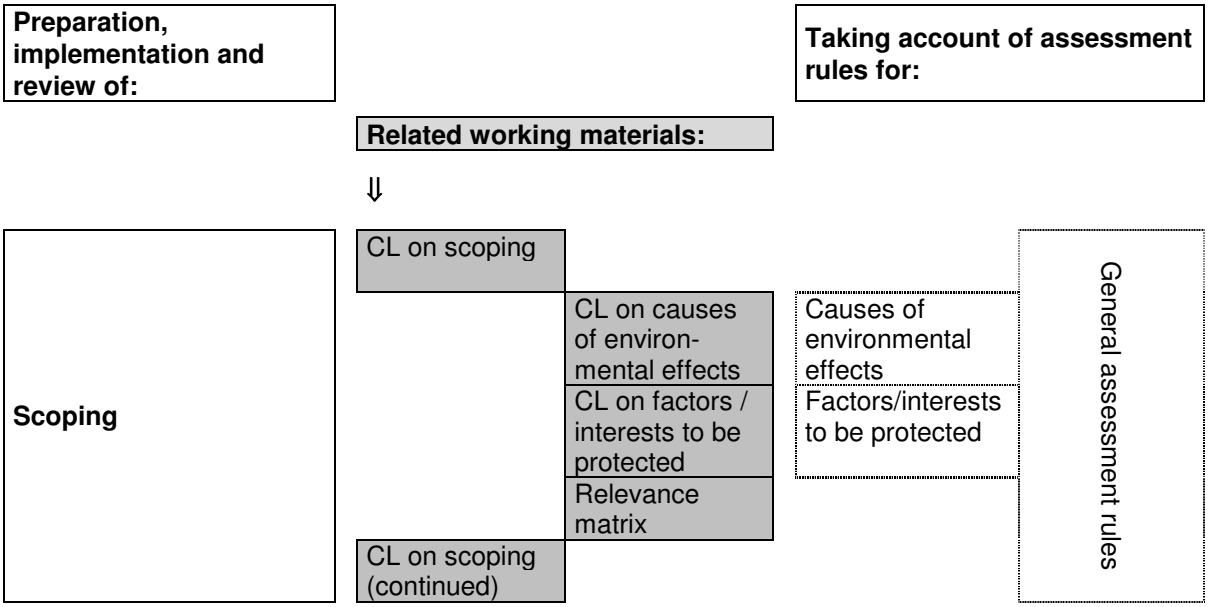
The next step after screening or, if there was no screening, the first mandatory step of an SEA is the **definition of its scope**, i.e. **scoping** for short. The determination of the scope is in fact prescribed even though there are no detailed requirements on the procedure to be followed or the precise contents of scoping. At any rate, it is a useful step and its thorough performance is recommended without any reservations.

Not only previous experiences made with strategic environmental assessments, but also—across the board—environmental impact assessments have shown that it makes sense and is efficient to start work by a systematic scoping exercise. Scoping is the decisive step for focusing SEAs on what is essential and is **key to the efforts** involved in SEAs, to preventing the production of **"data graveyards"** and to ensuring an efficient process. It has an impact on the SEA's implementation as well as on subsequent monitoring.

It is especially at this stage that measures can be taken to avoid duplication of assessment. Careful scoping with a well-founded result contributes to streamlining assessments. The time and effort spent on scoping pays off at any rate later on because, as a rule, more resources and, ultimately, more funds are required to make up for omissions, to close gaps and to correct wrong decisions.

Finally, it is worth mentioning that in those cases in which proper screening has been performed (in a case-by-case examination), considerable preparatory work has been carried out on which scoping can build. This means that information and findings from screening can constitute a valuable basis for scoping, which should actually be borne in mind already during screening.

Several **working materials** are provided for scoping in **Annex A**. These are to be applied as follows (see also Figure 2 in Chapter 4):



First and foremost, the scoping check-list is available for this step. For specific key aspects of scoping, there are additional check-lists (on causes of environmental effects as well as factors and interests to be protected), including their specific assessment rules, as well as the relevance matrix. After these tools have been used (or in practice, of course, also in parallel thereto), the scoping check-list has to be complemented.

5.1. Implementation

Scoping serves to determine the **scope** and, hence, also the contents of the environmental report as well as the framework for the next steps. In some cases, therefore, it may also be useful to define or at least outline the **structure of the ER.** In addition to taking a decision on the alternatives to be examined (see below), the following questions have to be answered—as far as possible at this stage:

a. Which aspects—including objectives—have to be examined in later steps (and which not)?
b. Which study areas have to be covered?
c. Which periods of time have to be covered?
d. Which assessment depth is required?
e. Which methods come into consideration?
f. Which data and information are needed (and available)?
g. Which measures are considered?
h. Which entities and experts from which subject fields have to be involved, if appropriate?

The listing of these questions, which are covered by the **check-list on scoping** in Annex A, implies neither a ranking according to their importance nor a specific sequence in which they should be answered. Also in this case, reiteration has to be expected.

(a) Aspects to be examined:
SEAs deal with the contents of PPs (sufficiently concrete in terms of space and substance) and their (significant) effects on the environment. The environmental effects to be further studied and ultimately assessed are to be identified. Thus, it is also to be clarified which aspects have already been assessed (e.g. at another level) and therefore, need not be considered in another or in a separate assessment.

At any rate, the effects have to be covered comprehensively and completely so that a systematic approach should be taken. At this stage, it is not possible to deal only with a part of the issues to be examined according to the SEA Directive. On the contrary, it is in this step that a justified selection is made for the next steps. When this choice is made, consideration has to be given to the alternatives studied. Annex A contains additional **working materials** for this key part of scoping in order to provide structured support.

In conjunction with the environmental effects, another issue to be addressed are the relevant **objectives** that will serve as yardsticks for assessment (see Chapter 6.3 on environmental quality objectives). These aspects also should be taken into account as far as possible already at this stage.

(b) Study areas to be covered:
A decision has to be made on the planning area to be examined. Consideration is to be given not only to planning areas or land directly affected or in physical contact (with regard to the PP's domain), but also to neighbouring land and its utilisation, if this land can be impacted. This may hold true, in particular, for cumulative effects. Moreover, attention has to be paid to the fact that, if applicable, land designated for a specific purpose in the land-use plan, but not yet used according to this designation has to be taken into account so that the potential for environmental effects is adequately considered.

(c) Periods of time to be covered:
Primarily, the planning horizon of the PPs to be examined will have to be used here. However, it must not be neglected that there are highly different reference periods or objectives for evaluating environmental effects that depend on the factors/interests to be protected as specified in the SEA Directive.

(d) Assessment depth:
Here, the aim is to define the level of detail required in further evaluations. Naturally, these decisions strongly depend on the previous items. As a rule, the demands made will not be the same for all aspects, but depend on the subject field in question. It may, for example, be justified to specify that negative effects require a more in-depth assessment than positive ones.

(e) Methods:
On principle, measurement, calculation, forecasting or assessment methods are identified here. Thus, the methods used also include those required for analysing the state of the environment, including data collection and acquisition, as well as measurement methods and methods for preparing forecasts, if applicable. Moreover, they also refer to methods for assessing environmental effects. A decision also has to be taken on the criteria or indicators that are suitable for identifying clear trends and for measuring the achievement of (environmental protection) objectives.

(f) Data and information:
Scoping always has to ensure that duplication of assessment is avoided by tiering. This is linked to the decision on the data and information that are required and to the answer to the question from which source it could be taken. Furthermore, it is to be clarified whether useful (e.g. sufficiently up-to-date) data are available from other planning processes (also at other levels of the hierarchy), environmental assessments or monitoring exercises.

In many cases, the full set of data and information required will not be available at the time of scoping. Therefore, the decisions taken here cannot be considered to be exhaustive or final. At any rate, diverse data sets, e.g. for evaluating different alternatives, must be of comparable quality and, in those cases in which no data of adequate quality are available, further data collection is also justified.

(g) Measures:
The different measures to prevent, reduce and offset negative effects as well as to reinforce positive effects already form part of scoping to the extent that they are already foreseeable.

(h) Entities and experts to be involved:
Discussions should already start on who should be involved in the course of the process. As far as foreseeable, this step may also identify the experts and their subject fields which will be needed for the evaluation or in subsequent steps.

As mentioned before, an essential aspect of all SEA steps described in the present study is that there is no clear sequence in which they need to be performed and that **reiterations** may well occur so that individual steps or at least individual aspects of these steps need to be covered again. It is, for example, conceivable that as knowledge grows and plan alternatives are further refined, framework conditions may emerge that were unknown at the time of scoping. Consequently, it is actually only a **preliminary scope** that is defined at the outset and that is subject to dynamic updating, if appropriate.

5.1.1. Alternatives

Article 5 of the SEA Directive implies that, in preparing an environmental report, the likely significant environmental effects of implementing a plan or programme as well as reasonable alternatives taking account of the PP's objectives and geographical scope are **identified, described** and **evaluated.** One aspect of scoping is—as mentioned above—to determine what is actually to be assessed. This also includes the alternatives considered, which play a **central role** in the assessment of the PPs' environmental effects. The identification and the **comparison of alternatives** are key aspects of SEA. Naturally, optimising plan alternatives also contributes to reducing the efforts involved because planning mistakes may result in efforts and costs caused by adaptations, subsequent improvements or also environmental impacts.

Alternatives may be seen as alternative roads towards the objectives. The basis for selecting and assessing alternatives and their environmental effects are, on the one

hand, environmental conditions and, on the other hand, the relevant objectives, including environmental protection objectives. These environmental protection objectives are the yardstick for optimising PPs with regard to their environmental effects. It is not only “in the spirit of the SEA Directive” that it is useful to include such alternatives in the planning process that consider not only the planning objectives, but also take account of the environmental protection objectives or even put them in the foreground. The design of alternatives may already serve as a tool to avoid or reduce negative environmental effects.

5.1.1.1. Reasonable alternatives

Detailed requirements are not defined for the development of alternatives. Therefore, the drafters of PPs have to decide on a case-by-case basis who is to be involved in identifying alternatives, when they are to be prepared, which level of detail they should have and, moreover, in which framework they should be set. It is only to be borne in mind that *“reasonable”* alternatives are highlighted that take account of the PPs' objectives and geographical scope.

The consideration of alternatives should start as early as possible in the planning process. Although the SEA Directive explicitly mentions alternatives only at the stage where the environmental report is prepared, it is safe to assume that, as a rule, it is appropriate or even absolutely necessary to focus on alternatives already at an earlier stage. Actually, the alternatives which—at least basically—come into consideration should already be borne in mind during scoping. Again, this is an iterative process: on the one hand, the selection of alternatives influences the scope and, on the other hand, the findings obtained during scoping may influence the decision on alternatives. Therefore, one should rather speak of **draft alternatives** in the context of scoping; the alternatives ultimately taken into account are included in the environmental report. Of course, there is a wide range of options in this context and it will depend on the concrete PP when it is appropriate to study alternatives and at which level of detail.

The situation is similar for the identification and involvement of the persons who define and select relevant alternatives. Here, the spectrum ranges from proposals by single experts that are submitted for discussion to alternatives identified with broad public participation and maybe even in as broad a consensus as possible. Alternatives developed “behind closed doors” may lead to a situation where essential aspects are discussed at the wrong time, i.e. too late. As the alternatives are of such great importance later on, it is recommended not to have them prepared by individual persons alone or at least, to provide opportunities for obtaining feedback from various stakeholders.

<u>Spectrum of alternatives</u>

Difficulties encountered during the selection of reasonable alternatives may relate to the definition of the possible limits for such alternatives. From the wording used with regard to the geographical scope of the PPs, one may conclude that the SEA Directive only considers those alternatives to be “reasonable” that fall under the geographic jurisdiction of the entity preparing the plan. It is difficult to imagine that alternatives relate to areas that are beyond the reach of the plan-makers.

Especially in the case of ad-hoc plans that may well occur, a strategic approach is made difficult by the very nature of the plan and the choice may be rather limited. An essential aspect related to the consideration of alternatives that may obviously result in misunderstandings again and again needs to be highlighted: Alternatives need **not necessarily** be **alternative locations** (or routes). Depending on the planning type, the alternatives may also involve different kinds, magnitudes or extents of diverse features, which may include, for example:[k]

- technical infrastructure,
- transport infrastructure, including transport modes,
- use of energy sources,
- use of raw materials,
- other (technical) features (e.g. capacities),
- diverse utilisations,
- organisational options,
- options in terms of time (dates, duration, sequence),
- all kinds of measures,[l]
- all kinds of strategic decisions (e.g. demand management, campaigns, grants, etc.),
- etc.

Because the Directive speaks of “alternatives” (in the plural form), it is also safe to assume that—as a general rule—several plan alternatives have to be examined. As mentioned above, alternatives need not necessarily be alternative locations (or routes). It is, however, possible—especially in the case of ad-hoc planning—that the leeway for designing alternatives may be restricted to such an extent that limitation (based on sound reasons) to one alternative is inevitable.

Not least due to previous experiences made with strategic environmental assessments, it is recommended that assessment is based, at any rate, on **realistic plan alternatives** This means that “worst case” and “best case” alternatives should not be developed and assessed if these constitute unrealistic extreme scenarios.

Another requirement should be that the alternatives considered actually differ (with regard to their environmental effects). It makes little sense to prepare and subsequently assess alternatives whose environmental effects are hardly or not distinguishable at all. It goes without saying that, in line with the objectives of the SEA Directive, alternatives should have as little environmental effects as possible.

Please note that it is not absolutely necessary to decide on an alternative as an “indivisible package” at any given time. It is also conceivable and in line with the SEA Directive, for example, to build the alternative ultimately selected (i.e. the one to be implemented) using different **“modules”** from the alternatives considered (if its environmental effects have been assessed; if it is a completely different alternative, the assessment naturally has to be repeated or performed anew).

[k] Depending on the plan type, a systematic differentiation could be made by locational alternatives, system alternatives and technical alternatives.

[l] Including measures to prevent, reduce and offset negative effects as well as to reinforce positive effects.

Level of detail

Another important aspect is that the alternatives considered during planning and SEA need not necessarily have the same **level of detail.** This means that not all the alternatives are described with the same comprehensiveness, but rather it is to be expected that certain alternatives are "dropped" early on (for good reasons) and therefore, are not studied in greater depth. One possibility of keeping the number of alternatives studied at a reasonable level are sensitivity analyses that identify parameters irrelevant to further planning decisions. Here, scoping also fulfils a tiering function with regard to specific issues by examining the question of which alternatives are to be considered at what stage in the process. Of course, the alternatives finally selected need to have the same level of detail when their environmental effects are to be assessed and compared.

5.1.1.2. Zero alternative

The only alternative that, based on the provisions of the SEA Directive, has to be considered at any rate is the zero alternative. This option describes the development in case the PP examined is not implemented. The relevant requirement is specified in Annex I to the Directive where *"the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme"* are identified under letter (b). Hence, the zero alternative forms the **reference framework** for evaluating the implementation of PPs and other alternatives considered. The description outlining the evolution of the state of the environment should essentially cover the same period of time that is envisaged for the PP's implementation.

Finally, it is to be borne in mind that one should actually speak of zero alternatives, in the plural form. This is due to the fact that different scenarios are possible also within the zero alternative. Apart from the given status, there may be several distinct developments and potentials, for example, because of diverse utilisation options that may be used or not. In addition to the business-as-usual scenario, there may be other scenarios that are characterised by significant differences due to other plans, technological, demographic or transport developments, etc. As a result, one should speak of several zero alternatives and, consequently, these assumptions should naturally also be considered among the alternatives examined. In this case, it also holds that the assumptions need to be realistic. And again, it is of decisive importance that all assumptions underlying the alternatives are documented.

5.2. A compact SEA due to no-impact statements

While screening is about an "all or nothing" decision where, to put it simply, the result is "SEA" or "no SEA," the implementation of SEA proper may involve a certain leeway and range of options due to different tiering levels, assessment depths, etc. This **range of options** (with regard to the scope, but not the SEA steps required) may extend from a **"fully fledged SEA"** to a **"compact SEA."** The latter is only

acceptable and in line with the SEA Directive if certain conditions are fulfilled and if also their justifications are documented.

The scoping materials presented in Annex A are to be used to identify which environmental effects are to be further examined—**and which not.** In this context, an option can be useful that has been available under the Austrian EIA Act for several years: so-called **"no-impact statements."** Adapted for plans and programmes, this rule could state that in those cases in which individual aspects are not relevant with regard to the environmental effects of implementing the PPs or if the plan-makers cannot reasonably be required to compile this information having regard to current knowledge and methods of assessment, this requirement may be waived in justified cases. At any rate, this has to be indicated and justified.

These could also be called **"nil reports"** because they are relevant in cases in which it can be expected with sufficient probability that there will be no significant effects on the environment. This may apply, in particular, to those PPs that are expected to give rise only to very specific effects on the environment and for which the scope of assessment, therefore, can be restricted early on. Moreover, strategic environmental assessments of PPs may be affected if an SEA has already been performed (also for sub-aspects).

The result of this approach is a **"compact SEA."** These no-impact statements, on the one hand, contribute to focusing attention on the environmental effects that are actually significant in justified cases. On the other hand, the requirements of the SEA Directive are complied with by evidencing that also those aspects have been covered that are insignificant for concrete PPs. As a result, no-impact statements may also include factors that are explicitly listed in the SEA Directive (for example, certain factors to be protected). What is essential is that their consideration is **evidenced** and that the "exclusion" is **justified.** Especially, if there is a high planning density (as in Austria), this may be justified in a specific case, in particular for a PP of little relevance to the environment. This may hold for modifications of PPs. For all cases, however, it is mandatory that **scoping** itself is **comprehensive** and, thus, covers all aspects of an SEA.

When the tools are used to delimit the scope, as a result, no-impact statements, in the meaning described, can already be identified on the basis of the check-lists. This means that responsibility has to be taken and requires the **courage to permit gaps**. In the further course of the SEA, these decisions are to be corroborated by scrutinising the no-impact statements again in all further steps, i.e. when preparing the ER, taking into account the results and decision-making as well as monitoring. The precondition is, of course, that the check-lists are actually used. This **"safety net"** provides additional justification and support for such an approach.

5.3. K.o. criteria

The implementation of PPs, however, may be connected with so-called "taboo" or **"k.o. criteria,"** i.e. exclusion criteria, that have to be considered during planning or when developing alternatives. Especially at the planning level, practice has shown that frequently only "if-then" statements can be made at this stage of planning. These

k.o. criteria may constitute, for example, conditions that absolutely have to be taken into account in designing PPs from the perspective of environmental protection. However, very concrete framework conditions that must not occur under any circumstances may also be recognised to constitute k.o. criteria. This will apply, for instance, if the effects have the potential to destroy an environmental system affected or lead to a permanent degradation or restriction (e.g. in case specific protection areas are affected or certain protective functions of forests are impaired). In these cases, k.o. criteria could be statements, such as “adverse impacts on protection area X” or “reduction of the area covered by protective forest Y,” resulting in the requirement that the PPs’ implementation has to take that into account. Moreover, k.o. criteria will naturally apply in all cases in which the legal basis is not complied with, e.g. legal approval requirements are not met.

This may mean that certain **conditions** are identified during SEA implementation (something the PP must and/or must not contain, e.g. a specific variant, design, measure, etc.). Another consequence might be a kind of “reference threshold” defining a specific value or state that triggers further consequences when it is reached. However, there is no duty to do so like in development consent procedures where conditions may be proposed. At any rate, the assumptions on which these decisions are based need to be documented.

Even though, as has been mentioned before, all the information and data required may not always be available at the time of scoping, it can still prove useful to identify already such k.o. criteria, as far as possible. It also seems to be essential to point out that the identification of such criteria does not necessarily mean that a plan or a specific alternative cannot be implemented. They may, however, be helpful and offer the possibility to recognise potential “stumbling blocks” already at an early stage so that serious planning mistakes can be avoided and further planning can be guided into the direction desired.

To ensure that k.o. criteria identified are actually taken into account, subsequent SEA steps also have to perform checks with regard to these k.o. criteria. This is safeguarded by all the working materials.

5.4. Economic and social aspects

The present study and, thus, also the working materials developed take account of the requirements defined in the SEA Directive as a tool to examine the effects on the **environment.** It is only this field that is covered by the SEA Directive and, as a result, has an impact on decision-making in accordance with the Directive. For the sake of completeness, it should be pointed out that it may make sense for some planning processes to limit the list of aspects to be considered not to environmental fields, but to include the fields of society (socio-cultural aspects) and economy with a view to performing a **sustainability appraisal.** After all, some of the requirements specified in Annex I to the SEA Directive also have economic and social dimensions.

The need for such an expansion may arise, for example, from demands made by decision-makers or to ensure acceptance by the public. Cases in which this may make sense include plans related to transport or waste management. However,

social and, in particular, economic aspects are already taken into account in many existing planning procedures and, thus, also in the selection of alternatives. Here, SEA only closes the gap of environmental integration.

Moreover, when certain topics are dealt with, specific issues—such as human **health**—may be discussed in greater detail. Human health, however, is to be covered by SEA as a matter of principle due to the wording of the factors to be considered and their interpretation. The present study understands “health” in its broader meaning, which is also reflected by the working materials where not only health as such, but also well-being is explicitly addressed. Additionally, safety issues and, at least indirectly, several other aspects are relevant in this context (e.g. air pollutants, noise, drinking water, vibration, light, landscape, utilisations, aesthetics, etc.). A further differentiation of this factor to be protected, which can be made in specialised impact assessments (health impact assessments), however, goes beyond the scope of this study.

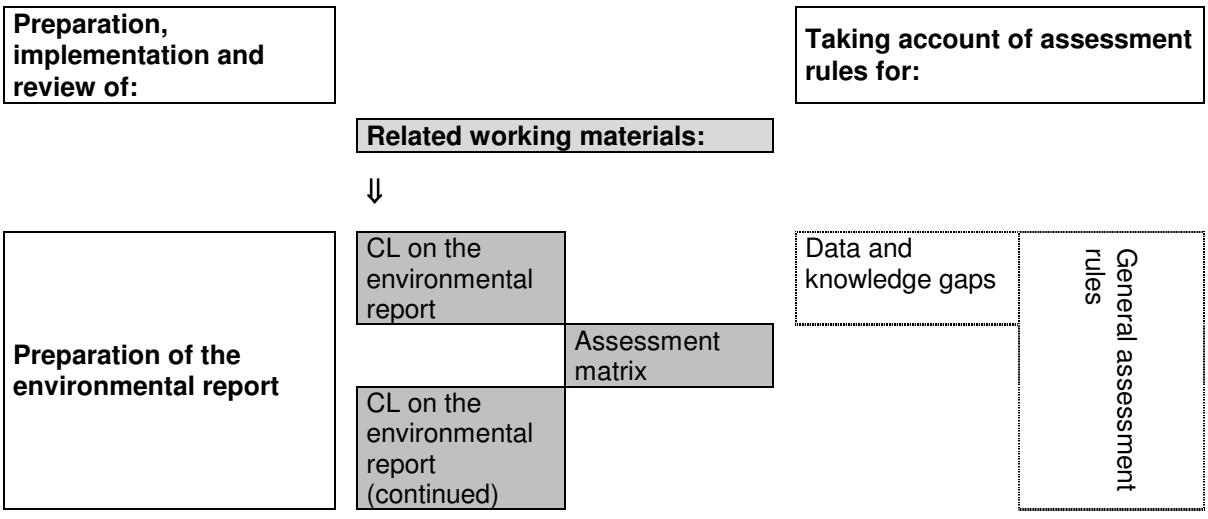
6. Preparation of the environmental report

The environmental report (ER) is defined in Article 2(c) as *"the part of the plan or programme documentation containing the information required in Article 5 and Annex I"* and, pursuant to Article 4, the environmental assessment has to be carried out during the preparation of PPs. Thus, the ER is an **in-process document.** The definition ("part of the plan or programme documentation") does not say whether the ER has to be a separate document. But, as the ER must have specific contents due to the specifications of Annex I, it is an obvious choice to prepare it as a **separate document** or at least as a **clearly delimitable part** of the planning documentation. This supports not only all the steps under various consultations, but also facilitates the planning and implementation of monitoring measures.

The environmental report documents the integration of environmental issues in line with the SEA Directive and should ideally contain a systematic, practice-oriented presentation of the assessment material in a form ensuring legal certainty. Thereby, it can make a decisive contribution to raising the transparency and traceability of the planning process and, as a result, to increasing acceptance of the planning results.

Although the SEA Directive does not state who is in charge of preparing the ER, it is safe to assume that the plan-making bodies will be responsible for this task and may commission other entities to prepare the ER in full or in part. As a rule, the environmental report will in all likelihood be drafted by those in charge of implementing the SEA.

The following **working materials** are provided for the preparation of environmental reports in **Annex B** and are to be applied in line with the scheme outlined below (see also Figure 2 in Chapter 4):



Essentially, the ER check-list is available for the preparation of the environmental report. It is important to point out, that **scoping** also provides the basis for preparing the ER including the assessment of environmental effects. Consequently, the assessment rules defined for scoping (on causes of environmental effects as well as factors and interests to be protected) are **valid** and the corresponding working

materials also support the preparation of the ER (the general assessment rules apply to all SEA steps anyway). An example of an assessment matrix is provided to illustrate the presentation of the overall assessment. After these tools have been used (or in practice, of course, also in parallel thereto), the ER check-list has to be complemented.

6.1. Contents and structure of the environmental report

The first content-related requirements to be met by environmental reports are defined in Article 5. Paragraph 1 lays down that, in preparing an ER, the *"likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated."*

Annex I of the SEA Directive that specifies the information to be given covers the following aspects:

a) an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;
b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;
c) the environmental characteristics of areas likely to be significantly affected;
d) any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Habitats Directive and the Birds Directive;
e) the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;
f) the likely significant effects[m] on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;
g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;
h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;
i) a description of the measures envisaged concerning monitoring in accordance with Article 10;
j) a non-technical summary of the information provided under the above headings.

[m] These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects.

These requirements cover a rather broad field. All these aspects are discussed in greater detail below. Where this seems appropriate for content-related and practical reasons, several issues are dealt with together. On this basis, proposals are presented on how to structure the ER appropriately—apart from obvious information to be included, such as authors, sources and references, etc. As a result, the following chapters reflect an outline for the **structure of the environmental report.** The check-list provided in Annex B is to support structured work in line with the requirements. This check-list, too, may and should already be used for **preparatory work** and during the preparation of environmental reports. Thus, it may also serve as the said outline for the structure of the ER.

Content-related and technical requirements can be **summarised** in a few **key items:**

- basic information: environmental conditions, objectives,
- alternatives,
- assessment of environmental effects, and
- measures (mitigation and monitoring measures).

These aspects are outlined in Figure 3 that illustrates the relationships by means of an example. Please note that, of course, these steps again build on scoping and also constitute iterative processes in which reiterations are likely.

Based on knowledge about environmental conditions, including environmental problems, and taking into account the relevant objectives of the PPs and environmental protection, alternatives can be developed (or simply put forward) at various stages. As already described in the context of alternatives, it is not necessary that all the alternatives have the same level of detail. It is well conceivable and even plausible that—also at different points in time—one or the other alternative is eliminated even before all aspects have been thoroughly covered. This may happen, for instance, if one k.o. criterion is identified.

The “final” alternatives, i.e. those which are actually submitted to a comprehensive assessment of environmental effects (and therefore, must have the same level of detail), may only take shape in the course of a process and possibly at different points in time. Please bear in mind that the number of alternatives need not be the same in all cases. In the example presented, two plan alternatives are selected from among various **draft alternatives.** Additionally, the mandatory zero alternative naturally has to be dealt with. As a rule, this is also the minimum requirement with regard to the number of alternatives, i.e. two plan alternatives and the zero alternative (see also Chapter 5).

The plan alternatives selected will eventually result in the final variant, which in theory, may also be made up of individual elements of different plan alternatives (if its environmental effects have been assessed; if it is a completely different alternative, the assessment naturally has to be repeated or performed anew). The figure also shows that it may be necessary to lay down (mitigation and monitoring) measures in their final form after this decision. It is, however, likely that at least part of the mitigation measures are already fixed beforehand. It makes sense to include

these measures already in the evaluation of the environmental effects caused by the alternatives. For further details, please see the following chapters.

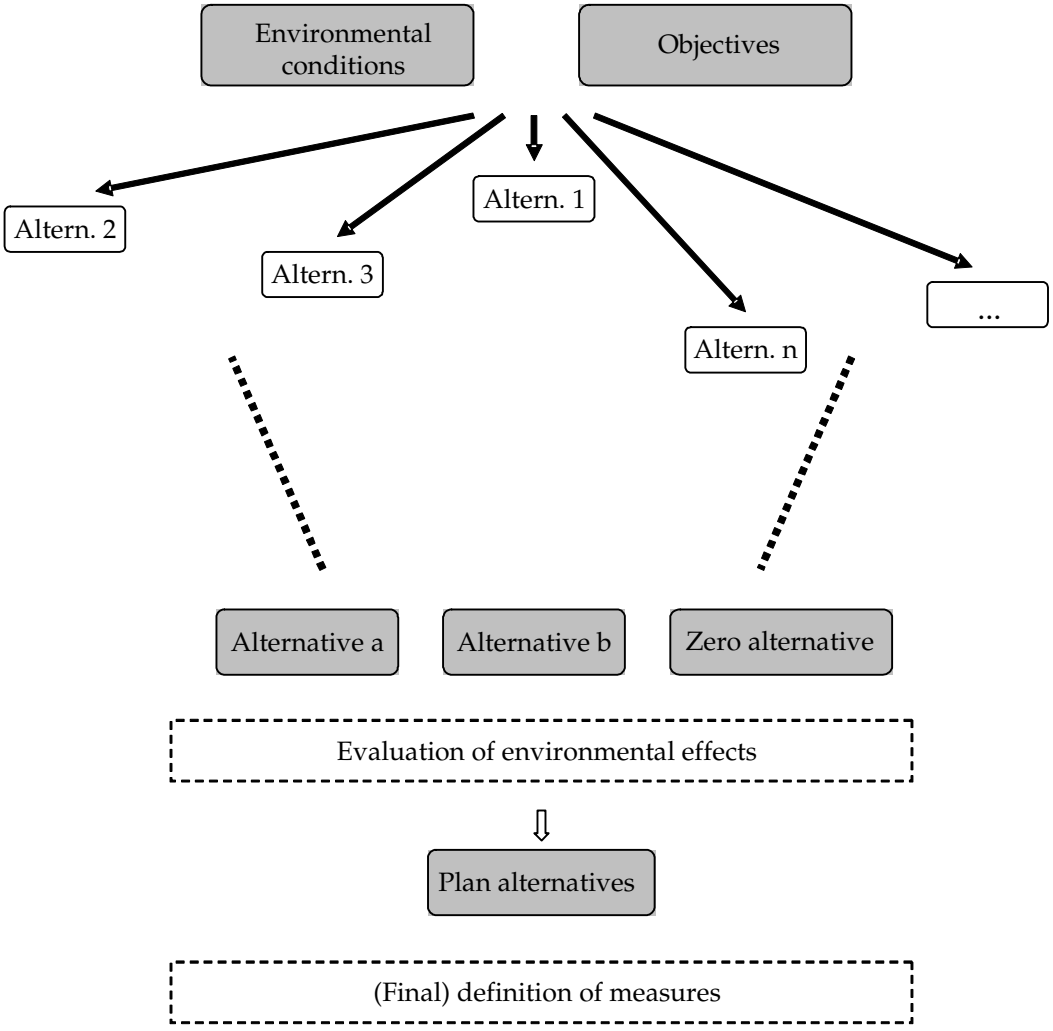


Figure 3: Example of a possible procedure for assessing environmental effects in an SEA (with two plan alternatives (a) and (b) as well as the zero alternative)

6.1.1. Scope and level of detail

Article 5(2) and (3) of the SEA Directive contains provisions on the preparation of the environmental report that give hints on its scope and level of detail. According to these provisions:

- *the environmental report has to include the information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the PP, its stage in the decision-making process and the extent to which certain matters are more appropriately assessed at different levels in that process in order to avoid duplication of the assessment;*

- *relevant information available on environmental effects of the PPs and obtained at other levels of decision-making or through other Community legislation may be used for providing the information referred to in Annex I.*

These aspects are important because they indicate the appropriate data and information to be used as a basis of assessment. The level of specificity and detail varies for PPs at different levels of the planning hierarchy. It is not possible in all the cases to clearly identify the level of detail in advance that is appropriate for the ER. At any rate, the ER's level of detail should match the specificity and depth of the PPs themselves. This requires that an evaluation has to be made with regard to the knowledge considered indispensable and, hence, responsibility has to be taken for this decision. Otherwise, this work would only result in "data graveyards." The fact that the level of detail of environmental reports depends on the one of the PPs in question is also clarified by the requirement that the *"contents and level of detail in the plan or programme"* should be taken into account. This means that the ER on detailed PPs will also go into greater detail and that less detailed information can or must suffice for less detailed (e.g. fairly general) PPs.

Article 5(3) may be interpreted to mean that it is desirable to minimise the efforts required for collecting and obtaining information. Relevant information already available from other sources is to be used in preparing the environmental report. The wording *"the information that may reasonably be required"* contained in Article 5(2) can be understood as a hint that the information should only require reasonable efforts meaning (economically) **justifiable efforts**. A concrete example is that all the information that is not easily **accessible** need not be included. This is also in line with the idea of no-impact statements and, in this respect, falls under what "cannot reasonably be required."

In spite of possible constraints with regard to the information available, statements on environmental effects may still be possible and make sense in many cases. To a certain extent, a lack of detailed information can well be offset by more general data, which actually is characteristic of strategic decisions and in many cases even necessary for them. This requires a certain balance between the desired substance of the result and the assessment depth/knowledge base used.

Moreover, it is to be borne in mind that strategic environmental assessments also focus on a **comparison of plan alternatives.** As a result, detailed, i.e. usually quantitative, statements may sometimes not be absolutely necessary if semi-quantitative or qualitative information also permit an assessment. At any rate, the provisions referred to give hints to restrictions permitted in the preparation of environmental reports. A decision on how far these may go can ultimately only be taken on a case-by-case basis in line with the concrete PP.

6.1.1.1. Data and information

Please note that the information on all the aspects listed in Annex I to the SEA Directive relate to **significant environmental effects** of PPs. The data and information actually required for the ER can be selected accordingly so that it is limited to the essential aspects. However, this applies to each item of Annex I separately, i.e. it is not permitted to eliminate entire aspects in advance and, above

all, without justification. Rather, the scope of the individual items can be adapted to their relevance in a concrete case.

To identify the information to be interpreted and evaluated (with regard to its usefulness), the following questions have to be answered:

- **Which** information (required) does actually exist?
- **Who** holds this information?
- In which **form** and **quality** is it available?
- Which **efforts** have to be made to obtain and, if necessary, process it?

One of the basic principles applying to the collection of data and information is that it has to build on the results of scoping. The environmental aspects determine the data and information required and not the other way round. Furthermore, **environmental protection objectives** and indicators (see below) naturally influence the knowledge necessary to evaluate in how much these objectives are reached. The level of detail in the data and information obtained is likely to vary for different environmental fields or factors to be protected. The information has to satisfy the requirements for decision-making at a strategic level. Data collection may also be an iterative process and further details may only emerge gradually in the course of the process.

The preparation of a list of all imaginable **sources** of relevant data and information would, of course, go beyond the scope of this study by far. There are numerous regulations at diverse levels (from international to local) requiring the reporting of relevant environmental information. In particular, a quite remarkable number of data have to be collected under Community law (e.g. IPPC Directive and Water Framework Directive) or national regulations, for example, to comply with diverse reporting duties. In the context of plans and programmes, special mention also has to be made of geographic information systems. Extensive references to and information on numerous data collections can be found in the literature (see References).

The **availability** of data and information may be a key criterion for the contents of environmental reports as well as the selection of methods (which does not mean that difficulties faced in obtaining the data required, a priori, are a reason for excluding such data). Again it is true that a good—and accessible—documentation of previous SEAs can constitute a valuable basis.

6.1.1.2. Data and knowledge gaps

If data and knowledge is lacking, decisions on how to handle this are to be based on the gaps' **decisiveness**. The information on which the ER's preparation is based must adequately throw light upon the existence of likely (significant) environmental effects. It is essential to take into account (and, if necessary, obtain) knowledge determining the final decision.

The following rules are to provide assistance in handling uncertainties due to insufficient knowledge (e.g. also about cause-effect relationships) or lack of available data:

- Without doubt, information that has to be present or presented due to legal or other mandatory requirements is indispensable.

- In all cases, the question has to be answered whether knowledge gaps are decisive for the environmental report, including the assessment of environmental effects. Here, the focus is on the **stability of the statements**, i.e. we have to check whether the results are influenced by knowledge or data gaps or not. If the answer to this question is yes, it is likely that further documentation or consultations of experts will be necessary.

- Information on the assessment of environmental effects will not be considered necessary if detailed information would be required that exceeds the PPs' level of detail and specificity and if it is ensured that this detailed information is taken into account either:

  – in **subsequent assessments** (SEA or other assessments, in particular environmental impact assessments), or

  – within the framework of **monitoring.**

- The underlying data and information has to meet increasing requirements with regard to **accuracy** and **level of detail**, the higher the importance, sensitivity, ecological value and protection needs of the area or factor/interest to be protected is or the more serious the potential damage is. This means that in case of uncertainties due to insufficient knowledge or data, the effects will have to be considered significant even if their likelihood is low when important factors/interests to be protected are affected or major potential damage is possible. Hence, data/knowledge gaps are not acceptable.

Missing or inaccessible data, information or knowledge are typical aspects addressed under letter (h) in Annex I (*"difficulties encountered in compiling the required information"*) and therefore, have to be explicitly described in the ER.

6.2. Basic information

Basic information covers the requirements specified in the first four items of Annex I to the SEA Directive, i.e. letters (a) to (d).

6.2.1. Planning objectives and other relevant planning processes

Letter (a) of Annex I calls for a (brief) presentation of the contents, main objectives of the PP and relationship with other relevant PPs. This includes, at any rate, the purpose, geographical scope as well as the timeframe and status of the PP. In this context, there is certainly no need to further explain what contents and planning objectives mean. Objectives are indispensable key elements of each plan or programme. Frequently, it will probably suffice in practice for the purposes of the ER

to provide an extract from existing planning documents supplemented by references in some instances.

By outlining the relationship with other relevant PPs, the place of the PP in question can be shown in a comprehensive context. This relationship may concern, for example, the importance of the PPs concerned with a view to environmental effects and may apply to PPs forming part of a planning hierarchy as well as to PPs from other fields or sectors. As far as possible, effects of other PPs that may impact the planning area should also be described and assessed. This information may be decisive, in particular, for the identification of **cumulative effects.**

Therefore, it is recommendable to start by reflecting on other PPs that may be of importance for the PP in question. Aspects to be taken into account here are, for example, the PPs' coherence or potential conflicts and contradictions. Relevant other PPs primarily cover the planning area in question, but on principle, can also extend beyond its borders. This may make sense, for example, if PPs developed at a local level relate to areas forming part of a planning area covered by higher-level plans, e.g. at a regional or national level.

6.2.2. Environmental conditions

The items of information addressed under letters (b) to (d) of Annex I to the SEA Directive are connected so that it makes sense to deal with them together. The requirements specified there all concern different aspects of environmental conditions in the planning areas and in areas likely to be impacted by significant environmental effects caused by the PPs.

Information on the *"relevant aspects of the current state of the environment"* addressed under letter (b) is a precondition for assessing how the environment of the area in question can be significantly affected by the PPs. These relevant aspects may basically include both positive and negative ones. The wording explicitly refers to the current state of the environment so that the information should be as up-to-date as possible. Nevertheless, foreseeable **trends** (improvements as well as deteriorations) should also be taken into account and described.

By referring to the likely evolution of the state of the environment without implementation of the plan or programme, letter (b) also creates a link to the **zero alternative.** Its importance, also as a reference framework for evaluating the implementation of PPs, has already been discussed in Chapter 5.1.1.

The *"environmental characteristics of areas likely to be significantly affected"* laid down under letter (c) have to be seen in connection with the information required under letter (b) and may, in a way, be seen as a further description of those aspects. Environmental characteristics should be understood to mean, for example, existing negative impacts or specific sensitivities of the areas or factors to be protected. Moreover, other examples are areas of special ecological or landscape value, areas of high recreational value, densely populated areas, areas with a high number of persons affected by environmental problems (e.g. noise), etc.

Both letter (b) and letter (c) can cover **positive** as well as **negative** aspects, i.e. environmental assets and interests that are particularly valuable or worthy of protection, a designated protection status or a state of the environment to be maintained just as well as special environmental challenges.

In contrast, letter (d) of Annex I primarily deals with environmental problems. By considering them, it is possible to examine how these problems influence the PPs in question and whether the PPs, in their turn, aggravate, reduce or otherwise influence existing environmental problems. They may ultimately be the starting point for deciding on the aspects to be given priority in the SEA. Environmental problems relevant to PPs may include:

- existing negative impacts,
- limited capacity or performance of environmental media,
- threats,
- resource consumption,
- existing or foreseeable conflicts, etc.

At any rate, letter (d) requires that special consideration be given to problems relating to any areas of a **particular environmental importance.** By mentioning areas designated under the Habitats Directive or the Birds Directives as examples, the wording explicitly shows that these areas are to have a particularly high ecological value. In addition to the examples given, this may also apply to areas designated as areas of special value under national law (e.g. in accordance with various nature conservation regulations).

The scope and amount of information to be provided on environmental conditions can be derived from the results of scoping. Therefore, it is appropriate for all the items discussed here to describe the environmental conditions (including state of the environment, environmental characteristics and environmental problems pursuant to letters (b) to (d) of Annex I) by analogy with, or at least on the basis of, the requirements defined for **environmental aspects** under **letter (f)** (factors and interests to be protected). This creates a link to the results of scoping, including the structure and system, and subsequently also to the **assessment of environmental effects.**

An overview of, and assistance for, all the aspects addressed here is provided by the **working materials** for scoping presented in **Annex A**—namely both the check-lists and the assessment rules (e.g. for identifying environmental problems, special areas, etc.).

6.3. Environmental protection objectives

While the term “environmental protection objectives” is used throughout this chapter, a major part of the explanations is dedicated to an important sub-set of these objectives, i.e. to **environmental quality objectives** (see below.)

In addition to the current and forecasted environmental conditions, the relevant objectives, including the environmental protection objectives required under the SEA

Directive, form the basis for selecting and assessing alternatives and their environmental effects. Apart from existing (legal) admissibility requirements, environmental protection objectives constitute the yardstick for appraising and optimising PPs with regard to their environmental effects (and basically also for assessing the proportionality of examination efforts). Thus, it should be possible to "measure" the PPs against their objectives. This concerns the assessment of the status quo and the environmental effects forecasted alike.

In line with letter (e) of Annex I, the ER has to include information on *"the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation."*[n] Consequently, the environmental protection objectives addressed here are of importance if they are of technical relevance to the PPs in question, i.e. if they can play a role for the contents of the PPs. As a result, they should also be oriented to the aspects listed under **letter (f)** (**factors and interests to be protected**). This means that environmental protection objectives are presented for those aspects that form part of the scope of environmental assessment. This again provides the required link to the results of scoping and to the assessment of environmental effects.

On principle, a broad range of interpretation options is conceivable, which need not necessarily focus on mandatory environmental protection objectives, such as those defined by law. We may safely assume that there is a "ranking" by the mandatory nature of the objectives so that top priority is given to objectives laid down in conventions, acts of law, ordinances, decrees, etc., and then to objectives contained in (political) resolutions and only then to objectives from various (e.g. scientific) recommendations.

Several objectives that an SEA has to focus on are directly implied by the SEA Directive. This applies, for example, to the principles of precaution and prevention, the safeguarding of a high level of environmental protection with a view to promoting sustainable development (the preservation, protection and improvement of the quality of the environment), the protection of human health, the prudent and rational use of natural resources as well as the conservation and sustainable use of biological diversity. Moreover, objectives are specified in numerous plans, programmes, strategies and similar documents, for example in the fields of spatial planning, transport, energy, etc.

Objectives defined at an international and Community level are frequently taken into account or included in the objectives applying at a national, regional and local level so that the latter may frequently suffice for certain PPs. This will primarily hold for PPs at a local or regional level where it is imaginable that Community or international objectives will be of less concrete importance. This does not preclude that global objectives also are of local relevance (e.g. climate protection at the level of cities and towns within the Climate Alliance). Within the framework of an SEA, it may be necessary to specify higher-level objectives in greater detail in order to be able to use them for the required (goal-oriented) evaluation. Moreover, it may make sense to

[n] Of course, these objectives are already dealt with during scoping, if this makes sense and is possible at that stage.

extract “core” objectives relevant for the PPs in question (i.e. objectives of special importance).

When selecting and defining objectives, it is necessary to bear in mind the PPs’ scope for action and in how far the PPs with their possibilities actually can contribute to the achievement of the objectives. A final selection of objectives can obviously only be made in each specific case. For this reason, it is also impossible to provide a generally applicable list of (environmental protection) objectives. On principle, however, the objectives for SEAs should focus on the results (or end points) rather than on the road towards them (e.g. the measures to be taken) because this is more appropriate with a view to the decision-making level and its (sometimes not very concrete) possibilities. This also makes it easier to take into account cumulative effects and equally applies to the indicators to be selected (see below).

6.3.1. Additional information on environmental quality objectives

It may happen again and again that no or only inadequate (e.g. not valid or not applicable to the area covered by the plan) objectives are available, at least in sub-fields. In such cases, it may be worthwhile to develop **special objectives** or systems of objectives (i.e. including standards and indicators) for concrete planning processes. The same also holds for contradictory objectives. This proved well, for example, in pilot projects in which the objectives defined and their achievement was very valuable not only to ensure the joint commitment of various stakeholders, but also as transparent assessment criteria. When drawing up the objectives, consultations of the environmental entities may be helpful.

But let us briefly define the terms used below. Environmental protection objectives include all objectives that aim at safeguarding or improving the state of the environment and, as a result, are especially statements specifying the environmental quality to be maintained or achieved as well as the measures required for this end. They comprise **environmental quality objectives** (EQOs)—if possible, quantified, measurable and specific in terms of time—as well as environmental action objectives derived therefrom.

In general, “environmental quality” is to be taken into account when assessing the effects. This **environmental quality** (“ecological status”) covers all the structures and functions of an eco-system and provides information on certain characteristics, features and properties of factors to be protected, including resources, potentials and functions, that are defined in terms of substance, space and time. Eco-systemic relationships have to be taken into account. Environmental quality is characterised by a system of objectives that specify the environmental quality to be maintained or achieved in concrete cases. EQOs are of importance both for technical appraisals and legal assessments.

Environmental quality objectives are, on the one hand, the outcome of technically and scientifically justified requirements and, on the other hand, they result from social and social-policy values. Thus, they link (natural) scientific knowledge with society’s attitudes to factors and interests to be protected. A precondition for ensuring that adequate EQOs can be applied is the identification of environmental

conditions, e.g. a description of the current performance of the environment and natural balances.

Environmental action objectives set out the steps required to achieve the states defined in EQOs (i.e. to bring the current state in line with the desired state). Please note that the borderline between these two types of objectives may be blurred, which should not play a major role; what is certainly more important is to have appropriate and clear (environmental quality) objectives as well as standards and indicators.

6.3.1.1. Standards and indicators

A complete and usable system of environmental quality objectives and environmental protection objectives also requires appropriate (environmental quality) standards as yardsticks for evaluation as well as (environmental quality) indicators to make their achievement "measurable." Therefore, it is necessary to lay down how the achievement of the objectives can be determined, i.e. suitable indicators and, if appropriate, adequate standards have to be selected. Several principles for their selection are to be described below.

Standards (for environmental quality) specify the EQO in concrete terms and serve as yardsticks for evaluation. They are quantitative or otherwise sufficiently specific definitions that lay down the desired quality level, eventually also the measurement method and other framework conditions for a certain parameter or indicator. Depending on their source and binding nature, these may be limit values, reference values, indicative values, discussion values, etc. Frequently, however, such standards are missing or only available in rudimentary form and—in certain cases—hardly imaginable. This may apply, for example, to so-called "soft facts," such as the assessment of landscape or aesthetic aspects.
Indicators are indispensable for determining and evaluating environmental effects because it is impossible or too costly to explore comprehensive causal chains. Indicators are generally defined as characteristics or attributes that describe a state, a situation or a complex system. Indicators (of environmental quality) are measured, calculated, observable or derived parameters providing information on the state and development of the environment and make comparisons possible. Frequently, a differentiation is made between pressure, state and response indicators.[o]

Indicators have to meet numerous **requirements.** Basically, they are to provide information on phenomena and identify correlations between, in part, highly complex relationships in order to allow for conclusions on relevant—perhaps critical—environmental aspects. As a rule, this means that indicators must contain simplifying or aggregate information in order to make them manageable. The indicators selected should be, in particular:

- representative,
- appropriate,

[o] A wide-spread system, which is frequently used as a framework for other systems, is the DPSIR (Driving Forces, Pressure, State, Impact, Response) model developed by the European Environment Agency. It takes account of interrelations insofar as certain driving forces may exert pressure on the environment leading to a change in the state of the environment. The results are certain impacts that, in their turn, may require measures to be taken in response to them.

- timely,
- expressive,
- available,
- reproducible,
- compatible with other (sets of) indicators.

This also means that indicators should, ideally, be typical of the cause-effect relationship examined. But, it is precisely this requirement that raises an extremely big challenge—not only in the context of SEAs. And, as the focus of SEAs is on comparing **alternatives**, indicators have to make sure that differences of the alternatives studied can be identified. Finally, indicators may also be selected for assessing the effectiveness of measures planned.

When selecting suitable indicators, a decision also has to be taken as to whether the achievement of objectives is to be measured directly or indirectly. Because a focus on essential effects is necessary, it is also worthwhile to consider **key indicators** that may be representative and expressive for certain effects (e.g. in certain cases, nitrogen dioxide as a possible marker for air pollutants or the occurrence of certain plants or living communities—so-called bio-indicators—as an indication of air quality, etc.). The advantage of such "pointers" is that they are also able to reflect synergisms and interactions. Moreover, sum parameters, for example those developed from the methodology of life-cycle analyses, may be very useful.
Table 1 shows **examples** of environmental quality objectives plus standards and indicators:

Environmental quality objective:	*Reducing the percentage of the population affected by noise* or *Reducing the area of land with a lower value due to noise*
Environmental quality standard:	*Noise immission limits or reference values (e.g. separate daytime and night-time values)*
Environmental quality indicator:	(measured or calculated) *noise immission levels*

Table 1: Examples of environmental quality objectives plus standards and indicators

The two environmental quality objectives mentioned above could also be **quantified** by specifying, for example, absolute values or (rather) percentages. Indicators, too, can basically be expressed in absolute or relative terms.

At any rate, it is important to emphasise that, due to the manifold and complex links between the factors playing a role in environmental effects, it is impossible to define a "universal set" of indicators. For the same reasons, it would also be wrong to search for generally valid or "right" indicators. In particular on indicators, there is much literature discussing varied systems and indicator sets. Establishing lists of indicators only makes sense—if at all—for specific tasks and PP types because, in each and every case, there are different options for implementing the PPs and measures, different levels of specificity, different situations of data availability, etc. For further details, see the references which include literature proposing lists for specific types of planning processes.

Consequently, the indicators to be used have to be defined on a case-by-case basis, and they are likely to be subject to continuous updating. However, the indicators have to be adapted to the PPs, if necessary, and not the other way round, i.e. the PPs should not be adjusted due to the indicators used. Likewise, it seems to be important to point out that indicators should identify trends and should not be misunderstood as "benchmarking" tools (which would result in a "competition" among different PPs).

Please note that indicators are of relevance in several SEA steps: in addition to their role in the assessment of **environmental effects** forming part of the ER, they are also a key element of performance evaluation during **monitoring.** However, it is important to bear in mind that it will not or at least not always make sense to use the same indicators for these two tasks. For the environmental report, useful results may be achieved through indicators that differ completely from the ones used for monitoring and that meet different requirements. It is, for instance, thinkable that parameters were used for assessing the environmental effects of the alternatives studied that can only be established on the basis of calculations or simulations. This may, however, mean that the same indicators are not suitable for monitoring.

6.4. Effects on the environment

One of the major challenges in implementing SEAs certainly is the methodology for performing the assessment of *"the likely significant effects on the environment"* called for under letter (f) of Annex I to the SEA Directive (or, strictly speaking, also of *"areas likely to be significantly affected"* in line with letter (c)). In contrast to screening, which "only" has to identify whether PPs are likely to have significant effects in order to determine whether an SEA is required or not, the SEA ("proper") has to examine the effects more closely.

With a view to developing principles and recommendations on how to proceed, several important aspects related to the assessment of environmental effects are summarised in the following overview (for further details, please see below):

	Principles
✓	The starting points of evaluation are the **environmental conditions** as well as predicted **environmental effects.**
✓	The likely **significant** environmental effects of **implementing** a PP have to be examined.
✓	Evaluation is based on the admissibility requirements and on the (planning and) **environmental protection objectives.**
✓	The environmental effects across all environmental media/factors to be protected are to be assessed in a multi-disciplinary way (**integrated approach**).
✓	The integrated approach cannot be adopted only when the overall assessment is made, but basically must already be used in scoping.
✓	All **assumptions** underlying the PPs or their implementation and, hence the assessment of environmental effects have to be documented.
✓	The **comparison** of environmental effects for different alternatives is a key element of SEAs.
✓	The work of the experts involved requires technical **co-ordination.**
✓	There are no **"magic formulas"** for evaluating the environmental effects of PPs.

Recommendations on how to proceed
• The assessment of environmental effects should not be more detailed or more differentiated than planning, i.e. **fictitious precision** is to be avoided.
• As a general rule, **weightings** for evaluations are to be critically scrutinised for this purpose.
• **Expert judgement** seems to be a method that is very well suited and recommendable.
• At first, **evaluations specific to individual subject fields** are made (by the relevant experts).
• It makes sense to include **measures** that are already foreseeable in the evaluation.
• To allow for aggregation to an **overall assessment**, it is recommended that a common (coded) scale is used in all the evaluations for specific subject fields.
• Evaluation or **assessment yardsticks** (i.e. the rules for applying the scale) are to be defined in advance.
• The individual evaluation results are to be collated to obtain an **overall result**, for which a matrix is an appropriate tool.
• In addition to the matrix, explanations and justifications have to be stated so that a **(verbal argumentative) statement** is available.

Table 2: Principles and recommendations for assessing environmental effects of PPs

6.4.1. Assessment of environmental effects

It is important to emphasise again that the SEA Directive only relates to the **significant** environmental effects of PPs. What is more, there are not only no provisions requiring the consideration of insignificant aspects, but such consideration would even involve the risk that actually important facts are overlooked. Not least to support the consultations, it may be useful to discuss any no-impact statements (see Chapter 5 on scoping) in a separate chapter.

With regard to the most important terms used in this context and the integrated approach, the readers are referred to Chapter 3 on framework conditions. The assessment of environmental effects serves to prepare decision-making, but is not a substitute for it. This always means that responsibility has to be taken. Both the current state as well as the planned and forecasted states have to be evaluated. These states are assessed against objectives, i.e. the current state is compared with the desired state. When determining the environmental effects and their significance, the following elements basically form part of the assessment: identifying, juxtaposing, comparing and considering.

The check-lists and assessment rules used during scoping already take account of the requirements of the integrated approach and are designed accordingly. The assessment of environmental effects also is to be in line with such an integrated perspective. At any rate, the results of scoping form the basis of this work. Thus, it is only logical that, in addition to the general assessment rules, the specific **assessment rules** defined for scoping also are valid for assessing the environmental effects (irrespective of the methods used).

Based on the scope identified, the environmental effects are to be assessed, i.e. they are identified, described and evaluated in line with all the requirements laid down in the Directive. The Directive explicitly speaks of *the likely significant effects on the environment of **implementing** the plan or programme.* Given the diversity of plans and programmes that fall under the scope of the SEA Directive, “implementation” may cover a fairly broad range of options. These may, of course,

also include project-related aspects. However, the concrete implementation of PPs is frequently not certain or only partly foreseeable at the time when SEAs are performed. The environmental assessment should always cover all activities and potentials related to the PPs' implementation.

It is to be determined whether and, if appropriate, when (i.e. under which **preconditions**) environmental effects caused by PPs are significant. The latter aspect plays a bigger role at the level of plans and programmes than at the project level because many issues related to the precise design or utilisation of the PPs' implementation will still be open. All the more important it may be to define the conditions under which effects are to be considered significant (the factors that need to be present or the way in which something has to be implemented). In this context, it is indispensable that all **assumptions** underlying the PPs or their implementation and, hence the assessment of environmental effects are documented. As far as possible, the probability of various assumptions should be estimated, which may be done using a scale like "hypothetical"—"likely"—"certain."

The strategic level certainly poses a special challenge for the assessment of environmental effects. Differences from the project level, such as EIA, relate, for example, to uncertainties and the data available as a basis of assessment (which also limits the transferability of findings, i.e. with a view to tiering). As a rule, the data available for assessing the environmental effects of plans and programmes is usually insufficient for providing fairly accurate estimates of the impact on the environment. This is mainly due to the fact that—apart from the generally poor definition of eco-systems—we are primarily dealing with **indirect effects** of the PPs' instruments and measures.

Nevertheless, this planning level also offers **potentials.** This applies, for instance, to **indirect** or **cumulative** effects on the environment. In many cases, such effects certainly are better covered and controlled at the level of an SEA that is performed, for example, before an EIA. And it is more than obvious that the planning level is significantly better suited and more reasonable than the project level for examining alternatives.

The assessment of environmental effects always involves **comparisons** (with a status, alternatives or objectives). The examination of environmental effects of different **alternatives** is a central element in the assessment of plans and programmes. Frequently, however, it will only be possible to predict the "directions" of effects. At any rate, it is essential to identify serious conflicts, whereas it will not always be possible to determine the overall effects. Thus, the examination of the effects of PPs and alternatives may focus on a **"relative"** evaluation rather than on the examination of absolute parameters.

In the comparative assessment of environmental effects, it is also crucial to make this process transparent and, thus, traceable so that it provides a basis for the consultations of the environmental entities and the public as required by the Directive. This is important not least for decision-making.

6.4.1.1. Principles for selecting methods

First and foremost, it has to be explicitly made clear that exact instructions on how to select assessment methods is unthinkable on principle. For a specific individual case, there are appropriate and plausible assessment methods but no "right" ones. I deliberately do not want to create the impression that there are "magic formulas," but rather clearly state that the focus is on the requirements of each individual case. Some of the essential **principles** are to be presented for selecting methods to assess environmental effects in SEAs in order to provide a general framework—as methodological cornerstones, so to speak, to identify options and possible leeway and to support the selection process. The methods used constitute a vehicle for operationalising cause-effect relationships. As mentioned several times, evaluation requires that appropriate yardsticks exist. These are both the admissibility requirements to be considered and the underlying objectives, including environmental protection objectives.

First of all, it is common practice to identify the impact factors specific to the PP, including their magnitude and intensities, and then to determine the spatial distribution and status of the relevant factors to be protected as well as their sensitivity to the impact factors. Finally, the **type, volume** and magnitude as well as the spatial and temporal **dimension** of the resulting **effects** on the environment are forecasted and evaluated. A challenge certainly faced in this context are the different **time-scales** of environmental effects. These have to be stated always—no matter how big the difference between them may be.

Since eco-systems are more than the sum-total of their individual components, interactions and interrelationships absolutely have to be covered by the assessments. Hence, we are dealing with highly complex systems for which potential adverse effects are to be assessed on the basis of rather fragmentary data, taking into account not only "hard" facts (e.g. land consumption), but also "soft" factors (e.g. effects on the scenery). We also have to cope with the problem that as the complexity of a system increases, on principle, the ability of making precise and significant statements on the behaviour of the system decreases.

Likewise, the complexity and dynamism of PPs constitute a major challenge. Here, we have to make sure that the assessment applied must not be more differentiated than the basis of assessment. The assessment of environmental effects resulting from PPs, which cover a certain **range**, cannot be more precise than PPs themselves and, therefore, will also specify a range. If data availability and the information's level of detail is not reflected by the assessment's depth, you can only achieve **fictitious precision**. It is only logical that the same uncertainties accepted in the PPs must be permitted in the assessment of the PPs' environmental effects. Please note that assessments of the significance of environmental effects will, in part, only be **qualitative** and not quantitative assessments. An attempt at quantifying qualitative and semi-quantitative aspects will hardly lead to an increase in "objectivity."

As a rule, the assessment of environmental effects and the definition or further specification of measures are iterative processes, too. When it comes to the appropriate integration of **measures** envisaged to avoid and reduce negative environmental effects (or to reinforce positive effects), it is recommended to

integrate into the assessment basis those measures already known at the time of assessment. This is to prevent that merely "abstract" assessments of the PPs' effects are performed, without dealing with the concrete plan cases (at a strategic level, abstract assessments would very frequently lead to the conclusion that effects are "potentially significant"). Such an approach—for example, if the effects of land clearance were always considered to be significant, without considering any replacement afforestation[p] already planned—would not live up to reality and could also lead to pointless discussions. And finally, this eliminates avoidable efforts that would arise if, first, the effects were evaluated without the measures planned, second, the measures were assessed and, third, only then the final assessment was made taking into account the measures in order to determine the so-called "residual effect."

With a view to the level of detail of the measures used, it is also necessary to say a word on **weighting.** As a rule, evaluation would probably be overburdened in the context of strategic environmental assessments if systematic weighting was explicitly carried out in the assessment. Moreover, weighting must not be decided by experts (alone), but to a major extent, also by society and policy-makers. Here, we can make do with "intuitive" weighting that results from expert knowledge and is implicitly included in the individual assessments anyway. Also in this respect, practical experiences have been made, which indicate that assessments and assessment methods that show too much **"love for detail"** are not necessarily conducive.

There are uncountable scientific works on various methods for environmental assessments. Taking into account that, as a rule, a mix of methods is applied in assessment, there are almost as many assessment methods as fields of applications. The use of exact mathematical models generally requires that both the relevant data are available and that the meaning of the terms used is clear. While there are numerous proposals for assessment methods, for example, in the fields of spatial planning, nature conservation and landscape protection, a major part of the other assessment tools available is geared to the project level and, therefore, require completely different data.
Some methods involve the risk that (in part inevitable) uncertainties, contradictions or conflicts of interests are covered up. So-called "classic" methods, such as cost-benefit analyses or benefit analyses, will probably be useful for strategic environmental assessments only to a limited extent. However, this need not apply to certain sub-fields or sub-assessments. One tool for operationalising links between causing factors, effects and factors affected is ecological risk analysis which takes account of the effects' intensity, the sensitivity to effects and the risk of effects and may be helpful for strategic environmental assessments. Especially at the planning level, geographic information systems are well proven tools for overlaying various factors so that the "spatial resistance" and the "carrying capacity" of an area can be represented. However, such overlays can depict spatial but no functional relationships.

Experiences from previous planning practice as well as from the EIA instrument may well be used, which concerns a broad range of possible methods. Although the technical, content-related requirements for EIA are basically almost identical to the

[p] Naturally, it is also not possible to assess afforestation measures in general, but their quality and effects have to be evaluated in line with the specific case in question.

ones of SEA (even the texts of the related directives are widely similar), methods that proved well for EIA may not be applied to SEA without any reservations. After all, the methods used that essentially may only be applied under quite specific conditions should not create more problems than they solve.

6.4.1.2. Expert judgement

Due to the framework conditions described and the experiences made in practice, expert judgement is considered to be an essential instrument for assessing environmental effects in strategic environmental assessments. Mathematical methods hardly make sense in the assessment of environmental effects and the significance of these effects, in which many aspects can only be covered by verbal descriptions and, moreover, are partly interrelated. Exact numeric specifications involving detailed mathematical models (which may well be appropriate for individual issues) are, therefore, impossible for this application due to the PPs' fuzziness. Moreover, it would lead to "fictitious precision" reducing such approaches to absurdity.

It is obvious that methods using exact numeric specifications can not be used—or at least only with restrictions—for the assessment of the likely significant effects of PPs on the environment. In such cases, it is considered recommendable and, under certain conditions, indispensable to apply a knowledge-based approach using **expert judgements** rooted in justified expectations and experiences with a qualified discussion of the topic concerned.

As explained before, the environment is described by means of indicators. There is a variety of constantly changing indicator sets and criteria for assessing individual effects. As a consequence, it has to be left to the experts involved to apply these criteria in line with the current state of the art and science. However, structured support can be offered to them.

In order to achieve a transparent and, thus, traceable procedure, a common **"tool-kit plus instructions"** is used. The result could be called a **structured expert judgement.** This pragmatic approach to dealing with lacking or insufficiently concrete data also ensures that experiences with the conditions on site as well as generally accepted conventions are included in the assessment. This is indispensable for drawing analogies, which will frequently be necessary at this level of concreteness in order to make up for a lack of data. In this respect, expert knowledge is to ensure that a well reflected assessment can be performed, rather than a formal and mechanical examination of the likely significant environmental effects.

For all the reasons stated above, the assessment of environmental effects must not exclusively rely on algorithms, but has to be flexible in individual cases and remain the experts' responsibility so that the diversity and special nature of a concrete individual case can be accommodated. Moreover, positive experiences have indeed been made with such an approach, for example, in the performance of environmental impact assessments and it is appropriate to integrate them into the practice of strategic environmental assessments.

This includes the lesson learnt that the work of the experts involved requires **technical co-ordination.** This is to ensure that the assessment of environmental effects is complete and as far as possible free from contradictions so that an overall view can be obtained (if necessary, supplemented by a discussion of contradictions and conflicts), and is to guarantee that the integrated approach is fully applied.

6.4.1.3. Overall assessment

First of all, environmental effects are evaluated from the perspective of diverse subject fields (by the experts involved). Irrespective of the methods used for evaluating individual effects, an overall assessment has to be performed. To this end, the environmental effects have to be **considered** taking into account any **positive** effects.

For this task ultimately aimed at obtaining an **overall judgement** on the environmental effects of the various alternatives examined in an integrated approach, an **ordinal scale** is proposed. This scale serves as a recognised and well-proven **tool** for the **aggregation** required because, in fact, different units apply to the different effects and, strictly speaking, a comparison of actually incomparable items is demanded.

This tool has proven fairly well, for example, in the context of environmental impact assessments. Of course, various scales with different levels of detail come into consideration. On the basis of practical experiences, a scale (roughly) as shown in Table 3 below is recommended:[q]

a	.....	beneficial effect
b	.....	no effect
c	.....	negligible adverse effect
d	.....	considerable adverse effect
e	.....	major adverse effect

Table 3: Example of a scale for assessing environmental effects

The number of categories used in the scale was “limited” to five as traceability basically decreases as the number of categories increases and, not least for that reason, a five-grade scale is commonly used. This naturally requires that the experts involved in the assessment of environmental effects agree on a common scale (in the sense of a **“common language”**).

The scale is to be used for describing how the effects identified are classified taking into account the value of the environmental asset, the intensity of the adverse effect and the probability of occurrence. In this process, specialised assessment procedures and criteria may and should obviously be used for individual factors and interests to be protected. The reasons have to be stated also for the assessments made here. I suggest that the characteristics and indicators that are decisive are

[q] Depending on the plan or programme or simply on the preferences of the persons involved, a scale from “++” to “--”, symbols or similar classifications may be used.

specifically listed. By way of analogy, this also holds for the evaluation and **assessment yardsticks** (quasi the rules for applying the scale). The definition of such yardsticks is a prerequisite of traceable evaluations. It proved well to define as unambiguously as possible the different grades of the scale for the criteria underlying the evaluation in advance. This means that agreement is achieved on the characteristics which a criterion or indicator must have in order to be classified as "(very) positive" or "(very) negative" and assigned to a specific grade along the scale.

It is also recommended to aim at exactly one assignment without any intermediate values. Moreover, a **coded** scale (a to e instead of, for example, -2 to +2) was selected for the proposal. Experience (also from pilot projects carried out) shows that the temptation is great to perform mathematical operations, such as the calculation of mean values, etc., but this is on principle not allowed when an ordinal scale is used. Three to a maximum of five grades are recommended for the scale. Further differentiations tend to produce fictitious precision. It is considered more important to permit more traceable, justified and disclosed uncertainties. Another noteworthy fact is that "symmetric" scales with an uneven number of grades, for example from "very positive" to "very negative," obviously encourage the users to select frequently the grade in the middle. When an even number of grades is used, such a "sag" in the middle of the (symmetric) scale could probably be avoided.

Then, the individual technical appraisals can be summarised in an **overall result.** Again, this can appropriately be done using a matrix. Regardless of the methods used in specific subject fields, individual results of the assessment of environmental effects can be presented in the matrix for the causes identified and their effects on the various factors and interests to be protected (**"assessment matrix"**)[r]. Of course, it is also true in this case that the illustrative presentation based on the matrix is not enough and further explanations and justifications are required. The fact that weightings are not used in the overall assessment ensures, by the way, that individual critical evaluations are not put aside.

The assessment matrices may be presented in a great variety of ways as appropriate in a specific case. For example, potential causes may be summarised for the PPs' measures or packages of measures—usually along the horizontal axis. Likewise, it is conceivable that the objectives defined or their achievement is (also) displayed—consequently along the vertical axis. Moreover, as mentioned before, additional aspects relating to sustainability appraisal (i.e. social and economic factors) may be indicated in the matrix. The decisive aim is to find an adequate tool for the purpose in question and to apply it in a uniform and traceable way. An example of such a matrix is presented in Annex B (see Figure B-1).[s] It illustrates the assessment of a programme from the field of town and country planning for which two alternatives and the zero alternative have been examined. As shown in the example, traffic-light colours are frequently used to display the evaluation made.

[r] Even though matrices are widely accepted and used for this purpose, many different (and in some instances, confusing) terms have been coined to designate them. The present study uses the terms **"relevance matrix"** in the case of scoping and **"assessment matrix"** with regard to the assessment of environmental effects.

[s] In this example, a non-coded scale (-2 to +2) was used and the problems of inadmissible mathematical operations did indeed occur.

This presentation allows for quickly getting an overview—**"at a glance,"** so to speak—of:

- the causes (measures, instruments) that will actually have effects on specific factors and interests to be protected,
- the causes that seem to require special caution,
- whether causes have rather comprehensive/far-reaching or rather selective effects,
- where the most serious environmental effects are foreseeable, and
- where there are decisive differences between the planning alternatives.

Building on this presentation of the environmental effects, it is recommended to focus on particularly negative and particularly positive classifications in verbal descriptions. These can further explore additional differentiations, qualifications or, for example, constraints and conditions under which the classifications are valid. This may support, among others, the consideration of results and their processing for further steps in the planning process. The final result is a **verbal argumentative statement** of the effects of the PPs and alternatives on the environment. This evaluation should also identify leeway for decision-making so that decision-makers can fulfil their responsibility on a justified and transparent basis.

6.5. Measures

According to letter (g) of Annex I to the SEA Directive, the ER also has to contain *"the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme."* Additionally, letter (i) of Annex I calls for *"a description of the measures envisaged concerning monitoring in accordance with Article 10."*

Of course, this is not the first instance when measures are considered. This holds both for mitigation and monitoring measures. On principle, at least mitigation measures already have to be reflected on when alternatives are developed.

In the context of SEAs, the measures also are characterised by higher uncertainty than in the case of EIAs (not least for this reason, monitoring is important). Moreover, it may be typical of SEAs that the possibilities for measures are bigger than at a project level. It is essential to answer the following questions on measures in the ER:

- What is the purpose of the individual measures defined, e.g. which objectives are to be achieved by them?
- How effective are the measures, when will they become effective and how long will their effect last?
- Who are the addressees of the measures, i.e. who is responsible for their implementation?
- When or by when do the measures have to be implemented (ideally a timetable should be fixed)?
- How is their implementation ensured (also in terms of budget)?

It has to be borne in mind, however, that a certain flexibility is also required due to the uncertainties involved in PPs. At any rate, it seems to be necessary to clearly identify those measures that are essential or **indispensable** (also for evaluating environmental effects) and which ones are additionally desirable. The latter should be explicitly marked as recommendations or in a similar way.

6.5.1. Mitigation measures

This term is to summarise all the measures required under the SEA Directive, i.e. the measures envisaged *"to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme."* This also extends to measures for which other terms may be used (e.g. "substitution measures" and the like) as well as measures capable of reinforcing positive effects.

When defining the measures, several principles should always be taken into account. Like monitoring measures, mitigation measures are the result of, or rather the response to, significant environmental effects identified. Their purpose is to avoid or reduce either the volume or the probability or the frequency of negative environmental effects. Attention should be paid to their (ecological) effectiveness and appropriateness as well as the cost-benefit ratio. Another crucial aspect should be the fact whether the measures are adequately capable of contributing to the avoidance and reduction or, if appropriate, enhancement of effects with a view to **cause-effect relationships**—if these can be associated clearly or fairly well at all.

Please note again that mitigation measures in the broadest sense also include the selection of appropriate **alternatives.** The design of alternatives may already serve as a tool to avoid or reduce negative environmental effects. Furthermore, the spectrum of options for measures basically ranges from a change in **strategies** to detailed **technical** measures.

Even though there may be more possibilities for measures at the SEA level than, for example, at the project level, these are still subject to legislative and administrative limits. This may apply, for example, when measures are envisaged to reduce cumulative effects that, however, affect other planning areas or fall under the responsibility of other entities.

Nevertheless, for all the measures defined consideration should be given to the question whether it makes sense to include them in **monitoring.**

6.5.2. Monitoring measures

The *"measures envisaged concerning monitoring in accordance with Article 10,"* which have to be described in the ER pursuant to letter (i) of the ER, frequently cannot be laid down in all their details at the time when the ER is prepared. For this reason, special flexibility may be required in their definition so that they can be adjusted later on, if necessary.

The monitoring measures should at least take account of the following aspects of **performance monitoring:**

- the implementation of the PPs (if appropriate, including projects),
- the correctness of the assumptions on which the ER was based,
- the accuracy of the environmental effects forecasted with regard to their volume, intensity, etc.,
- the coping with the environmental effects forecasted and, if applicable, the resolution of conflicts,
- the mitigation measures, and
- additional new negative adverse effects and their management.

For further details, e.g. on the design and organisation of monitoring, please see Chapter 8. Moreover, it should be mentioned explicitly that the monitoring check-list (Annex D) may also be helpful for planning monitoring measures and, therefore, can also be used at earlier stages, actually during all SEA steps. This naturally applies specifically to the preparation of the environmental report where the monitoring measures should already be planned.

6.6. Information on the selection of alternatives and methods used

According to letter (h) of Annex I to the SEA Directive, the ER also has to contain *"an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information."* With regard to the second aspect, i.e. the description of "how" the environmental assessment was performed, the methods used to evaluate the environmental effects of the alternatives are to be presented.

Article 5 also requires that the information provided in the environmental report also takes into account *"current knowledge and methods of assessment."* This may include all the measurement, calculation, forecasting or assessment methods defined during scoping and/or used in the SEA's course, i.e. the methods for analysing the state of the environment, including data collection and acquisition, as well as measurement methods and methods for preparing forecasts, if applicable. Moreover, they also refer to methods for assessing environmental effects. The information also has to cover the criteria or indicators and yardsticks for assessment.

A separate chapter may be dedicated to the methods in the ER, but it may also be expedient to discuss individual methodological aspects in different chapters, for example in the one on the assessment of environmental effects. It is assumed that the latter option will frequently be given preference. What is ultimately important is that (also) the methods used are transparent and traceable.

This also applies to the second part of letter (h) in Annex I which requires that *"any difficulties encountered in compiling the required information"* be outlined and explicitly lists as examples *"technical deficiencies or lack of know-how."* The

traceable description of such difficulties may not only raise transparency of planning and decision-making, but also may constitute an essential element of future activities, including subsequent strategic environmental assessments. This description may, for example, implicitly involve the "tasks" of collecting more data and information or simply making them available in a useful form.

With regard to transparency and traceability, similar requirements apply to the *"outline of the reasons for selecting the alternatives dealt with."* As already described in Chapter 5.1.1, alternatives or rather draft alternatives may have been eliminated for various reasons at different stages. These reasons, such as k.o. criteria, can be described in this part of the ER.

At any rate, the reasons have to be stated why the final optimised alternative was eventually selected from among the alternatives studied more closely and evaluated. As mentioned before, this alternative may be a variant (or even several variants) made up of modules taken from several alternatives.

6.7. Summary

The *"non-technical summary"* provided for in letter (j) of Annex I is not least an important tool needed for public participation. For this reason alone, it is recommendable to prepare it in such a way that it can be used as a separate part for precisely this purpose.

It is to be borne in mind that this summary may also play an important role in subsequent decision-making as well as in considering and communicating the results (without replacing the summarising statement, see below). As a rule, (assessment) matrices could again be helpful by providing an overview of the environmental aspects dealt with—at a glance, so to speak. However, matrices alone are by no means sufficient.

Depending on the extent of external participation up to this point in time, it may also make sense to summarise the comments or objections submitted in diverse consultations in a separate part (e.g. in an annex to the ER).

6.8. Ensuring quality

In addition to the requirement that the process and decisions have to be traceable, Article 12 of the Directive implies that **minimum standards** must be defined in order to comply with the duty to ensure that environmental reports are of a sufficient **quality** in accordance with Article 12(2). As a result, measures have to be taken so that such minimum standards are applied in a uniform way. Here, the focus is on technical, content-related requirements. Process quality does not fall under the scope of this study anyway.

As a matter of course, the quality of the environmental reports is based on the entities and **experts** involved in SEA as well as on their **current knowledge**, the

data and information used, the methods applied, etc. In this vein, the **education and training** of the persons involved also is to be understood as an instrument of quality assurance. The most essential tool for ensuring the ERs' quality as completely as possible is to be provided by the present study: standardised specifications and requirements relating to aspects, such as data collection, evaluation, documentation, etc., and, in particular, **harmonised working materials**, such as check-lists.

These tools are to be **systematic** and comprehensive, and not least, should support ongoing reviews, e.g. also with a view to evaluating environmental reports and their quality, in a **standardised** form and thereby, promote the comparability of strategic environmental assessments. Finally, transparency and traceability also are features of quality assurance. Ensuring the quality of environmental reports, naturally requires that appropriate standards are actually applied and, additionally, that their application goes beyond merely "checking off" various items and also extends to the substance-related quality of the discussions included in the ERs.

Consultations can—and should—also make a significant contribution to the quality of ERs. By involving both the environmental entities and the public several times, the process, too, ensures quality. This creates the opportunity to establish a qualified and critical regulating factor.

And last, but not least, **monitoring** is a tool of quality assurance. It may, for example, be the basis for learning lessons that are fed into future planning processes. It may also create (and make accessible) the data basis for future environmental reports. This naturally requires again that there is a useable documentation of monitoring and its results.

6.9. Avoiding duplication of assessment

The SEA Directive explicitly states that duplication of assessment has to be avoided, e.g. in Article 4(3), which reads as follows: *"Where plans and programmes form part of a hierarchy, Member States shall, with a view to avoiding duplication of the assessment, take into account the fact that the assessment will be carried out, in accordance with this Directive, at different levels of the hierarchy. For the purpose of, inter alia, avoiding duplication of assessment, Member States shall apply Article 5(2) and (3)."*

Additionally, information on how to reduce unnecessary efforts is given in Article 11 of the SEA Directive which provides that *for plans and programmes for which the obligation to carry out assessments of the effects on the environment arises simultaneously from the SEA Directive and other Community legislation, Member States may provide for coordinated or joint procedures fulfilling the requirements of the relevant Community legislation in order, inter alia, to avoid duplication of assessment.* Finally, the SEA Directive also opens up possibilities for avoiding unnecessary efforts within the framework of monitoring. Pursuant to Article 10 of the SEA Directive, *"existing monitoring arrangements may be used (…) with a view to avoiding duplication of monitoring"* in order to comply with the monitoring requirements.

The **most important instrument** for avoiding duplication of assessment is **scoping,** which decides on the efforts required within the framework of an SEA. The first question to be asked to avoid unnecessary efforts always is: What makes sense and is possible at the relevant level of planning? Duplication of efforts can also be prevented by identifying competition among several plans and programmes (e.g. contradictions, etc.) in due time. With regard to the quoted Article 5(3), it is also possible to use information collected at other levels of the decision-making process, e.g. for plans and programmes in other fields or the implementation of other Community legislation. This includes numerous possibilities, such as previous strategic environmental assessments.

While the assessment at a certain planning level cannot fully replace (strategic) environmental assessments at the next levels or even EIAs, precautions can be taken to ensure that assessments are not repetitive in terms of contents and can be limited to any additional, more recent or more concrete aspects. It may even be appropriate to take over an existing environmental report, for example prepared at a higher level of the planning hierarchy, that meets certain criteria, such as up-to-dateness (see below), for a plan or a programme, for example, by declaring that it is "valid" in full or in part. And finally, it may make sense, especially in the case of planning hierarchies—at any rate in the field of town and country planning—, to perform strategic environmental assessments **on a voluntary basis** and thereby reduce the workload for environmental assessments at lower planning levels.

Please note that certain requirements have to be met for this approach:

- the PPs to be assessed obviously do not contain any additional or current aspects with regard to environmental effects, and
- the results of the SEA already performed are sufficiently up to date, and
- there are no new framework conditions, findings or data that have a decisive influence on the results of the SEA already performed.

Moreover, the information and data also need to be accessible or made accessible in a useable form. For example, it is of little help for project applicants or investors who have to perform an EIA for their project if strategic aspects, such as alternatives, have been comprehensively studied, but the related information is neither known nor accessible. This may also hold for experiences and information from monitoring. In this context, monitoring could be very helpful as an early-warning tool—not only for decision-makers and plan-makers, but also for project applicants.

Because it is also conceivable that planning processes already have an "eye" on concrete projects or actually trigger planning activities, it is at least in these cases that the results are "re-used" and the workload is reduced. The potential reservation that the level of detail of assessment at the PP level may not (fully) meet the requirements of the project level can be more effectively addressed in these cases.

To reduce the burden at the project level, especially in the context of environmental impact assessments, it would not only be desirable to make the results of strategic environmental assessments accessible, but also to provide for explicit regulations in the relevant (development consent) procedures. Such regulations could state that the results of planning-level assessments not only can be used, but are even—

explicitly—sufficient for specific purposes. Only practice will show the extent to which the workload of environmental assessments can be reduced at the project level.

The very sensible approach explicitly mentioned in Article 11 of providing for **coordinated** or **joint procedures** is absolutely realistic for specific applications. This would, for instance, be conceivable in those cases (in Austria) in which land-use plans have to be modified for certain projects requiring EIAs and an SEA has to be performed for those modifications. Another possible example might be the case of projects requiring EIAs, such as shopping centres or large-scale wholesale establishments, for which a "location ordinance" has to be issued—as stipulated in some provisions at the regional level. At least, efforts have to be made to use existing data and findings—e.g. from spatial impact assessments and "nature impact assessments"[t]. This facilitates the **avoidance** of **competition** or **contradictions** and, thereby, also contributes to minimising extra work. Please note that the results may have to be presented separately because different legal consequences may be connected with them.

[t] Assessments under Articles 6 and 7 of the Habitats Directive.

7. Taking into account the results and decision-making

Article 8 of the SEA Directive stipulates the **duty to take into account** the environmental report, the opinions expressed in consultations as well as the results of any transboundary consultations *"during the preparation of the plan or programme and before its adoption or submission to the legislative procedure."* Bearing in mind the Directive's stipulations, e.g. the objective of integrating environmental considerations stated in Article 1, this means that this information not only has to be simply taken note of or made available, but has to be **discussed** with regard to its contents.

Additionally, Article 9 defines the requirements for **providing information on the decision taken**. This Article 9 provides that, *when a plan or programme is adopted, the environmental authorities, the public and any Member State consulted are informed and the following items are made available to those so informed*:

- *the plan or programme as adopted,*
- *a **statement summarising** how environmental considerations have been integrated into the plan or programme and how the environmental report, the opinions expressed and the results of transboundary consultations have been **taken into account** (in accordance with Article 8) and the reasons for **choosing** the plan or programme as adopted, in the light of the other reasonable alternatives dealt with, and*
- *the measures decided concerning **monitoring**.*

The detailed arrangements for the provision of this information can be determined by the Member States.

The regulations contained in the SEA Directive provide for ensuring not only the traceability of the decision, but also its technically sound basis and justification. Thereby, it becomes more difficult to adopt poorly reasoned or even arbitrary decision or to justify them in public.

7.1. Approach

Taking into account all these aspects requires that the process and its results are appropriately documented as far as possible without any gaps, which is of great importance as pointed out already several times. With regard to the consideration of the ER, it is necessary to deal with the substance of its results. Therefore, it is recommended to take account of the **structure** and **system** just as in the preparation of the **environmental report.**

When there are numerous, extensive or technically complex opinions (or objections) on the SEA, it may be necessary to process them, for example, by collating comments on the same topic, etc. Moreover, the opinions submitted in the consultation process may naturally require that various experts have to be involved

(again) who either adopt proposals received or respond to comments in a qualified fashion. This may even mean that individual steps or sub-aspects have to be repeated due to deficiencies pointed out. In this context, it becomes particularly clear that a **thoroughly** performed, **justified** and fully **documented** SEA is the best guarantee for avoiding or minimising the **efforts** involved.

It is recommendable to use the **check-list** presented in **Annex C** also in advance ("ex ante") for carrying out this work and documenting that the requirements of Articles 8 and 9 of the SEA Directive have been fulfilled, and not only use it afterwards ("ex post") for checking compliance.

7.1.1. The summarising statement

After PPs have been adopted, several items have to be made available, including a statement summarising how the environmental report, the opinions expressed and the results of consultations have been taken into account. This statement is to document the **overall consideration** of different requirements and interests. On the basis of the **duty to deal with these issues**, the consideration process can be made transparent with a view to the integration of environmental issues—in terms of stating the reasons for planning decisions. While one could speak of an **"information duty"** in the case of the ER, the requirements applying to the summarising statement go further and result in a **"justification duty."** At any rate, the statement should cover the following items:

- a presentation of the **environmental aspects** dealt with in planning and how they were taken into account (including objectives and their achievement),
- any **modifications** to the plan or programme in response to results of the ER or consultations (if applicable, repetition of steps required due to serious findings that emerged in the course of SEA),
- the reasons why results of the ER or consultations, if applicable, were **not taken into account in planning**,
- the reasons why the **plan finally adopted** was chosen in the light of other alternatives dealt with,
- the measures decided concerning **monitoring** (either confirming the related information in the ER or pointing out modifications).

The non-technical **summary** of the ER could primarily serve as a basis for this information, at least for describing the environmental aspects and the way in which they were taken into account. This non-technical summary, however, certainly does not replace the summarising statement, which has to satisfy different demands.

Furthermore, it may make sense also in this context to summarise the **opinions** or **objections** received under diverse consultations in a separate part. This could be done, for example, in an annex to the summarising statement.

8. Monitoring

After the adoption of PPs examined in SEAs, an ER is available in which several alternatives are examined. The next step is the implementation of the PPs. Annex I to the Directive demands that a description of the monitoring measures envisaged according to Article 10 be included in the environmental report and, according to Article 9 of the SEA Directive, the monitoring measures also have to be made available when information on the decision is issued. According to Article 10 of the SEA Directive, Member States have to monitor the significant environmental effects of the implementation of plans and programmes in order, *inter alia,* to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action. To comply with these requirements, existing monitoring arrangements may be used if appropriate, with a view to avoiding duplication of monitoring.

The Directive does not contain any information on how exactly monitoring is to be designed, i.e. it does not answer the following questions:

- What has to be monitored and how is monitoring to be performed?
- When and how frequently is this to be done?
- Who is responsible for it?
- Which concrete consequences are linked to it?

The same holds for the documentation of monitoring, the presentation of results, and information or consultation obligations. The fairly imprecise specifications of the SEA Directive need not necessarily be considered problematic, but can also be seen positively as leeway resulting in **flexibility** opening up opportunities. Again, explicit reference is made to the *"implementation"* of plans and programmes. This may cover a broad range of possibilities and, of course, may include also project-related aspects.

There is no doubt that the contents of the **environmental report** and, hence, actually scoping constitutes the basis of monitoring. Ultimately, the scope of monitoring is a direct consequence of the (final) scope of SEA because—at least, as a rule—only those aspects can be monitored that have been classified as relevant in the course of the SEA process. Therefore, it is advantageous if the environmental report already states as specifically as possible how the questions listed above are to be answered.

Aspects going beyond the assessment scope of the ER are not excluded on principle, if they arise after the SEA's completion and in the course of the PP's implementation. Thus, it is well possible that issues relevant for monitoring emerge during decision-making, for example, when the summarising statement is prepared. These issues may be related to aspects previously described or also aspects that have additionally been raised during the consultations of the environmental entities and/or the public. Moreover, open issues that should be clarified during monitoring may crop up also later on. This interpretation is also supported by the term "*unforeseen* adverse effects" used in the Directive.

8.1. Objectives and possibilities of performance monitoring

Although monitoring is mandatory and the question of its purpose, therefore, may seem to be pointless, several related considerations should be stated by way of introduction.

First of all, monitoring is not an issue raised for the first time by SEAs or the SEA Directive. In fact, there are numerous approaches and specifications for monitoring in other fields, not least due to requirements defined in various legal acts of the EU. These include both general and project-specific monitoring measures. Examples are reporting duties under the IPPC Directive and the Water Framework Directive, etc. Other (potential) monitoring instruments are diverse inventories, mapping or measurement networks (e.g. for air quality) and the collection of diverse other data (e.g. in the waste field), which is already done today in many cases. However, there are indeed hardly any experiences for a systematic monitoring of the implementation of plans or programmes in line with the Directive.

Monitoring provides the possibility to examine and analyse also the **implementation phase** after the planning phase. As a means of **measuring success**, it opens up the opportunity to handle uncertainties, to take corrective measures and to support the updating and adaptation of plans and programmes. This relates, for example, to the controlling of forecasts prepared in SEAs and to the environmental effects predicted. Monitoring permits a comparison of forecasted and actual environmental effects (in this respect, we can also speak of a **follow-up analysis** and, if appropriate, re-adjustment or also evaluation). The monitoring requirements as defined in the SEA Directive include the aspects *"to identify at an early stage unforeseen adverse effects"* and *"to be able to undertake appropriate remedial action."* From this perspective, monitoring is a kind of **"early-warning system"** for undesirable effects occurring during the PPs' implementation. This also applies to cases of insufficient progress towards planning or environmental protection objectives. As a result of the comparison between forecast and reality, either the planning assumptions can be verified or important conclusions can be drawn for subsequent assessments or future forecasts.

In contrast to the project level, the (mitigation) measures are also affected by major uncertainties. Therefore, monitoring is also a valuable tool for implementing such **measures** and evaluating their effectiveness, and should be given the related priority. Moreover, monitoring may contribute to **closing information and data gaps.**

Another highly crucial aspect of monitoring certainly is that it can provide the basis for learning lessons that are fed into **future planning processes.** Thereby, for example, it may create the data basis for future **environmental reports.** This naturally requires again that there is a useable (and accessible) **documentation** of monitoring and its results.

To put it in a nutshell, effective monitoring makes it possible to learn for the future (not only from mistakes) and to broaden knowledge. It also contributes to transparency in the implementation of plans and programmes. For all those reasons,

monitoring—as an instrument of reflection and communication—is an important tool of **quality control.**

8.2. Design and organisation

The monitoring **check-list** presented in **Annex D** can already be used for preparing monitoring. Monitoring focuses on environmental effects and, consequently, has to take into account the state of the environment. Likewise, planning and environmental protection objectives as well as (mitigation) measures are dealt with in monitoring. First of all, it is necessary to determine the **status of the PPs' implementation.** This also involves a check to see whether there are modifications or deviations as compared with the planning results, i.e. the environmental report, for example. Furthermore, current weaknesses and problems arising in the PPs' implementation are to be identified early on.

Talking about the monitoring of environmental effects, it is obvious that monitoring should not and also cannot cover all aspects. This means that when the monitoring scope is determined, it is always necessary to address the issue of appropriateness in order to obtain not only reliable and up-to-date, but also appropriate results. As a result, **priorities** have to be defined on which monitoring will concentrate. For example, a focus could be on critical issues identified within the framework of SEA with regard to environmental effects. Such issues may be problems previously identified (e.g. k.o. criteria) or new ones (due to new framework conditions, secondary effects, cumulative effects, etc.).

In the case of monitoring, too, a challenge is that potentially very abstract and little specific issues have to be dealt with. What is more, the issues to be monitored are usually characterised by complex relationships, and it is extremely difficult to identify cause-effect relationships. This means that a **causal link** between effects and the implementation of PPs frequently cannot be unambiguously established.

At any rate, it makes sense to clarify which purpose monitoring is to serve and which objectives it should pursue. Monitoring is a learning process, and its requirements are manifold. Monitoring should:

- be problem-oriented and focused on the information required for decision-making,
- (wherever possible and appropriate) establish a link to lower levels of planning hierarchies and, if possible, even to the project level (especially to EIA),
- be transparent, cost-effective and not time-consuming,
- make do with easily accessible information and, if possible, without additional data.

The implementation of monitoring also raises the question of its **organisation.** As a rule, it is safe to assume that the plan-makers will also be responsible for monitoring. This need not necessarily mean that they perform the monitoring measures themselves. Further questions to be clarified are:

- Should monitoring be carried out by a team and, if yes, how should the team be made up?
- Should monitoring be formalised and institutionalised, for example in the form of an advisory committee or a platform?
- Should certain entities be able to comment on the monitoring results?
- Who should be informed about the monitoring results?

Definitive answers to these questions can certainly only be given on a case-by-case basis. An interesting question is whether monitoring should be performed individually for each PP or whether it would make more sense and be more efficient to monitor **several PPs together.** Under certain conditions, this may be expedient for raising the likelihood of identifying **cumulative effects**.

In general, it is recommended not to restrict unnecessarily the **flexibility** created by the Directive and to permit individual, empowered decisions. This relates both to the monitoring procedure and to the contents, which may have to be adapted in the course of the PPs' implementation. It is even recommended to "institutionalise" this flexibility and explicitly provide for it in the monitoring documentation. This could be done, for example, by stating which issues are open or uncertain and, if necessary, by specifying certain conditions (in the form of **"if-then"** provisions). After all, there is the risk that in particular, monitoring is overburdened by premature and even unrealisable expectations (that may even be impossible to clarify finally when monitoring is planned) and that there is "too much of a good thing." In this case, too, practice will highlight the "golden mean" which again requires appropriate documentation and the **exchange of experiences.**

8.2.1. Timing and intervals

At any rate, monitoring relates to the **implementation phase** of plans and programmes, which already provides initial hints for the timing of monitoring. It is conceivable that implementation only results in concrete measures in subsequent steps (e.g. the adoption of routes for roads where concrete implementation may require an EIA). In such cases, this aspect also has to be considered when deciding on the appropriate time of monitoring—not least to avoid duplication of assessment. However, measures have to be taken to ensure that applicable monitoring requirements are met in any subsequent steps and assessments.

As outlined above, the time when monitoring, including the first monitoring of PPs, makes sense also crucially depends on the nature of the effects the PPs have on the environment. In this context, you have to bear in mind that the response times of the environment are long for many relationships and that damage may already exist when an adverse environmental effect shows. By analogy, this also applies to the frequency of monitoring. The definition of sensible intervals should actually also be oriented to the time-scales of environmental effects, the relevant factors/interests to be protected and their response times to various developments. Finally, another reference point for the timing and frequency of monitoring could be the introduction of important innovations or modifications.

A pragmatic approach might be to schedule monitoring exercises in line with the PPs' updating intervals. This could also answer the question of who is responsible for

monitoring. At any rate, **existing revisions** of PPs could serve as occasions for monitoring, i.e. it could be performed when regular reviews or revisions of PPs are carried out. However, it has to be borne in mind by all means that, due to the effects of PPs, monitoring maybe only takes place at a time when it may be too late. If necessary, such revisions could or should be appropriately adapted and in cases in which such an obligation does not exist, analogous instruments could be provided for.

8.2.2. Documentation

Given that the documentation is a crucial aspect of monitoring, it cannot be stressed too often that it may form the basis of future planning processes—and future strategic environmental assessments. Adequate documentation is essential for learning from monitoring experiences and, for example, make data sources accessible for future planning and environmental assessments as well as for future monitoring exercises. This also holds for lower levels in the planning hierarchy, including the project level. Therefore, it makes sense to bear already in mind the way in which monitoring experiences and results will be most beneficial and to ensure that they are appropriately presented.

Not least for this reason, the check-list included in Annex D was designed to ensure a structured documentation that is as complete as possible.

8.3. Contents and implementation

It can (and, as a rule, will) be necessary to answer the following questions:

- Which aspects should be covered by monitoring? These include:
  - the status of the PPs' implementation,
  - the contribution made by contents and measures of the PPs to the achievement of planning and environmental protection objectives,
  - developments (of the PPs' implementation, environmental parameters, other forecasts, e.g. traffic, demographic trends, etc.),
  - identification of unforeseeable (undesirable) environmental effects,
  - effectiveness of the (mitigation) measures,
- Which areas should be covered?
- Which methods should be applied?
- Which indicators are suitable for obtaining relevant information?
- Which data and information are required?
- When (under which conditions) do consequences have to be taken and which ones come into consideration?

8.3.1. Significant environmental effects

First of all, the focus is again on the relation to the ER. Article 5 of the SEA Directive and Annex I specify that SEA deals with **significant** environmental effects. Consequently, it is to be assumed that monitoring also concentrates (only) on

significant environmental effects. Additional issues that may well pursue ambitious goals can be justified in individual cases. However, their consideration in monitoring cannot be derived from the SEA Directive.

With regard to the significant environmental effects, too, a certain selection is recommendable. It will make sense to put the main emphasis on essential effects. Therefore, for example, k.o. criteria identified in SEA should be taken into account. In general, however, the effects considered should not be limited to those identified early on, but also extend to additional ones that only emerged after the end of the planning phase.

Not only the type, magnitude and evolution (trend) of environmental effects, but also their temporal and spatial dimension form the basis of deciding on when, where and how monitoring can be performed in a sensible way. For example, it is of crucial importance whether the PPs' forecasted effects on the environment are more **short-, medium-** or **long-term in nature.** Furthermore, any transboundary effects of PPs also have to be taken into account.

No-impact statements should also be re-examined during a monitoring exercise. After all, it is possible that no-impact statements originally adopted prove to be wrong in the course of time or that forecasted effects do not occur. However, it is also conceivable that clear cause-effect relationships cannot be identified at all.

During monitoring, too, environmental effects have to be assessed and, here basically the same rules apply as during the preparation of the environmental report. Just as for the ER, **expert knowledge** will also be a central tool of assessing environmental effects during monitoring.

8.3.1.1. Measurability of success

It is also necessary to lay down how success can be "measured," i.e. **indicators** are to be selected for this purpose (and the indicators already defined and documented in the environmental report or the summarising statement have to be closely scrutinised). It is obvious that the achievement of objectives or **"success"** can only be related to the corresponding planning and environmental objectives.

Here, a decision also has to be made as to whether success should be checked **directly** or **indirectly**—for example, by examining certain measures. An essential problem affecting the decision on suitable indicators has already been addressed several times, i.e. identifying links between cause and effect. Given the fact that Article 10(1) requires that significant environmental effects of the implementation of plans and programmes are monitored in order, *inter alia*, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action, it is only fair to assume that indicators will be preferable that relate to the (measurability of) results, e.g. a specific aspect of environmental quality. Thus, it will be more appropriate to use the quality of certain factors to be protected (e.g. quality classes of waters) as indicators rather than indicators that describe the extent of their deterioration (e.g. emission to waters in this case).

Please note that it will not—at least not always—make sense to use the same indicators that have been compiled to assess the environmental effects during the preparation of the environmental report (ER). It is, for instance, thinkable that parameters have been used for the ER that could only be established on the basis of calculations or simulations. This may, however, mean that the same indicators are not suitable for monitoring. Moreover, the indicators used may also be subject to continuous updating, if appropriate. Therefore, it is recommended to scrutinise the indicators during each monitoring exercise.

8.3.1.2. Data and information

Furthermore, it has to be clarified which data and information are required and from which sources it can be obtained. This includes the question whether these are (have to be) qualitative data or also quantitative data. At any rate, expressive, up-to-date data are needed to make accurate statements about the effects caused by the implementation of PPs. To this end, it may also be sufficient if trends can be indicated.

Furthermore, an adequate infrastructure is required so that it is actually possible to access data or learn about their existence in the first place. In many cases, the data base will certainly be more or less the same as the one used for preparing the environmental report.

Data requirements and data availability should already be taken account of when designing the monitoring measures so that it involves only a simple collection of data and, if possible, no additional data have to be recorded or measured. Consequently, existing data—which may also come from previous monitoring exercises—should be used as far as possible. Of course, any monitoring programmes previously established and reports to be prepared under various obligations are potential data sources. As in the case of the ER's preparation, data can be used that have to be gathered under diverse legal acts of the EU.

8.3.2. Measures

Furthermore, where applicable, consideration also has to be given to any mitigation measures (measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme as well as measures capable of reinforcing positive effects) that may be planned during the PPs' implementation.

Monitoring may focus both on the **efficiency** and **effectiveness** of the measures taken. It makes sense to ask whether the measures taken are efficient as well as to examine whether the "right"—i.e. in particular, appropriate and proportional—measures have been envisaged to achieve the objectives defined.

8.4. Consequences

The SEA Directive does not contain provisions implying that plans or programmes have to be modified or adapted as a consequence of monitoring. To prevent that monitoring is an end in itself, however, it should naturally be possible to draw consequences in terms of an "adjustment obligation." The best approach is to define the conditions in advance under which the monitoring results may and must lead to consequences. Ideally, criteria can also be laid down for deciding when further measures are required (e.g. in the case of specific deviations, values or states).

Moreover, it may make sense to reflect already on the way in which the results are to be presented, the persons to whom they should be made available, on whether there should be the possibility to submit comments, etc. A possible measure could be, for example, **follow-up monitoring** or related specifications.

In this context, you must not forget that monitoring may well offer additional possibilities and, come to that, also further addressees for measures at the planning level, but that, on the other hand, consequences, for example in the form of remedial action, may also be problematic. After all, this raises the question of the (legal) effect of monitoring results, where care has to be taken not to call into question **planning security** and **legal certainty.** At the most, monitoring results and experiences will not directly or immediately result in PP modifications but only at a later date (e.g. during the next scheduled revision). This may put limits on effective monitoring whose actual importance will only be shown by practical experiences in the future. Nevertheless, monitoring exercises will lead to consequences, perhaps not for the PPs monitored, but at least for future planning processes or environmental assessments.

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Annex:

Working materials

Annex: Working materials

With regard to the **screening** of PPs to determine whether they are likely to have significant environmental effects, the readers are referred to the related study (A. Sommer, Assessment of the significance of environmental effects. Screening procedure and criteria applied in strategic environmental assessments; published by the Federal Ministry of Agriculture and Forestry, Environment and Water Management, 2003).

The following **working materials** are to offer practical guidance on the following steps of strategic environmental assessments (SEA):

- scoping;
- preparation of the environmental report;
- taking into account the results and decision-making; as well as
- monitoring.

They cannot only be used to prove that the entire procedure complies with all requirements defined in the SEA Directive, but ideally are also suitable as a basis of documentation.

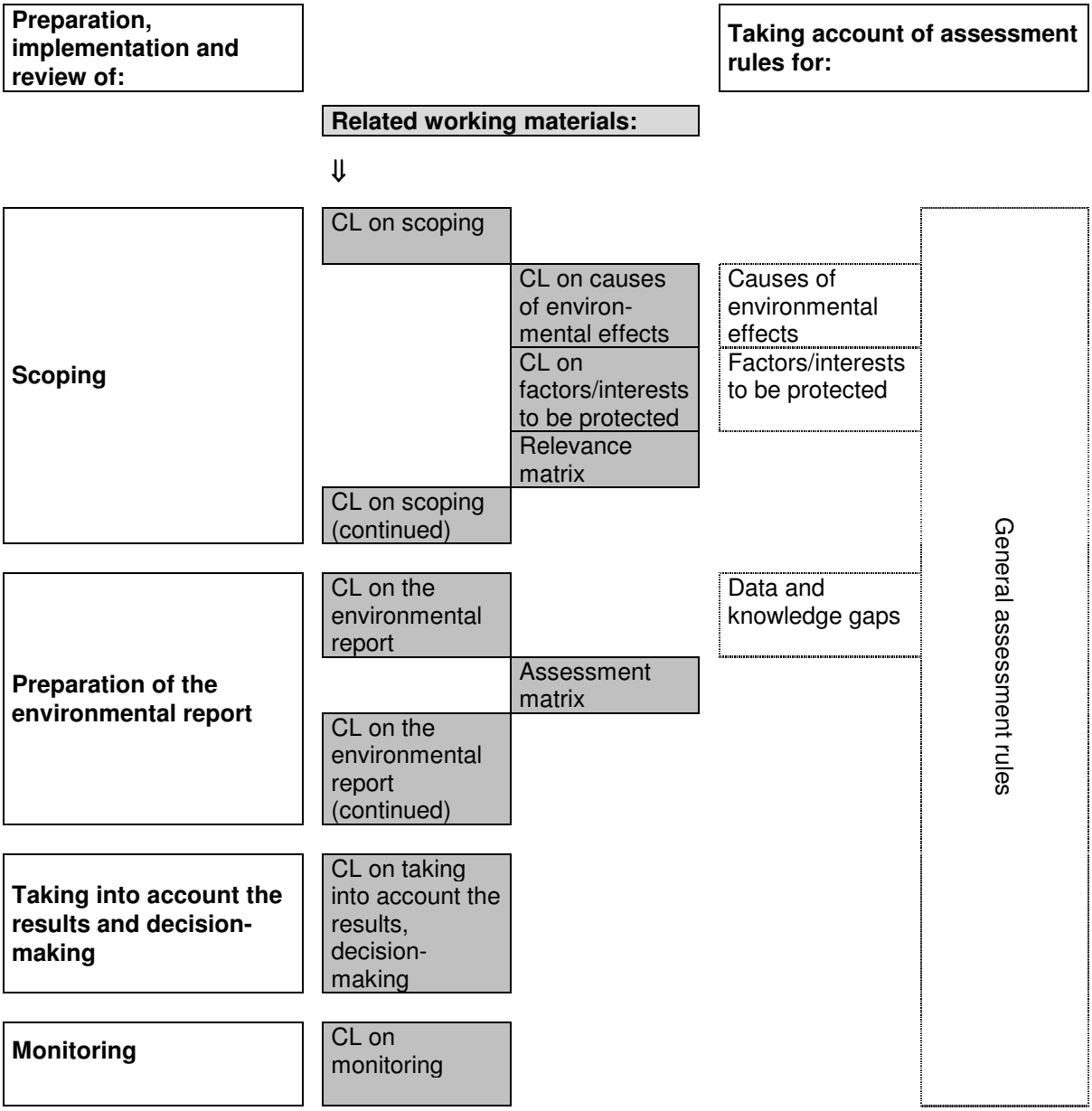
In order to achieve a transparent and, thus, traceable procedure, a common **"tool-kit plus instructions"** was developed for each step. To this effect, a basic set of tools has to be provided, which essentially are **check-lists** and, in some cases, also **assessment rules** designed to facilitate the use of the check-lists. Thereby, it is to be evidenced and documented that all the aspects and issues required by the SEA Directive and "good practice" have been covered (even if these aspects are considered to be irrelevant in a specific case). Finally, the working materials also contain examples of **matrices.** Even though matrices are widely accepted and used for this purpose, many different—and in some instances, confusing—terms have been coined to designate them; the present study uses the terms **"relevance matrix"** in the case of scoping and **"assessment matrix"** with regard to the assessment of environmental effects.

Check-list design

The check-lists developed are designed in such a way that they can be used already in **preparation** of, and during, the related SEA steps and not only at their end (i.e. not only "ex post," but also **"ex ante"**). Moreover, they build on each other—like the SEA steps—and are interlinked taking account of the possibility of, or even need for, reiterations so that there is a proverbial "red thread" running through the system.

It seems important to point out that some demands cannot be met by applying the check-lists. These include the assessment of compliance with special individual legal requirements and the verification of information and its quality.

The present study contains the following working materials that are to be applied in line with the following scheme:



Overview of the application of the working materials developed (CL = check-list)

One or more check-lists (CLs), including in some cases also specific assessment rules (on causes of environmental effects, factors and interests to be protected, as well as data and knowledge gaps) and two matrices are offered for **preparing, implementing** as well as **reviewing** (i.e. examining or checking in retrospective) the various steps from scoping to monitoring. The general assessment rules provided apply to all the steps. On principle, the steps are intended to be performed in the sequence presented, though reiterations in which the check-lists are complemented or corrected are naturally conceivable and will frequently also make sense. Moreover, the specific assessment rules basically can and should be helpful also for other steps (for example, the specific assessment rules on the causes of environmental effects as well as on factors and interests to be protected also provide assistance when the environmental report is prepared).

Let us briefly explain the approach by taking scoping as an example: Essentially, the scoping check-list is available for this step. For specific key aspects of scoping, there are additional check-lists (on causes of environmental effects as well as factors and interests to be protected), including specific assessment rules, as well as the relevance matrix. After these

tools have been used (or in practice, of course, also in parallel thereto), the scoping check-list has to be complemented.

Application of the check-lists

The application of the check-lists is to support the implementation of the individual steps and, at the same time, they are to ensure a standardised procedure—as a quality assurance tool, so to speak—so that certain minimum standards are maintained for the consideration of environmental issues. The working materials are intended to provide **uniform "work instructions"** covering the entire range of PPs that may require SEAs. When using the tools, the legislation currently in force with regard to the implementation of the SEA Directive also has to be considered.

Provided that the working materials are as **comprehensive** as possible, they contribute to minimising the risk of incorrect assessments. The length of the lists and, in part, their level of detail also has to be seen from this perspective—as a **service** for the users, so to speak. On principle, the aspects included in the lists only have to be taken into consideration if this is possible and relevant for a concrete plan/programme. Care has been taken to ensure that the materials proposed can be used for all the plans and programmes that may be affected. Therefore, the working materials, such as check-lists, constitute **"maximum lists"** from which irrelevant items can and should be deleted in concrete individual cases.

Although such lists may constitute a model for a common basis or a common structure, they can never fully accommodate all individual cases nor can they be exhaustive, universal "all-purpose catalogues." Therefore, the materials have to be designed as an open, expandable system and, indeed, can be **further differentiated, made more specific** or **complemented** by further aspects that are primarily characteristic of certain PPs in a concrete planning case and taking account of the PPs' nature and level of detail at any time. For this purpose, the working materials always include a field for "other" information.

The tools have been designed so that they can be used by one person or small teams—for example at a municipal level—in simple cases, which may become "routine cases" after some time. At any rate, the name of the person who used or completed the check-list should be indicated.

It is to be emphasised explicitly that the check-lists cannot relieve the users from their **responsibility.** Both the planners and other parties involved, such as the environmental entities, stay responsible for not employing the check-lists merely as a tool for a final formal examination in which items are only "ticked off" at the end. Quite on the contrary, if applied ex ante, i.e. to **prepare** the individual steps, and also during these steps to ensure **in-process control**, they will raise the efficiency and quality of the processes and results.

Documentation

The proposed **comprehensive** and **systematic** assessment of environmental effects ensures that the decisions are well founded and also have been taken on the basis of verifiable criteria using the working materials. It is recommended that, after the work has been performed, the working materials are added to the PP documents forming an official part of them (they are placed on file, so to speak). This applies to all the steps for which working materials are made available. For example, the environmental report check-list could well form part of the environmental report (e.g. as an annex).

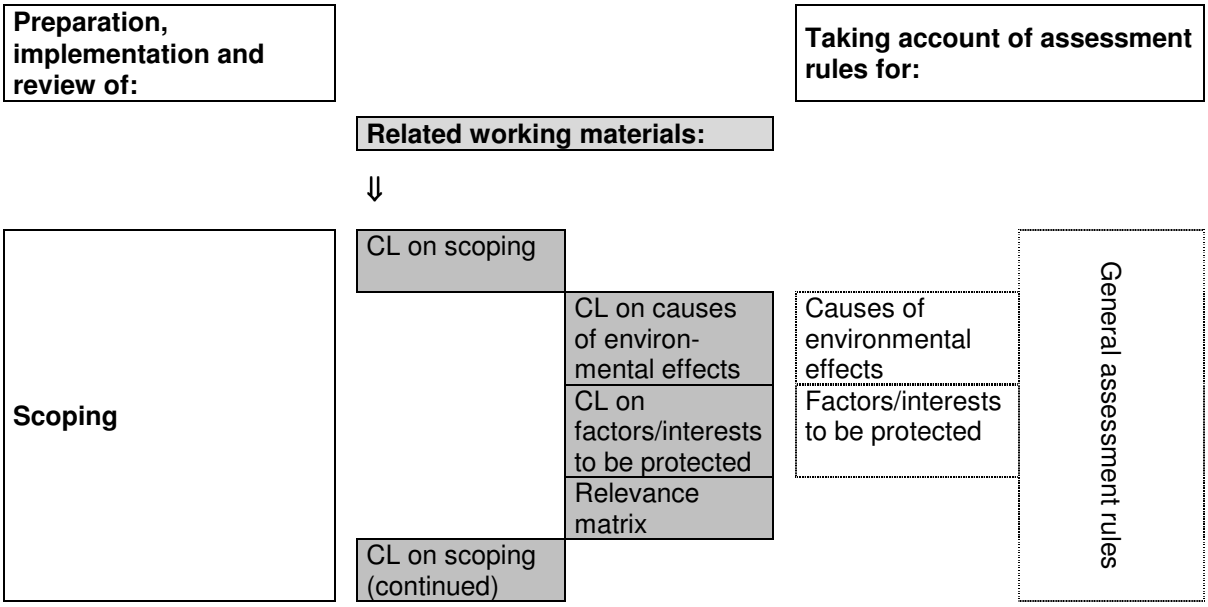
This allows for documenting the implementation of an SEA as well as the reasons for decisions taken without any gaps—in other words, making it "waterproof"—, and thereby making it traceable. Subsequently, these materials may also form the basis of the

consultation of the environmental entities and of the public participation procedure. Please note that seamless, transparent and traceable documentation is important not only for the public, but also for decision-makers.

Further information, in particular on the background of the approach and methodology, is presented in the main part of this study.

Annex A: Scoping

Several working materials are provided for scoping. They are to be applied as follows:



First and foremost, the scoping check-list is available for this step. For specific key aspects of scoping, there are additional check-lists (on causes of environmental effects as well as factors and interests to be protected), including their specific assessment rules, as well as the relevance matrix. After these tools have been used (or in practice, of course, also in parallel thereto), the scoping check-list has to be complemented.

Effects on the environment

The environmental effects across all environmental media/factors to be protected are to be assessed in a multi-disciplinary way (**integrated approach**). This fact is already fully taken into account in scoping. A structured and systematic approach taking into account all the relevant requirements of the SEA Directive was selected for assessing the significance of environmental effects. For delimiting the environmental effects to be assessed, the potential triggering or **causing factors** as well as the targets or **acceptors** of environmental effects are systematically checked. In line with the indication principle, lists of characteristics and attributes are used that, if possible, should be comprehensive as well as representative.

The tools developed, which essentially come in the form of check-lists, are to include the inputs and characteristics that are to provide orientation for the decision. Hence, they may also be used—so to speak—as **"lists of arguments"** for a decision. All the steps are based on common assessment rules or **"rules of the game"** that constitute an essential requirement for the correct and uniform application of the methods. The rules are to ensure that certain aspects are not left out if they are known and relevant (this does not necessarily mean that in-depth investigations have to be performed for these aspects). One of these rules requires that **reasons** are given for the decisions taken, stating the criteria that were decisive. Here, it is to be borne in mind that in several steps, both the public and environmental entities have to be consulted and that, for this reason alone, traceable and plausible reasoning is of importance.

Assessment rules

For assessing environmental effects, both **general** and **specific** assessment rules are proposed and provided in a structured form. They cover the rules and/or characteristics to be taken into account. The general assessment rules apply to all the steps carried out within the framework of an SEA. In addition, there are specific assessment rules that apply to the examination of causes of environmental effects as well as the factors/interests to be protected. And, since the results of scoping constitute the basis of the environmental report, it has to be explicitly stated that the assessment rules defined for scoping are also still valid for the subsequent assessment of the effects on the environment. The definitions of the most important terms used in the context of assessing environmental effects are also provided in the general assessment rules in order to assist the users. These include, for example, the terms “significant” and “decisive.”

Structure of the check-lists on environmental effects

The procedure is designed in such a way that comprehensive lists are used to assess in a **systematic and structured** way whether a specific aspect is of relevance or not in the context of a concrete plan/programme.

To this effect, two check-lists are used to identify potential effects on the environment by systematically checking **causes** and **acceptors** of the PP’s impact and by determining whether on principle, they are possible or relevant in the concrete case studied. In other words, the two “axes” of a relevance matrix (see below) are scrutinised for a concrete plan/programme. Both the aspects that need to be further assessed with regard to possible causes of effects and any factors/interests affected in a concrete case (column “to be examined”) and the aspects that need not be considered (column “no-impact statement”) are determined so that it is possible to focus on key aspects. The check-lists also have a separate column for k.o. criteria (see below) and, if appropriate, their description.

The tools can provide support, for example, in assessing compliance with statutory and generally accepted limits and environmental quality standards, etc. A detailed listing of all statutory limits and recognised recommended values would go beyond the scope of this work. Moreover, it would never be up to date and would overburden the assessment with a view to the PPs’ level of detail. At any rate, the lists of characteristics should contain recognised parameters, they should be as comprehensive as possible and, ideally, representative of the effects and the interrelationships to be assessed. As mentioned before, a list that is as complete as possible, therefore, also has to be seen as a **“service”** for the users in order to ensure the correct application of the Directive.

If at that point of the process, certain decisions cannot be finally taken it is recommendable as a rule to include the relevant aspects or subjects in the list for further examination (i.e. preliminary classification as “to be examined”). This does not constitute a real problem because this step only decides on which environmental effects will be examined. The decision does not relate to the importance of individual effects, whether they are particularly critical, etc. This is done when the environmental report is prepared. At any rate, a **“safety net”** is introduced by answering questions relating to the assessments under all further steps.

A compact SEA due to no-impact statements

Thus, the materials are to be used to identify which environmental effects are to be further examined—**and which not.** The relevant rule is that in those cases in which individual aspects are not relevant with regard to the environmental effects of implementing the PPs or if the plan-makers cannot reasonably be required to compile this information having regard

to current knowledge and methods of assessment, this requirement may be waived in justified cases and no-impact statements are permitted. At any rate, this has to be indicated and justified. No-impact statements are used in those fields where it can be expected with sufficient probability that there will be no significant (adverse) effects on the environment. This may apply, in particular, to those PPs that are expected to give rise only to very specific effects on the environment and for which the scope of assessment, therefore, can be restricted early on. Moreover, strategic environmental assessments of PPs may be affected if an SEA has already been performed (also for sub-aspects).

The result of this approach is a **"compact SEA."** These no-impact statements, on the one hand, contribute to focusing attention on the environmental effects that are actually significant in justified cases. On the other hand, the requirements of the SEA Directive are complied with by evidencing that also those aspects have been covered that are insignificant for concrete PPs. As a result, no-impact statements may also include factors that are explicitly listed in the SEA Directive (for example, certain factors to be protected). What is essential is that their consideration is **evidenced** and that the "exclusion" is **justified.** Especially, if there is a high planning density (as in Austria), this may be justified in a specific case, in particular for a PP of little relevance to the environment. This may hold for modifications of PPs. For all cases, however, it is mandatory that **scoping** itself is **comprehensive** and, thus, covers all aspects of an SEA.

When the tools are used to delimit the scope, as a result, no-impact statements, in the meaning described, can already be identified on the basis of the check-lists. This means that responsibility has to be taken and requires the **courage to permit gaps**. In the further course of the SEA, these decisions are to be corroborated by scrutinising the no-impact statements again in all further steps, i.e. when preparing the environmental report, taking into account the results and decision-making as well as monitoring. The precondition is, of course, that the check-lists are actually used. This "safety net" provides additional justification and support for such an approach.

K.o. criteria

The check-lists also have a separate column for **k.o. criteria** and, if appropriate, their description. The implementation of PPs may be connected with so-called "taboo" or **"k.o. criteria,"** i.e. exclusion criteria, that have to be considered during planning or when developing alternatives. Especially at the planning level, practice has shown that frequently only "if-then" statements can be made at this stage of planning. These k.o. criteria may constitute, for example, conditions that absolutely have to be taken into account in designing PPs from the perspective of environmental protection. However, very concrete framework conditions that must not occur under any circumstances may also be recognised to constitute k.o. criteria. This will apply, for instance, if the effects have the potential to destroy an environmental system affected or lead to a permanent degradation or restriction (e.g. in case specific protection areas are affected or certain protective functions of forests are impaired). In these cases, k.o. criteria could be statements, such as "adverse impacts on protection area X" or "reduction of the area covered by protective forest Y," resulting in the requirement that the PPs' implementation has to take that into account. Moreover, k.o. criteria will naturally apply in all cases in which the legal basis is not complied with, e.g. legal approval requirements are not met.

This may mean that certain **conditions** are identified during SEA implementation (something the PP must and/or must not contain, e.g. a specific variant, design, measure, etc.). Another consequence might be a kind of "reference threshold" defining a specific value or state that triggers further consequences when reached. However, there is no duty to do so like in development consent procedures where conditions may be proposed. At any rate, the assumptions on which these definitions are based need to be documented.

It also seems to be essential to point out that the identification of such criteria does not necessarily mean that a plan or a specific alternative cannot be implemented. They may, however, be helpful and offer the possibility to recognise potential "stumbling blocks" already at an early stage so that serious planning mistakes can be avoided and further planning can be guided into the direction desired. To ensure that k.o. criteria identified are actually taken into account, subsequent SEA steps also have to perform checks with regard to these k.o. criteria. This is safeguarded by all the working materials.

Check-list on causes of environmental effects

By means of the check-list, the PPs' instruments and measures are to be examined in a structured way for basically conceivable causes of environmental effects. Mainly for reasons of easy handling, many causes are indicated in the check-list only in the form of **keywords**. An assessment is made as to whether a cause that may result from a plan/programme or its measures and instruments may apply in the case in question. In that case, the cause has to be classified as **"to be examined,"** otherwise the field **"no-impact statement"** is to be ticked.

The categorisation is to be performed—again in line with certain pre-defined "rules"—for all possible causes of environmental effects. These rules are made transparent by the specific **assessment rules** (including characteristics of the effects) provided that constitute the basic set of characteristics or indicators to be applied. In this context, basically, indicators have to be used that can be generalised so that the system is open to new developments, both in legal, regulatory and technical terms.

Check-list on factors and interests to be protected

By analogy with the previous step, the check-list is used to examine the full set of basically possible factors/interests to be protected.

Classification is performed in the same way as for causes, and is again supported by specific assessment rules (including the characteristics and/or ecological sensitivity of the areas concerned). Support is also provided not only with regard to the factors to be protected themselves—essentially also listed in the form of keywords—, but also with regard to their **functions** worth of protection.

Relevance matrix

Relevance matrices can be used as a methodological basis and for further structured work. They make it possible to establish links between the two previously used check-lists on the causes and the factors/interests to be protected and to identify (additional) aspects that may be inter-dependent. Thus, they are a vehicle to operationalise cause-effect relationships. Therefore, we propose that a relevance matrix is drawn up for all those causes and/or factors/interests to be protected classified as "to be examined," given the fact that this makes it possible to draw on good and rather wide experiences, for example in the context of environmental impact assessments. Of course, this illustrative presentation based on the matrix is not enough and further explanations and justifications are required.

An example of a relevance matrix is presented in Annex A.5. It constitutes, so to speak, a "maximum matrix" that includes all potential causes of environmental effects as well as all the factors/interests that may be affected (see Figure A-1). In practice, it will make sense to limit the matrix to the causes and acceptors of environmental effects identified during work with the check-lists. For certain PPs, the preparation of specific separate matrices may indeed make sense to reflect the situation for a special case in a more appropriate way.

Numerous and manifold presentations are possible which summarise, for example, entire measures or packages of measures as causes of environmental effects.

A.1. General assessment rules

✓ The assessment of environmental effects takes into account and is orientated to the following **objectives** and **principles:**

- the principles of precaution and prevention;
- safeguarding a high level of environmental protection with a view to promoting sustainable development (the preservation, protection and improvement of the quality of the environment);
- the protection of human health;
- the prudent and rational utilisation of natural resources;
- the conservation and sustainable use of biological diversity;
- other environmental objectives of relevance to PPs that have been established at an international, Community, national, regional or local level.[1]

✓ The criteria for assessing the environmental effects generally do **not form part of a hierarchy** and will be of different relevance in each concrete case. It is safe to assume that, usually, a single criterion will not be decisive and that significant environmental effects will be more likely, the more criteria are fulfilled.

✓ The assessment's **level of detail and concreteness** matches the one of the PP to be examined.[2]

✓ The environmental effects covered include direct and indirect, secondary, cumulative, synergistic, short, medium and long-term, permanent and temporary, reversible and irreversible, positive and negative effects.[3]

✓ An assessment is to be given with regard to **potential** environmental effects that will occur with sufficient **probability**, i.e. the PPs are examined to find out whether there are concrete indications for reasonably assuming such a potential (risk).

✓ The assessment has to cover the entire **range** of PPs and their instruments and measures; this includes the examination of the following aspects:

- all realistic planning options;
- (reasonable) **alternatives**, if they form part of the PPs;
- future **developments**, including growth effects as far as these are foreseeable (e.g. demographic, transport and other developments).

✓ If individual aspects are not relevant with regard to the environmental effects of implementing the PPs or if the plan-makers cannot reasonably be required to compile this information having regard to current knowledge and methods of assessment, this requirement may be waived in justified cases. In such cases, **no-impact statements** are permitted.

✓ For all the decisions taken, the **reasons** have to be given, stating the criteria that were decisive, and a **documentation** has to be prepared.

✓ All the **assumptions** related to the PPs that are used as a basis of assessment have to be documented. And if a decision only applies under very specific **conditions** (e.g. aspects that have to be covered and/or must not be included in PPs, such as certain variants, designs, measures, etc.), this has to be documented, as well.

Terms and definitions		
✓	For the purposes of assessing the significance of environmental effects, the following **terms** are defined as follows:	
	• environmental effect	any change in the physical, natural or cultural environment (be it positive or negative) that fully or partly results from PPs or from their instruments and measures
	• significant	weighty and momentous in the context studied
	• decisive	determining the final decision
	• likely effects	potential effects that may be reasonably expected, i.e. due to concrete indications and with sufficient probability
	• secondary (or also indirect) effects	effects that are induced through one or more intermediate stages or events and, thus, may only materialise after some time and/or in other places (these are sometimes also referred to as "consequential effects")
	• cumulative effects	effects building up
	• synergistic effects	effects acting together (here, we can differentiate synergistic effects whose combined impact is greater than the sum total of the individual effects from antagonistic effects whose combined impact is less than the sum total of the individual effects)

	Both cumulative and synergistic effects may be caused by the fact that effects occur at the same time or at the same place.

Other:

A.2. Check-list on scoping

Scoping issues	Applies	Notes
The foreseeable aspects that will have to be examined (or need not be examined), including the alternatives to be dealt with, have been identified.	☐	
For that purpose, potential causes of environmental effects and the factors/interests that may be affected have been scrutinised systematically (see check-lists, including assessment rules, and relevance matrix in A.3. to A.6.).	☐	
The foreseeably relevant objectives (planning and environmental objectives) have been defined.	☐	
The study areas have been identified for which the assessments will foreseeably have to be performed.	☐	
The periods of time have been identified for which the assessments will foreseeably have to be performed.	☐	
The assessment depth and/or the level of detail has been defined that will foreseeably have to be used.	☐	
The methods of measurement, calculation, forecasting or evaluation have been identified that are likely to be applicable.	☐	
The indicators/criteria have been identified that are probably suitable for measuring the achievement of objectives.	☐	
The data and information probably required has been identified.	☐	
To avoid duplication of assessment, the data sources, including information from other planning processes, environmental assessments or monitoring exercises previously performed, that are likely to be available have been identified.	☐	

Scoping issues	Applies	Notes
The measures have been identified that will probably be taken into account with regard to preventing, reducing and offsetting negative effects as well as reinforcing positive effects.	☐	
The entities and experts who will probably have to be involved as well as their subject fields have been identified.	☐	
Other:	☐	

Additional notes:

A.3. Check-list on causes of effects

Cause: Potential of	To be examined	No-impact statement	Notes[4]	K.o. criteria[5]	Description of k.o. criteria
Use of resources					
Land use, sealing	☐	☐		☐	
Use or shaping of nature and landscape	☐	☐		☐	
Water use and abstraction	☐	☐		☐	
Use of other resources[6]	☐	☐		☐	
Changes in the area concerned and in spatial-functional relationships[7]					
Terrain changes, fragmentation, separating or barrier effects, erosion, increase or decrease in density	☐	☐		☐	
Changes in dispersal conditions and surface properties	☐	☐		☐	
Hydrological changes[8]	☐	☐		☐	
Land clearance	☐	☐		☐	
Traffic generation	☐	☐		☐	
Visual, aesthetic changes	☐	☐		☐	

Cause: Potential of	To be examined	No-impact statement	Notes[4]	K.o. criteria[5]	Description of k.o. criteria
Hazard potential					
Earthflows, mud slides, avalanches, floods	☐	☐		☐	
Risk of accidents[9] or failures[10]	☐	☐		☐	
Emission potential[11]					
Noise[12]	☐	☐		☐	
Air pollutants[13]	☐	☐		☐	
Liquid emissions[14]	☐	☐		☐	
Waste and residues[15]	☐	☐		☐	
Interactions and interrelationships[16]					
Cumulation of effects[17]	☐	☐		☐	
Synergistic effects[18]	☐	☐		☐	
Other:[19]	☐	☐		☐	

A.3.1. Assessment rules for causes of effects

	If applicable, consideration is to be given to:
	Characteristics of the effects
✓	Volume
✓	Extent
✓	Complexity
✓	Severity
✓	Dominant or shaping character
✓	Likelihood (of occurrence)
	Temporal dimension of effects
✓	Point in time[20]
✓	Duration (short-, medium- or long-term)
✓	Frequency
✓	Development and, if applicable, change
✓	Reversibility
✓	Period of time until regeneration/recovery may come about
	Spatial dimension of effects
✓	Location, including altitude, exposedness, spatial barriers/topographic boundaries
✓	Geographic region (local, regional, transregional, global)
✓	Number of persons affected
✓	Transboundary character
✓	Other:

Notes:

A.4. Check-list on factors and interests to be protected

Factors and interests to be protected	To be examined	No-impact statement	Notes[4]	K.o. criteria[5]	Description of k.o. criteria
Environmental media					
Soil and subsoil[21]	☐	☐		☐	
Groundwater and surface water[22]	☐	☐		☐	
Air	☐	☐		☐	
Meso-climate[23] and macro-climate	☐	☐		☐	
Fauna and flora[24]					
Animals[25]	☐	☐		☐	
Plants[26]	☐	☐		☐	
Forests[27]	☐	☐		☐	
Habitats (biotopes, eco-systems)[28]	☐	☐		☐	
Biological diversity[29]	☐	☐		☐	

Factors and interests to be protected	To be examined	No-impact statement	Notes[4]	K.o. criteria[5]	Description of k.o. criteria
Human beings					
Health and well-being	☐	☐		☐	
Landscape,[30] its character and ecology	☐	☐		☐	
Cityscape and scenery[31], spatial structure, aesthetics	☐	☐		☐	
Utilisation[32]	☐	☐		☐	
Material assets[33]	☐	☐		☐	
Cultural heritage	☐	☐		☐	
Interactions and interrelationships[16]	☐	☐		☐	
Other:	☐	☐		☐	

A.4.1. Assessment rules for factors and interests to be protected

	If applicable, consideration is to be given to:
	Functions of factors to be protected
	Soil and subsoil in their function as:
✓	a habitat for animals, plants and other organisms
✓	a part of natural balance, including in particular the water and nutrient cycles
✓	decomposition, neutralisation and accumulation media
✓	an area used, for example, for settlements, transport, recreation, sports, tourism, agriculture and forestry, horticulture, etc.
✓	groundwater storage
✓	deposits of raw materials
	Groundwater and surface water in their function as:
✓	a habitat for animals, plants and other organisms
✓	a part of natural balance, including in particular the nutrient cycles
✓	retention volume
✓	drinking water (including watering points for animals)
✓	domestic and industrial water
✓	basis of fishery and other economic activities (e.g. energy production, cooling medium, navigation)
✓	bathing waters
	Air and (local) climate in their functions as
✓	basis of life for humans, animals, plants and other organisms
✓	a part of natural balance, including in particular the water cycles and climate-relevant functions (e.g. temperature regulation)
✓	transport medium
	Plants (incl. forests) in their functions as
✓	parts of food chains
✓	crops
✓	producers of fresh air
✓	protection
✓	recreation areas
✓	barriers, including climate-relevant functions,
	Animals in their “function” as
✓	parts of food chains
✓	livestock
✓	Other:
Notes:	

	If applicable, consideration is to be given to:
	Characteristics and ecological sensitivity of the areas affected[34]
	Ecological/cultural importance of the areas or their value, in particular
✓	densely populated areas
✓	areas or landscapes which have a recognised national, Community or international protection status, e.g. areas designated under the Habitats and Birds Directives, national parks, nature reserves, areas of outstanding natural beauty, protected landscape areas, natural monuments, forest reservations, water protection and conservation areas, climatic health resorts, etc.
✓	(cultivated) landscape or elements of historic, cultural, geological or archaeological importance, e.g. architectural and archaeological heritage, monuments, UNESCO World Cultural Heritage, etc.
✓	areas subject to special (spatial planning) designations and provisions (e.g. protected, priority, development and suitability zones); open spaces
✓	areas with protective functions (against natural risks), e.g. areas with retention functions
✓	pristinity, naturalness, level of anthropogenic influences (hemeroby)
✓	coherence and consistency of areas, networking of ecologically important areas (habitat patch connectivity)
✓	possibility of (directly) experiencing nature
✓	scarcity, characteristic features, uniqueness; also with regard to ensembles
	Potential of the areas, in particular
✓	special or particularly characteristic or representative natural or cultural features
✓	production, habitat and regulating functions
✓	performance and functioning, development potential, potential yield
✓	natural or semi-natural dynamism, including spatial dynamism (e.g. migration routes, movement ranges, game paths)
✓	availability or depletability of renewable (e.g. plant and animal biomass, water) and non-renewable (e.g. mineral) resources, landfill volume, etc.
✓	richness in, and diversity of, natural resources as well as their quality and regenerative capacity
✓	special reserves, e.g. with regard to habitats, (recreational) utilisation, water (e.g. medicinal springs)
	Vulnerability of the areas, in particular
✓	existing pressures
✓	current utilisation, especially intensive land use
✓	existing or foreseeable utilisation conflicts
✓	existing environmental problems, such as former disposal and industrial sites[35], suspected and proven contaminated sites according to ALSAG, pollutant depositions, overfertilisation, compaction, etc.
✓	areas in which statutory limit values, recognised recommended values or other environmental quality standards, in particular those laid down in Community legislation[36], are exceeded[37]
✓	existing risks, for example due to natural risks, such as avalanches, mud slides, rockfalls or floods (e.g. hazard zone plans under ForstG, flood zones under WRG); fields of consultation under the Seveso II Directive, etc.
✓	absorption and buffering capacity
✓	sensitivity
✓	ecological/functional substitutability
✓	regenerative capacity
✓	(carrying) capacities, e.g. infrastructure, including transport infrastructure
✓	(unfavourable) special topographic or meteorological characteristics
✓	areas with extreme living conditions
✓	particularly sensitive eco-systems, such as wetlands, forests, mountain regions, glaciers
✓	rare or endangered animal and plant species[38], plant communities, refuges
✓	eco-systems (biotopes, biocoenoses) that are rare, endangered, of particular ecological value or typical for a region as well as their transition zones (ecotones)
✓	Other:
Notes:	

A.5. Relevance matrix

		Assessment of potential effects of plans/programmes	Causes																		
			Land use, sealing	Use or shaping of nature and landscape	Water use and abstraction	Use of other resources (raw materials, energy, etc.	Terrain changes, separating or barrier effects, etc.	Changes in dispersal conditions, etc.	Hydrological changes	Land clearance	Traffic generation	Visual, aesthetic changes	Earth flows, mud slides, avalanches, floods	Risk of accidents or failures	Noise (industry and traffic)	Air pollutants (gaseous and particulate emissions, odour)	Liquid emissions	Waste and residues (incl. excavated material)	Cumulation of effects	Synergistic effects	Other:
		Factors/interests to be protected																			
Effect on	**Environ-mental media**	Soil and subsoil																			
		Groundwater and surface water																			
		Air																			
		Meso- and macro-climate																			
	Fauna & flora	Animals																			
		Plants																			
		Forests																			
		Habitats																			
		Biological diversity																			
	Humans	Health and well-being																			
		Landscape, etc.																			
		Cityscape and scenery, etc.																			
		Utilisation																			
		Material assets																			
		Cultural heritage																			
		Interactions, etc.																			
		Other:																			

Figure A-1: Example of a relevance matrix

A.6. Notes

[1] In general, objectives from the following fields may be relevant: waste management, water management, water protection, spatial planning, transport, nature conservation, climate protection, agriculture, forestry, land use, energy management, resource economy, industry, tourism. In particular, landscape management plans, development concepts, transport concepts, etc., have to be taken into account.

[2] It does not make sense, for example, to look at the concrete volume of air emissions if these are not covered by the PPs with the same level of concreteness.

[3] In general, "environmental quality" is to be taken into account when assessing the effects. The following may serve as an orientation: Environmental quality ("ecological status") covers all the structures and functions of an eco-system and provides information on certain characteristics, features and properties of factors to be protected, including resources, potentials and functions, that are defined in terms of substance, space and time. Eco-systemic relationships have to be taken into account. Environmental quality is characterised by a system of objectives that specify the environmental quality to be maintained or achieved in concrete cases. The definition of the quality level aimed at, eventually also the measurement method and other framework conditions, are further specified as evaluation instruments by related standards. Depending on their source and binding nature, these may be limit values, reference values, indicative values, discussion values, etc. Indicators are measured, calculated, observable or derived parameters providing information on the state and development of the environment and make comparisons possible.

[4] For example, notes on spatial and temporal delimitation, methodology, suitable indicators, data and data sources.

[5] For example, k.o. criteria may be conditions that absolutely have to be taken into account in designing PPs, or very concrete framework conditions that must not occur under any circumstances may also be recognised to constitute k.o. criteria. This will apply, for instance, if the effects have the potential to destroy an environmental system affected or lead to a permanent degradation or restriction (e.g. in case specific protection areas are affected or certain protective functions of forests are impaired). In these cases, k.o. criteria could be statements, such as "adverse impacts on protection area X" or "reduction of the area covered by protective forest Y," resulting in the requirement that the PPs' implementation has to take that into account. Moreover, such criteria will naturally apply in all cases in which the legal basis is not complied with, e.g. legal approval requirements are not met. This may mean that certain conditions are identified during SEA implementation (something the PP must and/or must not contain, e.g. a specific variant, design, measure, etc.)

[6] Such as raw materials, energy, building materials, operating materials.

[7] Taking into account impoverishment or isolation (of elements), urban sprawl, change of land-cover types.

[8] Including drainage, transfers, etc.

[9] For example, due to the storage, handling or transport of dangerous substances (e.g. flammable, explosive, toxic, radioactive, carcinogenic or mutagenic substances).

[10] For example, supply or emergency facilities.

[11] Including the mobilisation of pollutants.

[12] Industrial and traffic noise.

[13] Gaseous and particulate emissions, including substances contributing to the greenhouse effect or to the depletion of the ozone layer as well as odorous substances (both with regard to traffic-related

and diffuse emissions); indirect effects caused by dry and wet deposits, eutrophication and acidification due to pollutant inputs, etc., also have to be taken into account.

[14] Wastewater, including water used for firefighting, liquid seepage.

[15] Taking into account waste generation and disposal, recovery and recycling, if appropriate, including excavated material.

[16] Interactions and interrelationships may include repercussions and counteractions of interventions as well as shifts to other media, accumulation and consequential effects, in addition to the effects mentioned (e.g. cumulative and synergistic effects). In order to cover combined effects, the existing load (e.g. due to current utilisations), the absorption capacity, the additional load caused by the PPs as well as the resulting overall load have to be considered. The essential factor in the assessment of the overall load may be either the existing load (making a low additional load critical) or the additional load (if it significantly changes the previous (local) conditions). Interactions and interrelationships may also concern spatial-functional relationships between eco-systems or their elements and, hence, processes (e.g. change in a regime or ecological balance taking account interrelationships, such as the food chain). Additionally, the dynamism of relationships (e.g. between water and soil or animals and plants), which may by typical of the structure or function of areas, can play a role.

[17] Including cumulation with other PPs; if applicable, also due to the fact that PPs are based on other PPs or, in their turn, induce and result into other PPs.

[18] In case of effects acting together, we can differentiate synergistic effects whose combined impact is greater than the sum total of the individual effects from antagonistic effects whose combined impact is less than the sum total of the individual effects.

[19] For example, light and shade, (ionising) radiation, electromagnetic fields, heat and thermal pressures, vibrations, fires, effects of explosions (blast, debris), biological working substances, genetically modified (micro) organisms, infectious material.

[20] This may be relevant, for example, with regard to meteorological aspects, vegetation seasons and utilisation aspects (time of day).

[21] Including soil structure and type, ecological and physico-chemical characteristics, quality, geological and geomorphologic aspects (e.g. relief, slope inclination and erosion risk).

[22] Including hydrogeological conditions, hydrochemical and bacteriological parameters, bedload and suspended load balance, flow regime and riparian zones.

[23] Including temperature, precipitation, humidity, cloudiness, wind patterns, cold air drainage, conditions favouring frost and fog.

[24] Including vitality, level of organisation, resistance, self-regulating capacity as well as the possibility of reproduction and, if applicable, the restoration of populations.

[25] Including game, fishes.

[26] Including plant communities, vegetation height, structure, dynamism, management methods, etc.

[27] Including location, species patterns, age, dynamism, forest edges, management methods, etc.

[28] Including interrelationships and networks.

[29] Diversity of species (including number of species and individuals), habitats and movement ranges (including terrestrial and aquatic habitat requirements, structures).

[30] Plus their elements and endowments, natural and anthropogenic characteristics and peculiarities.

[31] Including rhythm as well as visibility and vision.

[32] For example, housing, leisure and recreation, schools, hospitals, medical institutions, churches, agriculture, paths, forestry, pastures, use of water resources, hunting, fisheries, transport, supply and disposal, other technical infrastructure, raw material extraction, tourism.

[33] In particular, facilities of traffic (e.g. bridges), supply and disposal infrastructure, etc.

[34] Consideration is to be given not only to land directly affected or in physical contact (with regard to the PP's domain), but also to neighbouring land, its utilisation and characteristics, if this land can be impacted.

[35] For example, industrial plants, mines, landfills.

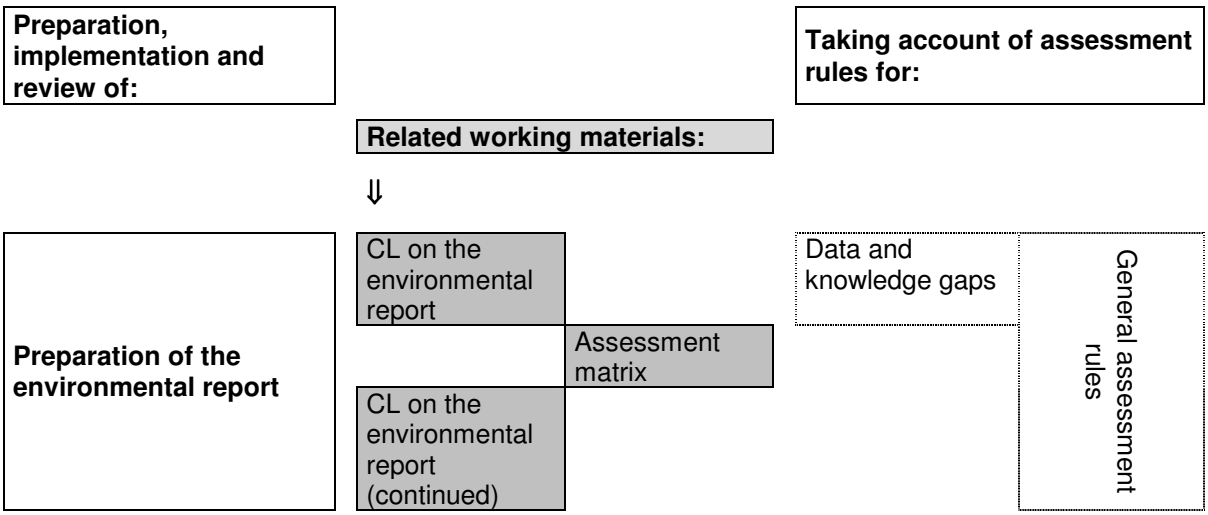
[36] For example, the environmental quality standards defined in, or based on, the Water Framework Directive and the Air Quality Framework Directive (e.g. under the 1st to 4th Air Quality Daughter Directives).

[37] For example, rehabilitation areas (*Sanierungsgebiete*) under IG-Luft, polluted areas (air) (*belastete Gebiete (Luft))* under UVP-G 2000, ozone monitoring areas (*Ozon-Überwachungsgebiete*) under OzonG that require a rehabilitation plan (*Sanierungsplan*); waters and water stretches requiring a rehabilitation programme or plan under WRG; monitoring areas (*Beobachtungsgebiete*) and prospective areas of action (*Maßnahmengebiete*) under GSwV, etc.

[38] For example, according to Red Lists.

Annex B: Environmental report

The following working materials are provided for the preparation of environmental reports (ER) and are to be applied in line with the scheme outlined below:



Essentially, the ER check-list is available for the preparation of the environmental report. It is important to point out, that **scoping** also provides the basis for preparing the ER including the assessment of environmental effects. Consequently, the assessment rules defined for scoping (on causes of environmental effects as well as factors and interests to be protected) are **valid** and the corresponding working materials (A.3 to A.6) also support the preparation of the ER (the general assessment rules of A.1 apply to all SEA steps anyway). An example of an assessment matrix is provided to illustrate the presentation of the overall assessment. After these tools have been used (or in practice, of course, also in parallel thereto), the ER check-list has to be complemented.

Environmental report check-list

The ER check-list lists the requirements of the SEA Directive (in keywords) with regard to the contents of the environmental report and their technical interpretation and covers the following issues:

- contents and objectives,
- environmental conditions,
- alternatives,
- effects on the environment,
- measures (mitigation and monitoring measures),
- other aspects.

The last item (other aspects) includes both general aspects, such as the plausibility of the presentations, as well as special requirements, such as the so-called non-technical summary. Thus, the check-list may also serve as an outline for the **structure of the environmental report**. The explicit repetition of texts taken from the SEA Directive is to be seen as a “service” for the users to document the conformity of these instruments with the SEA Directive.

The check-list may initially be used for **preparatory work** and, then, during the preparation of environmental reports. Moreover, it also provides support after the reports’ finalisation, for

example for **reviews** or for checking (the quality of) ERs by environmental entities or other (higher-level) bodies. Thus, the check-list may be used both by the authors of environmental reports and by bodies examining or commenting on them.

Several important aspects relating to environmental effects or to the **assessment of environmental effects** are summarised in an overview (for further details, see the main part of this study):

Principles
✓ The starting points of evaluation are the **environmental conditions** as well as predicted **environmental effects.**
✓ The likely **significant** environmental effects of **implementing** a PP have to be examined.
✓ Evaluation is based on the admissibility requirements and on the (planning and) **environmental protection objectives.**
✓ The environmental effects across all environmental media/factors to be protected are to be assessed in a multi-disciplinary way (**integrated approach**).
✓ The integrated approach cannot be adopted only when the overall assessment is made, but basically must already be used in scoping.
✓ All **assumptions** underlying the PPs or their implementation and, hence the assessment of environmental effects have to be documented.
✓ The **comparison** of environmental effects for different alternatives is a key element of SEAs.
✓ The work of the experts involved requires technical **co-ordination.**
✓ There are no **"magic formulas"** for evaluating the environmental effects of PPs.

Recommendations on how to proceed
• The assessment of environmental effects should not be more detailed or more differentiated than planning, i.e. **fictitious precision** is to be avoided.
• As a general rule, **weightings** for evaluations are to be critically scrutinised for this purpose.
• **Expert judgement** seems to be a method that is very well suited and recommendable.
• At first, **evaluations specific to individual subject fields** are made (by the relevant experts).
• It makes sense to include **measures** that are already foreseeable in the evaluation.
• To allow for aggregation to an **overall assessment**, it is recommended that a common (coded) scale is used in all the evaluations for specific subject fields.
• Evaluation or **assessment yardsticks** (i.e. the rules for applying the scale) are to be defined in advance.
• The individual evaluation results are to be collated to obtain an **overall result**, for which a matrix is an appropriate tool.
• In addition to the matrix, explanations and justifications have to be stated so that a **(verbal argumentative) statement** is available.

Assessment rules for data and knowledge gaps

If data and knowledge is lacking, decisions on how to handle this are to be based on the gaps' **decisiveness**. The information on which the ER's preparation is based must adequately throw light upon the existence of likely (significant) environmental effects. It is essential to take into account (and, if necessary, obtain) knowledge shaping the final decision.

The assessment rules presented for the relevance of uncertainties to the decision are to provide assistance in handling uncertainties due to insufficient knowledge (e.g. also about cause-effect relationships) or lack of available data.

Assessment matrix

Finally, an example is given for an assessment matrix. First of all, environmental effects are evaluated from the perspective of diverse subject fields (by the experts involved). Irrespective of the methods used for evaluating individual effects, an overall assessment has to be performed. To this end, the environmental effects have to be **considered** taking into account any **positive** effects.

For this task ultimately aimed at obtaining an **overall judgement** on the environmental effects of the various alternatives examined in an integrated approach, an **ordinal scale** (e.g. from "++" to "--" for very positive to very negative assessments) is proposed. This scale serves as a recognised and well-proven **tool** for the **aggregation** required because, in fact, different units apply to the different effects. Then, the individual technical appraisals can be summarised in an **overall result.** Again, this can appropriately done using a matrix. Regardless of the methods used in specific subject fields, individual results of the assessment of environmental effects can be presented in the matrix for the causes identified and their effects on the various factors and interests to be protected. Of course, it is also true in this case that the illustrative presentation based on the matrix is not enough and further explanations and justifications are required. The fact that weightings are not used in the overall assessment ensures, by the way, that individual critical evaluations are not put aside.

The assessment matrices may be presented in a great variety of ways as appropriate in a specific case. For example, potential causes may be summarised for the PPs' measures or packages of measures—usually along the horizontal axis. Likewise, it is conceivable that the objectives defined or their achievement is (also) displayed—consequently along the vertical axis. Moreover, additional aspects relating to sustainability appraisal (i.e. social and economic factors) may be indicated in the matrix. The decisive aim is to find an adequate tool for the purpose in question and to apply it in a uniform and traceable way.

The example presented (see Figure B-1) illustrates the assessment of a programme from the field of town and country planning for which two alternatives and the zero alternative have been examined. As shown in the example, traffic-light colours are frequently used to display the evaluation made. It is also recommended to use a **coded** scale (e.g. from "++" to "--" or from "a" to "e" and not from "+2" to "-2" as in Figure B-1). Experience shows that the temptation is great to perform mathematical operations, such as the calculation of mean values, etc., but this is on principle not permitted when an ordinal scale is used.

This presentation allows for quickly getting an overview—**"at a glance,"** so to speak—of:

- the causes (measures, instruments) that will actually have effects on specific factors and interests to be protected,
- the causes that seem to require special caution,
- whether causes have rather comprehensive/far-reaching or rather selective effects,
- where the most serious environmental effects are foreseeable, and
- where there are decisive differences between the planning alternatives.

Building on this presentation of the environmental effects, it is recommended to focus on particularly negative and particularly positive classifications in verbal descriptions. These can

further explore additional differentiations, qualifications or, for example, constraints and conditions under which the classifications are valid. This may support, among others, the consideration of results and their processing for further steps in the planning process. The final result is a **verbal argumentative statement** of the PPs' effects on the environment This evaluation should also identify leeway for decision-making so that decision-makers can fulfil their responsibility on a justified and transparent basis.

B.1. Environmental report check-list

Issues of the environmental report	Applies	Notes
Contents and objectives		
The contents and the most important objectives of the plan/programme (PP) are presented.	☐	
Other relevant PPs—forming part of a planning hierarchy or from other fields—have been identified and, if appropriate, the relationships to these other PPs are presented.	☐	
Environmental protection objectives, including environmental quality objectives (e.g. those established at an international, Community or national level), that are of importance to the PP and the way in which these objectives and all environmental considerations have been taken into account in the PP's preparation are presented.	☐	
Standards (of environmental quality) and suitable indicators for covering influences and changes have been identified and described.	☐	
Environmental conditions		
The presentations take account of the results of scoping, including – the current state of the environment, – the environmental characteristics of areas likely to be significantly affected, – relevant environmental problems, – potential causes of environmental effects, – potential factors/interests to be protected, – areas of particular environmental importance, – the spatial and temporal extent of environmental effects, with consideration being given to the characteristics and assessment rules contained in the working materials on scoping (see A.3 to A.6).	☐	
The data and data sources used have been indicated.	☐	
If applicable, data and information available from other (environmental) assessments, such as SEAs, spatial impact assessments and "nature impact assessments", have been used.	☐	

Issues of the environmental report	Applies	Notes
Alternatives		
Reasonable, i.e. also realistic, alternatives have been considered and included in the assessment of environmental effects.	☐	
The assumptions on which the alternatives are based are presented.	☐	
The reasons for selecting the alternatives examined (and, if applicable, for eliminating alternatives) are presented.	☐	
The zero alternative (likely development in case the PP is not implemented) has been studied.	☐	
Effects on the environment		
The likely significant environmental effects of implementing the PP have been identified, described and evaluated—based on the results of scoping and taking account of the characteristics and assessment rules contained in the working materials for scoping (see A.3 to A.6).	☐	
The potential causes of environmental effects, including interactions and interrelationships, identified during scoping have been taken into account.	☐	
The affected factors and interests to be protected, including interactions and interrelationships, that were identified during scoping have been taken into account.	☐	
The methods used (measurement, calculation and forecasting methods) are presented.	☐	
The methods used for evaluating environmental effects are presented.	☐	
The achievement of environmental protection objectives and the indicators/criteria described have been used as a basis of evaluation.	☐	

Issues of the environmental report	Applies	Notes
Any no-impact statements are in line with the results of scoping and are justified.	☐	
Any k.o. criteria identified (during scoping or later on) have been taken into account.	☐	
An overall assessment—in terms of a comprehensive (integrated) approach—has been performed.	☐	

Measures (mitigation and monitoring measures)

It has been laid down who is responsible for implementing such measures as well as (by) when they have to be carried out.	☐	
The implementation of the measures is ensured.	☐	

Mitigation measures

The mitigation measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the PP or to reinforce positive effects are presented.	☐	
The mitigation measures envisaged take account of their (ecological) effectiveness, including onset and duration of their effect, as well as of the cost-benefit ratio.	☐	
The mitigation measures take account of identifiable cause-effect relationships.	☐	
It has been indicated which mitigation measures are indispensable and which additional ones are recommendable.	☐	

Monitoring measures

Monitoring measures that are adequately flexible and suitable for performance monitoring with regard to the PP's implementation are presented.	☐	

Issues of the environmental report	Applies	Notes
There are statements indicating: – what has to be monitored and how monitoring is to be performed, – when and how frequently this is to be done, – who is responsible for it, and – which concrete consequences are linked to it.	☐	
There are statements indicating whether the achievement of planning and/or environmental protection objectives are to be examined in the course of monitoring.	☐	
There are statements indicating whether special priorities/problems exist with regard to significant environmental effects that should be covered by monitoring.	☐	
There are statements indicating whether k.o. criteria exist that should be covered by monitoring.	☐	
Conditions, such as (critical) states of the environment, criteria or (threshold) values, have been defined which, if applicable, trigger (mitigation) measures.	☐	
There are statements indicating whether the data and information likely to be available (and the way in which they are processed) are suitable for monitoring.	☐	
There are statements indicating whether data and knowledge is lacking and whether such gaps resulted in requirements defined for monitoring.	☐	
There are statements indicating whether the indicators/criteria defined are (also) suitable for monitoring and which (additional) ones come into consideration.	☐	
There are statements indicating whether there are mitigation measures that should be covered by monitoring.	☐	

Other aspects

The statements and conclusions are complete, plausible and traceable, and decisions are justified by indicating the reasons for them.	☐	

Issues of the environmental report	Applies	Notes
All the assumptions that underlie the assessment and, if applicable, constitute the basis for classifying the environmental effects (e.g. existence of specific variants, design features, measures) are presented.	☐	
If applicable, assessment issues to be covered in subsequent assessments have been identified.	☐	
The results and data have been processed and made accessible in such a way that they are suitable for subsequent planning exercises, other SEAs or the project level (e.g. EIA).	☐	
Any difficulties in compiling the information required have been indicated (e.g. technical gaps, lacking knowledge or methodological uncertainties).	☐	
A non-technical summary written in easy language forms part of the environmental report.	☐	
The consultations performed and the ways in which they were carried out are presented.	☐	
Comments and objections submitted during the process and consultations are presented.	☐	
Other:	☐	

Issues of the environmental report	Applies	Notes
Additional notes:		

B.1.1 Assessment rules for data and knowledge gaps

	If applicable, consideration is to be given to:
	Rules with regard to the relevance of uncertainties to the decision
✓	Information that has to be present or presented due to **legal** or other **mandatory requirements** is indispensable.
✓	Data and knowledge gaps are considered to be acceptable if they are irrelevant to the decisions of the environmental report, including the assessment of environmental effects, i.e. if the statements made do not depend on the knowledge or data gap identified and if the **result is stable.**
✓	Data and knowledge gaps are considered to be irrelevant to the decision and, thus, acceptable if detailed information is required for the assessment that goes beyond the PPs' level of detail and concreteness and if it is ensured that this detailed information is taken into account either – in **subsequent assessments** (SEA or other environmental assessments, in particular environmental impact assessments), or – within the framework of **monitoring.**
✓	The underlying information and data has to meet increasing requirements with regard to **accuracy** and **level of detail**, the higher the importance, sensitivity, ecological value and protection needs of the area or factor/interest to be protected is or the more serious the potential damage is. In the case of uncertainties due to insufficient knowledge or data, the environmental effects are to be considered significant even if their likelihood is low, if an important factor/interest to be protected is affected or major potential damage is possible; hence, data/knowledge gaps are not acceptable.
✓	Other:
Notes:	

B.2. Assessment matrix

Assessment of the effects of measures to **control settlement development** (for alternative 1 / alternative 2 / zero alternative)	Measure																		
	Development axes and settlement centres			Reference and orientation values for settlement development in the next ten years			Regional priority areas for future residential areas			Regional settlement limits			Reference and orientation values for areas needed for commercial use			Regional priority areas for future industrial and trade areas		
Factors/interests to be protected																			
Soil, geology and land-cover types																			
Maintaining important geological formations																			
Reducing the extension of extraction sites										+1									
Rapid recultivation of extraction sites																			
Sparing use of (high-quality) soils	+1	+2	-1	-2	-2	-1	-2	-1	-1				-2	-2	-2	-2	-1	-1	
Water																			
Groundwater quality	-1	-1	-1	-1	-1	-1	-1	-1	-1				-1	-2	-2	-2	-1	-2	
Quantity of drinking water	-1	-1	-1	-1	-1	-1	-1	-1	-1				-1	-1	-1	-1	-1	-1	
Water quality of water courses	-1	-1	-1	-1	-1	-1	-1	-1	-1				-1	-2	-1	-1	-2	-1	
Ecological function of water courses	-1	-1	-1	-1	-1	-1	-1	-1	-1				-1	-2	-1	-2	-2	-1	
Water quality of standing water																			
Air, non-renewable energy sources																			
Reduction of energy concumption	+1	+2	-2	+1	+2	-2	+1	+2	-2	+1	+2	-2	-1	-1	-1	-1	-1	-1	
Reduction of pollutant emissions	+1	+2	-2	+1	+2	-2	+1	+2	-2	+1	+2	-2	-1	-1	-1	-1	-1	-1	
Reduction of greenhouse gas emissions	+1	+2	-2	+1	+2	-2	+1	+2	-2	+1	+2	-2	-1	-1	-1	-1	-1	-1	
Fauna and flora																			
Safeguarding of habitats to be protected									-1			-1				-2		-1	
Safeguarding of rare plant species									-1			-1				-1		-1	
Safeguarding of endangered animal species									-1			-1				-2		-1	
Preservation of forest areas																-2			
Human beings																			
Protection against natural hazards							-2	-1								-1	-1		
Reduction of noise			-1				-2	-1	-2			-1	-1	-2	-1	-1		-2	
Protection against dangerous or toxic substances							-1	-1					-1	-1	-1	-1	-1	-1	
Protection against the effects of electromagnetic fields							-1	-1											
Protection against hazards caused by contaminated sites																-1			
Reduction of waste volumes				-1	-1	-1							-1	-2	-1	-2	-1	-1	
Protection of recreational areas																-1			
Landscape																			
Scenery of cultivated and natural landscape							+1	+1	-1	+2	+2	-2				-2	-1	-1	
Material assets and cultural heritage																			
Protection of material assets and cultural heritage																			
	+2		very positive						none/insignificant				-1		negative				
	+1		positive										-2		very negative				

Figure B-1: Example of an assessment matrix (with two plan alternatives studied)

Annex C: Taking into account results, decision-making

Check-list for taking into account results, decision-making

In **continuation** of the system for the previous steps (and the check-lists provided for them), the check-list presented here again offers structured support in taking account of results and in decision-making. In line with the requirements of the SEA Directive and primarily for practical reasons, the check-list essentially focuses on the **summarising statement.**

It may be used both by the bodies which prepare the summarising statement and are responsible for making it accessible, and by the bodies verifying, if appropriate, whether the results have been taken into account.

C.1. Check-list for taking into account results, decision-making

Issues of taking into account results, decision-making	Applies	Notes
The summarising statement has been submitted and made accessible to the public, the environmental entities and, if applicable, to foreign countries consulted.	☐	
The summarising statement describes how environmental considerations have been taken into account in the plan/programme (PP).	☐	
The summarising statement describes how the environmental report has been taken into account and where, if applicable, changes have been made as compared with the environmental report.	☐	
The results and conclusions presented in the environmental report have been taken into account.	☐	
Any k.o. criteria presented in the environmental report have been taken into account.	☐	
Changes related to environmental effects that may have occurred with regard to the no-impact statements contained in the environmental report have been taken into account.	☐	
All the assumptions that underlie the assessment and, if applicable, constitute the basis for implementing the PP (e.g. existence of specific variants, design features, measures) have been taken into account.	☐	
The (mitigation) measures, including definitions of responsibilities for implementing and ensuring them, that the environmental report contains have been taken into account.	☐	
Any recommendations made in the environmental report have been taken into account.	☐	

Issues of taking into account results, decision-making	**Applies**	**Notes**
The summarising statement describes: – how comments and objections have been taken into account that were submitted during the process and the consultations of the public, environmental entities and, if applicable, foreign countries, and – if appropriate, where changes have been made due to the comments and objections submitted.	☐	
If appropriate, the reasons have been stated why certain aspects have not been taken into account or only in part.	☐	
The summarising statement describes the reasons why the adopted PP was selected after consideration of the reasonable alternatives examined.	☐	
The monitoring measures adopted and any changes as compared with those specified in the environmental report are presented.	☐	
Other:	☐	

Additional notes:

Annex D: Monitoring

Check-list on monitoring

The check-list on monitoring contains all the aspects required for this step and is to be used primarily during the implementation of monitoring measures. This tool again builds on the previous working materials and takes account of their structure and contents. Monitoring may serve as a basis of future monitoring exercises or other (subsequent) planning efforts or environmental assessments. Therefore, the check-list was designed in such a way that a well-structured documentation can be achieved that is as complete as possible. Moreover, the check-list covers both SEA and the plans/programmes themselves. This means that it relates not only to aspects specific to SEA but also focuses on issues relevant to the plans/programmes.

For the monitoring topics, we have to explicitly emphasise that it is **not necessarily a "deficiency"** if the answer to individual topics is not "applies." After all, the bodies in charge of monitoring are not able to influence, for example, the fact whether framework conditions or similar aspects have changed. The topics addressed, however, are to ensure that important aspects of monitoring are not neglected.

Finally, the check-list may also be helpful for planning monitoring measures and, therefore, can also be used at earlier stages, actually during all SEA steps.

D.1. Check-list on monitoring

Issues of monitoring	Applies	Notes
The scope, extent, the spatial and temporal framework as well as the objectives of monitoring (basically taken from the SEA's environmental report or the summarising statement) have been adequately clarified and, if appropriate, priorities have been defined.	☐	
Joint monitoring together with other plans/programmes (PPs) makes sense.	☐	
The organisation of monitoring is clarified and all relevant stakeholders are involved.	☐	
There are experiences and/or data from other monitoring exercises that can be useful.	☐	
The documentation, including on the identification of the PP's implementation status, is sufficient.	☐	
All the information and data required are available, accessible and processed in a suitable way.	☐	
If applicable, monitoring is to close data or knowledge gaps identified during SEA.	☐	
There are no decisive changes/deviations from the PP or SEA (e.g. environmental report).	☐	
There are no changed framework conditions or requirements (technical/technological, legal, social developments) that need to be taken into account.	☐	
There are no new priorities/problems/weaknesses in the PP's implementation.	☐	

Issues of monitoring	Applies	Notes
The environmental (quality) objectives defined are appropriate and up to date.	☐	
The indicators are appropriate and up to date (for identifying influences and changes), and cause-effect-relationships can be reasonably determined with their help.	☐	
The planning and environmental protection objectives defined have been achieved.	☐	
The assumptions and forecasts used are true.	☐	
Any no-impact statements made during the SEA proved to be valid.	☐	
There are no additional and/or unforeseen (at least with regard to their type and/or magnitude) significant adverse effects on the environment.	☐	
There are no (additional) k.o. criteria.	☐	
Any conditions defined in SEA, such as (critical) states of the environment, criteria or (threshold) values, have not been fulfilled and related measures that may already have been defined need not be taken.	☐	
The (mitigation) measures defined have been implemented efficiently, are effective and achieved the desired effects.	☐	
The (mitigation) measures taken need not be adapted and further measures are not required.	☐	
No new comments or statements on the PP's implementation have been submitted that need to be taken into account.	☐	

Issues of monitoring	Applies	Notes
Aspects have been identified that are to be assessed in future monitoring exercises or other (subsequent) planning processes or environmental assessments.	☐	
The findings and data obtained are useful for future monitoring exercises, other (subsequent) planning processes or environmental assessments and are appropriately processed and made accessible.	☐	
Comments may be submitted on the monitoring results.	☐	
Certain bodies are to be informed about the monitoring results.	☐	
The consequences of monitoring have been defined.	☐	
Follow-up monitoring is required and has been laid down.	☐	
Conditions are fulfilled so that measures (remedial action) have to be taken.	☐	
The (legal) framework is in place that allows for taking measures (remedial action).	☐	
There are statements indicating (by) when consequences from monitoring, including measures (remedial action), have to be taken and who is responsible for them.	☐	
The implementation of the measures (remedial action) is ensured.	☐	
Other:	☐	

Issues of monitoring	Applies	Notes

Additional notes: