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## From vision to action: Framing the Leitbild concept in the context of landscape planning

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### ABSTRACT

Reviewing landscape developments in the last decades evidently shows that in the future most pressing changes can be expected for the land surface. This indisputably calls for strategic approaches based on visions and transdisciplinary creativity. Hence, this paper critically reviews the Leitbild concept, an idea on spatial planning which has been widely discussed in the German-speaking planning literature but which has received scant attention elsewhere. Although the term has been translated as a 'vision', this paper shows that the concept is far richer in its content than these casual translations suggest. The paper shows that it defines a particular paradigm for landscape planning that embodies a transdisciplinary approach in which lay-people and experts develop both goals and strategies for realising their joint visions. A systematic overview of the key characteristics that make up the Leitbild approach is provided and set in relation to already available approaches for decision makers. Although there are similarities between the Leitbild approach and other planning and decision-support tools, such as Environmental Impact Assessment (EIA), Strategic Impact Assessment (SEA) and Sustainability Impact Assessment (SIA-sust), the paper shows that the particular combination of issues considered when developing a Leitbild makes it distinctive. Through an iterative process, the development of a Leitbild allows new approaches to spatial planning in which space and place can be considered as a social construct, and in which the values and understandings of local actors can be better represented.

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### 1. Introduction

A key challenge of sustainable development for the research community has been to design tools and concepts. We need these toolboxes to assess the contemporary state of the art, the consequence evaluation of proposed actions, and to implement plans in ways that minimize or avoid impacts on the things we value. Nowhere is this more important than in the arena of landscape planning, where decision makers have to take account of the way environmental and social systems are coupled, and the fact that different interest groups may have quite different views about what actions are acceptable, affordable or wise. But especially this sustainable triangle combined with fundamental ongoing societal and economic changes cause traditional ways of sectoral planning becoming less efficient.

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In this article we suggest that there is a strong need for holistic, cross-disciplinary visions, which will help to understand the consequences of action and to develop satisfactory solutions for further development of an ever-changing landscape. With the purpose of developing further the idea of integrated landscape planning, we provide insights into the Leitbild concept. This is an idea that has been widely discussed in the German-speaking literature, but which has received scant attention elsewhere. We will argue that the way the Leitbild approach has been applied in the context of landscape planning has many similarities to the tools we are already using. However, a review of the concepts such as Environmental Impact Assessment (EIA), Strategic Impact Assessment (SEA) and Sustainability Impact Assessment (SIA-sust), and Quality of Life Capital approach reveal particular differences to be mentioned. However, before comparing the Leitbild approach with other tools already available we continue with the origin of the approach further extended by a discussion on the principle components and characteristics of a “good” Leitbild.

## 2. Origins and definition

Some limited reference to the idea of a “Leitbild” can be found in the English scientific literature, dealing with land and landscape issues, where it has already been used as a synonym, amongst others, for ‘mission statement’, ‘exemplary model’, ‘guideline’, ‘guiding pictures’, ‘target system’ or ‘landscape vision’ [1,2]. Such diversity of usage seems to imply that it is a rather general term that can mean different things to different people. If this is so, then it is unfortunate within an interdisciplinary planning framework within which the concept has its place. Along with Weiss [3] and similarly to Bosshard [4], we would argue that these casual translations do not do justice to the rich and coherent body of thought that underpins the term as it is used in German literature.

Part of the difficulty of defining a Leitbild is represented by the fact that it is a term whose usage is not confined to one discipline area. Klages [5] is generally recognised as having first used the word, in a very general sense to mean “my personal vision”, and following Adler [6], it was an idea to be used in the field of psychology. The term emerged in the applied sciences, such as landscape planning and economic policy in the 1960s [7], and was taken up widely in subsequent decades, promoted in the geographical literature by such commentators as Moeves [8] and Leser [9] (Fig. 1).

A review of present literature [2,10–13] suggests that in the context of planning there is some consensus that a *Leitbild* is something that describes a desired future state for a landscape or region, and a set of proposals or guidelines about how that state can be realised or achieved. The essential qualities of a Leitbild are, therefore, that it combines both a ‘call for action’ and proposals for how that plan of action can be achieved [10]. In other words, it combines both a ‘visionary’ component and an ‘operational’ one. To capture these key elements, we therefore suggest the following more formal definition of the term:

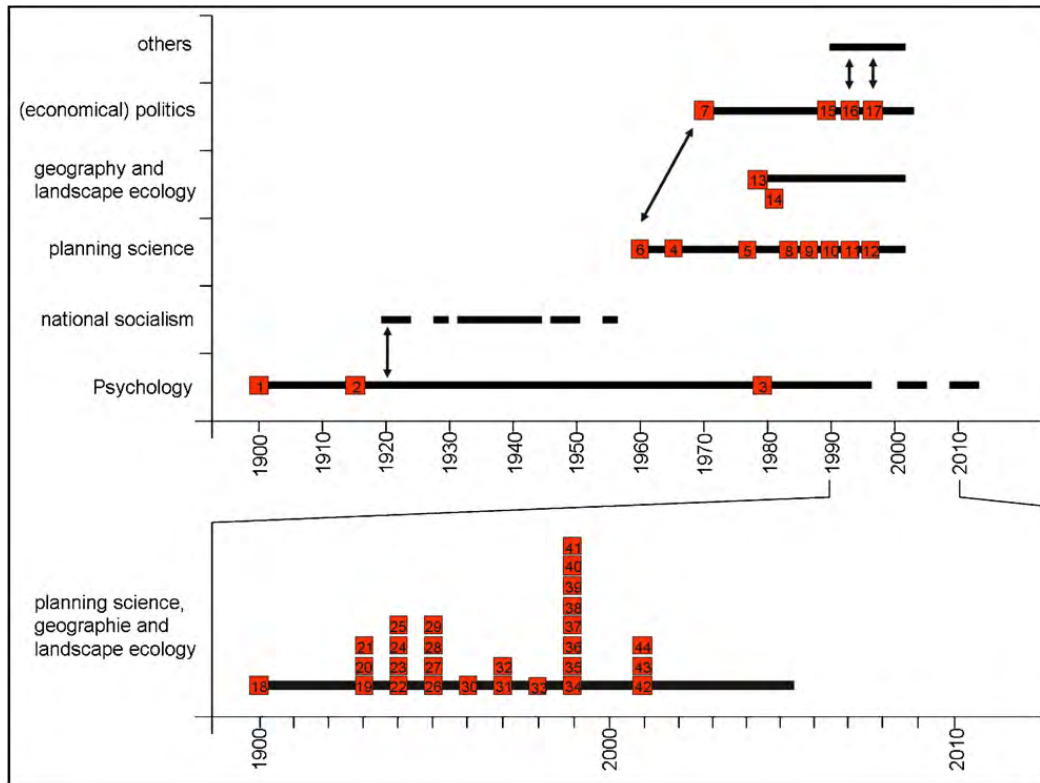
*A Leitbild (pl. Leitbilder) is a summary statement describing a desired and releasable future state for a specific issue or spatial unit, which takes account of the primary objectives and drivers in a holistic and integrated way. All present knowledge is used to balance future constraints and demands from social, economic, cultural, political and environmental perspectives. Therefore, a commonly accepted Leitbild projects a specified trajectory for the future spatial structure, distribution, utilisation, condition and development of the socio-natural system. It provides a set of guidelines that shape actions, and a framework within which the impact of particular developments can be judged and socially negotiated.*

With this definition we would argue that the notion of a ‘Leitbild’ is therefore far richer than the casual translations that have appeared in the English scientific literature would seem to suggest. It defines a particular ‘paradigmatic approach’ to the problem of landscape planning [14] that needs to be considered critically alongside the other tools that we have at our disposal to resolve the issues that arise when dealing with the economic, social and environmental dimensions of sustainable development. In the remaining parts of this paper explore the nature of this paradigmatic approach in more detail.

## 3. The key characteristics of a Leitbild

Although the Leitbild concept is not yet embodied in any formal planning requirements or procedures in Germany or Austria, they still have its value in present planning strategies. Ache [1] and Knapp [5], for example, describe the problems of spatial planning in the Rhine-Ruhr area. They argue that future development of the metropolitan region requires further steps to be taken by the Land government as well as the creation of better institutional processes. They then go on to show how a spatial Leitbild for Rheine-Ruhr could be developed and how it could be used to overcome current barriers to progress using communication, creativity, learning and governance as the main elements of a Leitbild.

In order to contribute to new knowledge, we highlight further important elements of the Leitbild approach and the practical implications of the concept. We describe its key elements by reference to a case study which concerns the Mondsee catchment in Austria (Fig. 2). As in the case of the Rhine-Ruhr area, no formal ‘Leitbild’ has been published. However, the case study illustrates how key stakeholders can be potentially brought together thinking about the process of creating a ‘Leitbild’. The study area is set in the pre-alpine Lake District, which straddles the Austrian–German border between Salzburg and Bavaria. Although it can be regarded as a single ‘natural unit’, it is divided into different administrative regions and so planning is often difficult to coordinate across state and national borders [16].



Legend: 1. Klages (1906), 2. Adler (1912), 3. Brachfeld (1980), 4. Kaiser (1965), 5. Brösse (1975), 6. no author, 7. Klotten (1967), 8. Mäding (1984), 9. Streich (1986), 10. Bund deutscher Landschaftsarchitekten (year n/a), 11. Kiemstedt et al. (1989), 12. Wiegleb et al. (1999), 13. Leser (1998), 14. Moewes (1980), 15. WCED (1987), 16. Rio (1992), 17. SRU (1994), 18. Kiemstedt (1991), 19. Burckhardt (1991), 20. von Haaren (1991), 21. Schweinöper, Seifert, Konold (1992), 22. Muhs (1992), 23. Fink et al. (1993), 24. Jax, Bröring (1994), 25. Knoll (1994), 26. Bastian, Schreiber (1994), 27. Heidt, Schulz, Leberecht (1994), 28. Jessel (1994), 29. Marzelli (1994), 30. Schemel (1994), 31. SRU (1994), 32. Halbritter (1994), 33. Maute (1994), 34. Otto (1994), 35. Peters (1994), 36. Fellner, Kohl (1994), 37. Roweck (1995), 38. Jessel (1995), 39. Bastian and Röder (1996), 40. SRU (1996), 41. Jessel (1996), 42. Stierand (1996), 43. Brux (1996), 44. DRL (1997), 45. Fink et al. (1997), 46. Jessel 1997, 47. Kohmann (1997), 48. Gerhards (1997), 49. Wiegleb (1997), 50. Bastian (1997), 51. Horlitz (1998), 52. Vorwald, Wiegleb (1998), 53. Horlitz (1998), 54. Broggi (1999), 55. Krahl (1999), 56. Mengel (1999), 57. Wiegleb, Schulz, Bröring (eds.)(1999), 58. von Haaren (1999), 59. Bastian (1999a), 60. Gerhards (1999), 61. Bastian (2000), 62. Härtling, Lehnes (2000), 63. Gaede, Potschin (2001), 64. Mosimann, Köhler, Poppe (2001), 65. Zepp et al. (2001), 66. Jacobs, Jessel (2002), 67. Jessel (2004), 68. Löffler, Steinhardt (2004), 69. Klug (2005), 70. Klug (submitted a,b), 71. Klug, Zeil (2006)

Fig. 1. Historical developments and disciplinary interconnections of the term Leitbild (after Gaede and Potschin [41]). Selected definitions and all full quotes on: [www.leitbild.hermannklug.com](http://www.leitbild.hermannklug.com).

The pre-alpine Lake District is an area of high landscape value and the lakes supporting important recreational and tourist activities. However, a number of issues are apparent. For example, the attractiveness of the area and the lake shore environment has led to a proliferation of both permanent residences and second homes, with the consequent loss of traditional agricultural land and semi-natural habitats. The large number of second homes poses a particular challenge for many local authorities [17]. The infrastructure dealing with water supply, sewage and waste has to be designed to cater for the maximum (permanent and temporary) population, whereas the tax base and the income-creating demand for locally supplied goods and services mainly depends on the minimum (permanent) population (oral communication with the Federal State Agency Salzburg, Department of Spatial Planning and the Salzburg Institute for Planning – SIR).

The large seasonal changes in population mean that at peak times there is substantial pressure on the ecosystems of the lakes. Although protected areas have been established to conserve rare species and to protect breeding grounds for birds (Wallcreeper, Wren, Kestrel), the disturbance from people cannot often be prevented. A particular issue that affects the environmental quality of the area is associated with agriculture. Areas around some of the northern lakes have long been



Fig. 2. The case study area: the Mondsee catchment.

subject to intensive farming, and the use of fertilisers has led to significant nutrient input into the lakes through runoff – resulting in eutrophication. Recent measurements observed from 2001 to 2003 put evidence to the increase of phosphorus loads into Mondsee catchment [18].

Due to the increasing phosphorus loads, the Mondsee catchment became a focus of discussion as a result of an Interreg IIIa project called “SeenLandWirtschaft” (Lake–Land–Economy; unofficial translation by the authors), based on a multi-level partnership of the various planning and research institutions in Austria and Germany. The aim of the study was to identify and implement measures based on changes in land use and methods of land cultivation to counter the eutrophication problem. The project used a modelling approach to compare different scenarios of land management and nutrient runoff. Model outputs then formed the basis of different possible futures, spatially explicit scenarios that could be discussed with local land managers according to the procedure described in Klug [16].

In the context of spatial planning, the multifunctional aspect of landscapes generally needs to be taken into account [19–21]. At the level of creating a vision for the future, the multiple objectives that different stakeholder groups might hold need to be identified, considered and resolved. In terms of assessing what needs to be done, the different stakeholder reactions to the present situation also need to be gauged, so that the ‘nature of the problem’ can be formulated. Contradictions identified too late could lead to a plan of action that simply replaces one problem with another [22]. Thus, a first key characteristic of any *good* Leitbild, and the processes that contribute to building one, is the attempt to build some shared vision of both the issues that need to be resolved and the possible solutions. As Lehnes and Härtling [23] have argued, in general terms, properly formulated goals should clearly describe the objects or entities on which action is focused, the desired or target states that outcomes should be designed to achieve, and the spatial context in which both are set.

More specifically, the following section provides a systematic overview of 19 characteristics identified as necessary to consider when applying Leitbild approach to landscape planning besides the elements communication, creativity, learning and governance mentioned by Ache [1]. The generic characteristics are illustrated with reference to the Mondsee case study area as a practical example. When reading the following subheadings it is stressed that it is not a step by step guide that leads to the construction of a Leitbild, rather a list of the characteristics that a *good* Leitbild should have. As shown in the articles of this special issue the processes and strategies that are needed to build such a Leitbild will vary from one place or situation to another. The outcomes are, however, the same.

In the case of the Mondsee, among the project participants the problem was agreed to be one relating to phosphorus discharge into the Mondsee Lake, and the objective of reducing inputs to less than 10 t per year through strategies that were both ecologically and economically satisfactory. To build such a shared understanding, the processes that lead to the creation of the vision and an agreement about the shape of the potential solutions need to be open and transparent. Thus the Leitbild needs to be constructed around an agreed body of verifiable evidence (*verifiability* (1)) that represents the real world at an

appropriate level of abstraction (*reasonability* (2), *level of abstraction* (3)). In this sense, the differences from present to the achievable future state needs an action plan to steer the development of the landscape. This development needs to be verified at each step captured in the action plan resulting from the Leitbild. This encloses monitoring of land use changes with high resolution remote sensing datasets. Hence, for each management practice *ex post* water measurements could indicate the improvement of the phosphorus discharge to surface waters.

To reach the objectives jointly identified, transparency and logical derivation of proper relationships between decision entities are mandatory. For the Leitbild in the present study area four reasonable assumptions have been framed.

- agreement on the problem that diffuse phosphorus discharge is causing eutrophication in surface waters,
- methodologies for measuring phosphorus in surface waters and the spatial approach have been clearly defined,
- the objectives that discharge should not exceed 10 t/a phosphorus into the Mondsee, and that
- the reasonable solutions in terms of ecological sound and economic suitable for farmers have been elaborated together.

Landscapes are inherently complex and therefore only to be modelled using abstract representations of the real ecosystem taking into account the most important elements.

The most important objective is to solve the diffuse nutrient discharge from the landscape (agricultural landscape as well as other inputs). Besides the nutrient problem, the establishment of both permanent residences and second homes is important. The maintenance/enhancement of habitat types and species should be consistent with the maintenance of agriculture and an open landscape suitable for tourists.

If different visions or goals are to be realised then it is likely that they will have to be prioritised, ranked and weighted in some way (*priority weighting* (4, see Table 1). This ensures solving the most pressing issues of spatially explicit phosphorus emissions first. The *reflection and selection* (5) of measures refer to *verifiability* (2), on which the verification and the evaluation progress can be made. A round table discussion with stakeholders (farm advisory service, water authority, pedologists, hydrologists and planners) led to the objectives defined in *the degree of tangibility* (3). These measures were transferred to the model and ranked according to the priorities set in the *priority weighting* (4) procedure.

Moreover, stakeholders must agree about what types of indicator should be used to gauge progress. From the round table discussion with the stakeholders, the relevance of each measure selected in the *level of abstraction* (3) was discussed according to their *relevance* (6) and potential for constructing indicators for evaluating success. Considering for instance the demands from the European Water Framework Directive, the reduction of nutrients to surface waters seems to be the most relevant subject measured together with land use change. Hence, in the Mondsee catchment most important are the development of solutions for sustainable agriculture with closed material and nutrient cycles. This has been reached by prioritising conservation and protection of areas of high value, followed by extensive then intensive meadows and pastures, and extensive and intensive tillage. These priorities have been brought together in a hierarchical order and made operational in a Geographic Information System (GIS).

Scenarios are often used as a tool for creating a shared vision of the future amongst stakeholders, or at least to present the range of choices that might need to be considered [24,25]. Although frequently qualitative in nature, scenarios can be built around the outcomes of quantitative models, as was the case in the Mondsee study. To be used effectively, stakeholders clearly need to be convinced that the agreed goals can be achieved within an acceptable *timeline* (7) with approximately 10–15 years and trust the way in which scenarios and models have been constructed and used (*reliability* (8), *transparency* (10)). Stakeholders should be able to interpret the scenario or modelling outcomes unambiguously (*interpretability* (9), *communicability* (11), *spatial explicitness* (16)), and be clear about the assumptions on which they are based and the uncertainties that surround them (*flexibility/adaptability* (12), *credibility* (13), *efficiency* (14), *simplicity* (15)). Thus, having elaborated the aspired future state of the case study area, the farm advisory service started consultation of the farmers. Both farmers and advisory service elaborated an action plan at farm level to be implemented within the next vegetation period. For this process, the *reliability* (8) of the study is strongly necessary. The reliability refers to the credibility and evidence of the assessment, which is most related to the veracity of the underlying data and the associated processing. Thus, for each step undertaken to reach the Leitbild, a handbook has been created which describes the datasets used with the mandatory metadata according to ISO 19115. Furthermore, each processing step has been documented using methodologies available in the ArcGIS 9 ModelBuilder (labelling, metadata description, etc.). Therefore, the methodology and data that underpins the analysis are *transparent* (10). But not only the assessment procedure as such need to be consistent. It is the *interpretability* (10) of results which is a requirement to explain the findings to stakeholders and local actors. To understand and interpret the result, scenario developments give insight to the model and the possibility of showing what is and is not possible by changing the measures and indicators (see also *communicability* (11) and *adaptability* (12)).

The baseline assessment and scenarios must be largely objective. The model assumptions should be explicit and clear. Users must gain confidence that the Leitbild and its interpretation is not an artefact or the result of hidden assumptions and agendas. *Transparency* (10) is essential to establish the trust that will ensure ownership of the process and commitment. Referring to the *interpretability* (9), and as discussed in the *reliability* (8) paragraph, for each step in the hierarchically ranked model, priorities and assumptions have to be discussed and agreed on in the groups. Hence, the underlying hypothesis is transparent to each member of the group and should support the communication process, allowing all participants to understand each step and the assumptions made.

**Table 1**  
19 stages to of a Leitbild-process.

Component	Explanation	Application in the given case study
1. Free of contradiction/ reasonable	Freeness of contradiction means transparency and logical derivation of proper relationships between the decision entities	For the Leitbild in the present case study following four reasonable assumptions has been framed: <i>Problem definition:</i> diffuse phosphorus discharge is causing eutrophication in surface waters <i>Measurement:</i> methodologies of measuring phosphor in surface waters and the spatial approach have been clearly defined <i>Objectives:</i> less than 10 t per year phosphor into the Mondsee <i>Solutions:</i> reasonable solutions in terms of ecological sound and economic suitable and for farmers rewarding have been elaborated together
2. Verifiability	The differences from present to the aspired future state need an action plan to steer the development of the landscape. This development needs to be verified at each step captured in the action plan resulting from the Leitbild	Partly land use changes need to take place which can be monitored using remote sensing data Hence, for each changing management practices <i>ex post</i> water measurements could indicate the improvement of diffuse phosphor discharge The enhancement of slurry storage capacity to overcome the winter time without storage capacity problems
3. Level of abstraction, degree of tangibility and generality	Landscapes are inherently complex and therefore only to be modelled using abstract representations of the real ecosystem taking into account the most important elements	The objective most important is to solve the diffuse nutrient discharge from the landscape (agricultural landscape as well as other inputs). Besides the nutrient problem, the proliferating establishment of both permanent residences and second homes is important. The maintenance/enhancement of habitat types and species should be consistent with the maintenance of agriculture and an open landscape suitable for tourists Most important are the development of solutions for a sustainable agriculture with closed material and nutrient cycles. This has been reached by prioritising conservation and protection of areas of high value, followed by extensive than intensive meadows and pastures, and extensive and intensive tillage. These priorities have been brought together in a hierarchical order and made operational in a GIS
4. Priority weighting and setting of preferences	A Leitbild is usually comprised of different goals, functions and processes which need to be ranked according to relative importance	A round table discussion with the stakeholders (farm advisory service, water authority, pedologists, hydrologists and planners) led to the objectives defined in point 3. These measures were transferred to the model and ranked according to the priorities set in point 4
5. Reflection and selection of measures to reach the goals determined	The selection of measures refers to point 2, on which the verification and the evaluation of progress can be made	From the round table discussion with the stakeholders (see 5) the relevance of each measure selected in point 3 were discussed according to their relevance and potential for constructing indicators for evaluating success. From the standpoint to fulfilling the goals of the Water Framework Directive, e.g. the reduction of nutrients to the lake seems to be the most relevant subject be measured together with land use change
6. Relevance	Relevance may be seen as an attempt to work out central demands from society as an essential feature of human communication resulting in the expression and recognition of intentions and evidence	Having elaborated the aspired future state the farm advisory service started again consultation of the farmers from the beginning of April 2006. Both farmers and advisory service elaborate certain action plans at farm level to be implemented within the next vegetation period
7. Urgency, timeliness	A Leitbild should be reachable within a reasonable or acceptable period of time, say 10–15 years	For each step undertaken to reach the Leitbild, a handbook has been created which describes the datasets used with the mandatory metadata according to ISO 19115. Furthermore, each processing step has been documented using methodologies in the ArcGIS 9 ModelBuilder. Therefore, the methodology and data that underpins the analysis are transparent
8. Reliability/trustworthy	The reliability refers to the credibility and evidence of the assessment, which is most related to the veracity of the underlying data and the associated processing	Having agreed on the measurements and the priorities and having made these operational the Leitbild must be explained to the stakeholders and actors. To understand and interpret the result, scenario developments give insight to the model and the possibility of showing what is and is not possible by changing the measures and indicators (see also points 11 and 12)
9. Interpretability	Interpretability extends the provability to describe various properties, dependencies and relations	Referring to point 9, and as discussed in point 8 for each step in the hierarchical ranked model, priorities and assumptions has been discussed and agreed on in the groups. Hence, the underlying hypothesis is transparent to each member of the group
10. Transparency and lucidity	The assessment itself must be largely objective. The model assumptions should be explicit and clear. Users must gain confidence that the Leitbild and its interpretation is not an artefact or the result of hidden assumptions and agendas. Transparency is essential to establish the trust that will ensure ownership of the process and commitment	
11. Communicability	The Leitbild model and its results should support the communication process allowing all participants to understand each step and the assumptions made	Following point 10, the outcome should be communicable, especially in relation to the scenarios mentioned in point 9 and described in Klug [45]. This enhances the understanding of the model behaviour and the results gained with the use of different sets of priorities

Table 1 (Continued)

Component	Explanation	Application in the given case study
12. Flexibility, adaptability	Flexibility refers to the model behaviour and the aspired state to reach. As described, a Leitbild is not a static point to reach. It is rather a proposed direction to go for a sound sustainable development of future landscapes	The possibility of adjusting the threshold values for each function in the GIS framework enables the planner of deriving scenarios. Therefore, the consequences of different values directly can be stressed as a statistical output as well as the modification of the land use in the map
13. Pursuable and credibility	The decision process should be plausible from its structure	This point refers to the transparency and lucidity of the model (point 10). If each person agrees on the steps performed (points 3 and 4), the credibility has been achieved
14. Efficiency	Efficiency is the capability of acting or producing an output effectively with a minimum of effort	This step is necessary for the planner, to allow them to execute the model to derive scenarios without spending too much effort
15. Simplicity	The model must be easy enough to make landscape modelling accessible to a wider audience and practically operable	The simplicity refers to property of keeping the overview of the processing steps, which is necessary so that the model is not simply black-box (point 13). Nevertheless, the complexity results from the number of factors resulting from the input of the stakeholders, what they see as most important and necessary (point 3)
16. Spatial explicitness	The model and the resulting Leitbild (aspired state) should be spatial explicit and not just expressed as statistics	Solving the problem is causing action. Action is leading to change. These alterations are expressed in spatially explicit maps and bar charts describing the present to the desired state
17. Repeatability, re-usability, controllably	The decision process should be repeatable and the model re-usable	This requirement refers to all points contained in this table. Given the evidence, any groups should come to the same conclusion – as is assumed, by analogy, in a court of law. Additionally this feature enables the planner to derive scenarios with different stakeholder values (9 and 11)
18. Robust	Robustness refers to the resilience of the system developed, especially when under stress or confronted with other opinions	For the Mondsee case study, this meant the derivation of sensitivity analysis, e.g. assuming land use change resulting in a reduction of phosphor loads to surface waters
19. Data accessibility	One needs adequate data access for all interest groups	The data accessibility caused the main effort of the project and took together with the data preparation (accuracy examinations, assignment of an equal reference system, etc.) approximately one year

Following the *transparency* (10) of the process, the outcome should be communicable, especially in relation to the flexible scenarios mentioned. *Flexibility* (12) refers to both the model behaviour and the aspired state to reach. As described above, the Leitbild is not a fixed point to reach but rather a development pathway towards sustainable development of future landscapes. The possibility of adjusting the threshold values for each function in the GIS framework enables the planning of deriving scenarios. While deriving the scenarios one need to ensure the credibility of the decision process. This point refers to the *transparency and lucidity* (10) of the model to run it effective and efficiently. While effectiveness refers to the individual's performance and capacity in a given team, *efficiency* (14) is the measure of success in increasing the competence of the individual before and after the dissemination of results. To have a good performance of the model it must be easy enough to make landscape modelling accessible to a wider audience and practically operable. Therefore, the procedure of the model needs to be as simple as possible but as complex as necessary. However, the complexity or *simplicity* (15) of the process is a matter of *problem abstraction* (3).

Despite the simplicity of the model and the resulting Leitbild, it should be *spatially explicit* (16) and not just expressed as statistics. Spatial explicitness is necessary since problem solving in landscape is causing action in space and hence roots into measurable change in monitoring programmes. These alterations are expressed in spatially explicit maps and bar charts describing the present to the desired state.

Finally, given the implication that the Leitbild process is grounded in the rational and systematic assessment of evidence, a desirable characteristic of any outcome is that it should be 'socially robust' (*robustness* (18)), in the sense that it is *repeatable* (17). Robustness refers to the resilience of the system developed, especially when under stress or confronted with other opinions. For the Mondsee case study, this meant the derivation of sensitivity analysis, e.g. assuming land use change resulting in a reduction of phosphorus loads to surface waters.

The requirement of repeatability refers to all points mentioned as a characteristic for a 'good' Leitbild. Given the evidence, any groups should come to the same conclusion – as is assumed, by analogy, in a court of law. This requires that the data on which the model is constructed should be open and available to all who would seek to challenge or test the proposed visions or the suggested solutions (*data accessibility* (19)).

Taken together all the components described above show that a Leitbild contains both an *ex ante* and *ex post* dimension. The two key features are an assessment of the current state and management options, and mechanisms for monitoring outcomes against visions or plans. It is also firmly grounded in transdisciplinary approaches to science [26], in that stakeholders are involved both in the definition of the problem as well as the evaluation of proposed solutions. As Knapp [15] have argued, the very act of working together to create a spatial Leitbild, can initiate the kinds of institutional transformation

that are needed to make spatial planning relevant to the broader needs of social and economic development [27] and ultimately ensure more sustainable forms of development [15].

#### 4. Putting the Leitbild concept in context

The purpose of amalgamating the characteristics of a Leitbild was to show that a Leitbild is not just a synonym for a 'vision', but rather a term that describes a broader approach to landscape planning, e.g. encompassing a plan for action. Whether one agrees with the aims embodied in the Leitbild concept or not, the use of the term clearly has implications and meanings that have to be unpacked more clearly. One additional way of making the different elements of the Leitbild concept clearer, is to set it alongside some of the other tools already available to decision makers so that the key characteristics of the paradigm can be seen.

Table 2 has been constructed around the definition of the Leitbild concept that we have suggested above. Within the table we comment on the extent to which other decision-support tools such as Environmental Impact Assessment, Ecological Impact Assessment (EcIA), Social Impact Assessment (SIA-social), Strategic Impact Assessment, and Sustainability Impact Assessment address the elements that are highlighted in the definition of a Leitbild. Included in Table 2 is a lesser known assessment tool from UK, the Quality of Life Capital (QoLC) approach, which is also useful to consider in terms of the way it seeks to capture and apply stakeholder views. In constructing this table, it should be noted that we have not, however, sought to be comprehensive in terms of coverage of available tools, for as reviews such as *Sustainability A-Test* has shown (an EU 6th framework programme project, see <http://ivm5.ivm.vu.nl/sat/>), there are many available. Instead we have focused on those which are more frequently used or discussed at EU level, or which can provide useful insights into what the Leitbild approach seeks to promote.

A characteristic of the tools reviewed in Table 2 is that while they all aim to articulate some desired or proposed future state, they differ in the breadth of issues considered (Table 2, row 1). Thus while Environmental, Ecological and Social Impact Assessments (EIA, EcIA and SIA-social) are usually focused at the project level, Strategic and Sustainability Impact Assessments (SEA and SIA-sust), along with the Leitbild approach, are more holistic in outlook. In 2002, for example, the EC published "Communication from the Commission on Impact Assessment" [28]. In the context of the Göteborg Strategy for Sustainable Development [29,30], the document established a procedure for assessing the sustainability of all major initiatives, which "integrates all sectoral assessments concerning direct and indirect impacts".

An important feature of both the Leitbild approach and Sustainability Impact Assessment is that they seek explicitly to balance social, economic and environmental considerations; those involved in SEA might also claim to do this [31,32], but the extent to which it can be achieved might be more limited because the focus here is often on a narrower set of sectoral plans or policies. However, while Sustainability Impact Assessment is directed more towards the policy level, the Leitbild idea encourages decision makers to take account of both the policies and the policy mechanisms by which actions are carried out. These elements are described in components "holistic way" and "trade offs" of Table 2 (rows 3 and 4). Another interesting difference between SIA-sust and Leitbild is that while SIA-sust attempts to minimize losses across the three pillars of sustainability [33], the Leitbild approach seeks to generate net environmental gains.

The need to ensure that decision making is open, transparent and inclusive, is now a fundamental tenet of contemporary approaches to environmental management [34]. However, the degree to which the different tools included in Table 2 are based on a process of 'social negotiation' varies. Clearly, stakeholder involvement is now an important consideration in any application of EIA, EcIA or SIA-social. However, unlike some of the other tools, people are consulted mainly in terms of their response to a specific set of proposals. By contrast, SEA, SIA-sust and the Leitbild approach are more transdisciplinary in character; that is lay-people, or non-expert groups, are expected to be involved from the outset (Table 2, rows 6 and 10).

The touch-stone of transdisciplinarity is that stakeholders have an input into both the problem formulation, as well as the decisions about what kinds of solutions are acceptable or realistic. While in principle this aspiration could be achieved through mechanisms such as SEA, as Ehrhardt and Nilsson [32] note, "SEA has been applied mainly as a retroactive step – after policies, programs or plans have been developed, prepared and agreed". Although applications in the arena of landscape planning are limited because of the novelty of the approach, the same might be said of Sustainability Impact Assessment, in terms of its specific focus on the assessment of policy proposals [28].

All the tools summarized in Table 2 clearly seek to shape actions (Table 2, row 8). An important feature of the Leitbild approach is, however, that it attempts to cover plans and implementation strategies at a range of spatial and temporal scales (Table 2, rows 12–14). In terms of similarities with the other approaches considered, it has, perhaps most in common with the Quality of Life Capital and assessment framework developed in the UK [35,36]. This has been proposed as a "tool for maximising environmental, economic and social benefits as part of any land use planning or management decision" and has been promoted by the three Government Agencies (Natural England, English Heritage, and the Environment Agency) as a way of achieving the UK Government's integrated approach to sustainable development.

The QoLC approach places particular emphasis on the services (benefits) that natural, social and economic systems associated with landscapes, can provide. The key questions that are at this approach are particularly challenging for decision makers, and are resonant of the issues covered by the Leitbild approach. The QoLC methodology asks stakeholders to consider proposals at the site or plan level in relation to:



**Table 2**  
 Elements of the Leitbild in comparison with other currently applied landscape analysis, assessment and appraisals tools/methods in the EU and English planning literature/system (Original: M. Potschin). Cells in grey indicate similarity of tool with the Leitbild approach.

	LB	EIA	Ecia	SIA-social	SEA	SIA-sust	QoLC
1. Key elements of the Leitbild definition (see above) or [related key words]							
1	Desired future state [vision developed]	Yes in the sense of a specific proposal	Yes in the sense of some implicit notion of maintaining ecological integrity	Yes in the sense of a specific proposal	Yes in the sense of a specific proposal	Yes in terms of general goal of enhancing sustainability	Yes in terms of questions like do we have enough of this good or service?
2	Specific issue [project, proposal]	Yes generally development proposal orientated	Yes generally development proposal orientated	Yes generally development proposal orientated	Yes generally policy/strategy proposal orientated	Issue expressed at policy level – policy can be specific	Yes generally development proposal orientated
3	Holistic/integrative way [towards sustainable development]	No mainly focuses on environmental	No mainly focuses on ecological	No mainly focuses on social	Yes in the sense of looking at strategic implications of a specific policy	Yes in the sense of looking at the three pillars of sustainability	Yes, considers three pillars
4	Balance future constraints and demands from social, economic, cultural, political and environmental perspectives [trade offs]	No	No	No	No	Yes in the context of a specific policy	Yes in the context of a specific proposal
5	Socially negotiated [iterative process]	No, but there may be some consultation on impacts	Not generally, but there may be some consultation on impacts	No, but there may be some consultation on impacts	No	Yes – should be?	Yes, depends fundamentally on stakeholder input
6	Specific trajectory for a future spatial structure [aims to produce net environmental gain]	Emphasises minimization of environmental losses	Emphasises minimization of ecological losses	Emphasises minimization of social losses – and often tresses positive economic outcomes (but not losses?)	Emphasises gains and losses in relation to range of policy options	Ex ante assessment, which tends to aim to minimize losses across three pillars	Yes, aims to achieve net gain and minimization of losses
7	Set of guidelines (regulations)	Yes	Yes, but no formal regulations	Yes, no formal regulations	Yes	No but developing	Yes
8	Call for actions	Yes	Yes	Yes	Yes	Yes	Yes
9	Framework in which the impact of particular developments can be judged [socially negotiated, decision aiding instrument]	No	No	No	Yes	Yes	Partially
2. Additional criteria							
10	Active stakeholder involvement	Partial	Limited	Partial	Yes?	Yes – limited by scale	Yes
11	Included in national or EU regulations/directives	Yes	No	No	Yes some countries – see sustainability-a test review	No, but EU directive on assessment of European policies?	No

3. Application scale		Yes		Local		Regional		Regional and national		Open, but usually large scale project		Local	
Local/project specific		Small scale project		Local		Regional		Regional and national		Open, but usually large scale project		Local	
12	Regional	Yes	No	No	No	No	No	Yes	Yes	Yes	No	No	No
13	National	Yes	No	No	No	No	No	Yes	Yes	Yes	No	No	No
14	Globally accepted	Yes	No	No	No	No	No	Yes?	Yes?	Yes	No	No	No

Abbreviations and sources for definitions used to fill in table (homepages accessed April 2008) – LB: Leitbild (this paper, [www.leitbild.hermannklug.com](http://www.leitbild.hermannklug.com)); EIA: Environmental Impact Assessment [35]; EcIA: Ecological Impact Assessment [42]; SIA-social: Social Impact Assessment, SEA: Strategic Environment Assessment [33], definition based on [43]; SIA-sust: Sustainability Impact Assessment [33,34], definition based on [44], Verheem (2002) in [33]; and QoLC: Quality of Life Capital (<http://www.countryside.gov.uk/LAR/archive/Quality/index.asp>). Sustainability A-Test: EU 6th framework project, see: homepage: <http://ivm5.ivm.vu.nl/sat/>.

- What landscape services are associated with the area of interest, who the services matter to, why, and at what spatial scale they operate;
- How important the services are and how this valuation changes across geographical scales;
- Whether we have enough of these services locally and nationally and what the minimum levels of provision are considered to be; and,
- What (if anything) could be done to make up for any loss or damage to the service through management?

The main difference between the QoLC and Leitbild frameworks is that the former is aimed mainly for use at local scales, the latter has been proposed as a means of looking at issues more broadly. Providing data that are available, the Leitbild approach advocates a method of putting local decisions in a wider context. It is a way of taking issues at a range of spatial scales.

The aim of the comparisons set out in Table 2 is not to imply that any one assessment framework is better than another. Each has its place in decision making, and the selection of which to apply depends on context. The purpose is to describe something of the distinct niche that the Leitbild concept occupies in spatial planning, and to use its particular insights to reflect more critically on the tools we have at our disposal.

## 5. Conclusions

Over the last decade and a half, there has been renewed interest and emphasis on spatial planning at the regional, national and supra-national scales to cope with the upcoming challenges [37,38]. Within Europe, for example, much of the current interest in spatial planning has been stimulated by the European Spatial Development Perspective (ESPD), published in 1999 [39]. The aim of the document was to promote the goal of “balanced and sustainable spatial development”.

As Healey [40] notes, however, there has been much debate about the meanings of “spatial planning”. She suggests that it can broadly be described as “. . . self-conscious collective efforts to re-imagine a city, urban region or wider territory and to translate the result into priorities for area investment, conservation measures, strategic infrastructure investments and principles of land use regulation”. She argues that we need to move debates on from rather narrow discussions of spatial organisation, to consider space and place as a social construct whose meaning is given in particular social contexts to particular areas. The Leitbild concept certainly places emphasis on the importance of such “re-imagining”, and given the emphasis it places on gathering the values and understandings of “local actors”, may be one way in which more “relational approaches” to planning could be developed.

In this paper we have sought to describe more comprehensively what the Leitbild concept involves for a wider audience in landscape planning. We explained the different requirements necessary for making a *good* Leitbild and hence extended the list of procedural aspects such as communication, creativity, learning and governance provided by Ache [1]. Furthermore, we have shown that the Leitbild approach can stand beside other tools already available to decision makers charged with the task of bringing together sometimes diverse groups of people to think and plan for a more sustainable future.

The strategic framework suggested in this article is not at all comprehensive. It needs to be applied within real case examples to be proved as useful toolbox. This is done in further articles of this special issue. In these contributing articles to this special issue, the Leitbild approach demonstrated to be a useful solution for given odds and conflicts of everyday life and proved to be a useful tool coming into fruition around the world.

## References

- [1] P. Ache, Vision and creativity—challenge for city regions, *Futures* 32 (2000) 435–449.
- [2] O. Bastian, U. Steinhardt, *Developments and Perspectives in Landscape Ecology*, Springer, Dordrecht/Boston/London, 2002.
- [3] J. Weiss, Evaluationsbericht zum Gesamtprojekt Kulturlandschaft Fischenthal (GfK). Das Vorprojekt 1994–1996, Meliorations- und Vermessungsamt des Kantons Zürich, Zürich, 1996.
- [4] A. Bosshard, A methodology and terminology of sustainability assessment and its perspective for rural planning, *Agriculture, Ecosystems and Environment* 77 (2000) 29–41.
- [5] L. Klages, *Das persönliche Leitbild*, Graphologische Monatshefte, 1906.
- [6] A. Adler, in: A. Adler, C. Furtmüller (Eds.), *Organdialekt, Heilen und Bilden*, 1912.
- [7] J. Kaiser, *Planung*, Baden-Baden, 1965.
- [8] W. Moeves, *Grundlagen der Lebensraumgestaltung*, Berlin, New York, 1980.
- [9] H. Leser, *Dierke Wörterbuch der Allgemeinen Geographie*, Braunschweig, München, 1984.
- [10] G. Wiegler, F. Schulz, U. Bröring (Eds.), *Naturschutzfachliche Bewertung im Rahmen der Leitbildmethode*, 1999.
- [11] P. Finck, U. Hauke, E. Schröder, R. Forst, G. Woithe (Eds.), *Naturschutzfachliche Landschafts-Leitbilder, Rahmenvorstellungen für das Nordwestdeutsche Tiefland aus bundesweiter Sicht*, 1997.
- [12] O. Bastian, Landschaftsfunktionen als Grundlage von Leitbildern für Naturräume, *Natur und Landschaft* 74 (9) (1999) 361–373.
- [13] T. Mosimann, I. Köhler, I. Poppe, *Entwicklung prozessual begründeter landschaftsökologischer Leitbilder für funktional vielfältige Landschaften*, in: H. Gebhardt, G. Heinritz, A. Mayr, H. Zepp (Eds.), *Berichte zur Deutschen Landeskunde*, Leipzig, 2001, pp. 33–66.
- [14] J. Knieling, *Leitbildprozesse und Regionalmanagement*, Beiträge zur Politikwissenschaft Frankfurt a. M., 2000.
- [15] W. Knapp, A cooperative spatial future for RheinRuhr, *European Planning Studies* 12 (3) (2004) 323–349.
- [16] H. Klug, Application of a vision in the Lake District of Salzburg, *Futures* 42 (7) (2010) 668–681.
- [17] K. Fuchs, W. Hacker, S. Pinterits, *Natur und Landschaft: Leitbilder für Oberösterreich, Raumeinheit Attersee-Mondsee-Becken*, Linz, 2004.
- [18] H. Gassner, D. Zick, G. Bruscek, I. Frey, K. Mayrhofer, A. Jagsch, *Die Wassergüte ausgewählter Seen des oberösterreichischen und steirischen Salzkammergutes 2001–2005*, Wien, 2006.
- [19] J. Brandt, H. Vejre, *Multifunctional Landscapes: Theory, Values and History*, Southampton, 2004.

- [20] K. Helming, H. Wiggering, *Sustainable Development of Multifunctional Landscapes*, Springer-Verlag, Berlin-Heidelberg-New York, 2003, 286 pp., ISBN 3-540-00008-9.
- [21] Ü. Mander, K. Helming, H. Wiggering (Eds.), *Multifunctional Land Use: Meeting Future Demands for Landscape Goods and Services*, Springer Verlag, Berlin-Heidelberg, 2007, ISBN 978-3-540-36782-8.
- [22] D. Dörner, *Die Logik des Mißlingens. Strategisches Denken in komplexen Situationen*, Hamburg, 1996.
- [23] P. Lehnies, J. Härtling, *Der logische Aufbau von Umweltzielsystemen. Zielkategorien und Transparenz von Abwägungen am Beispiel der "nachhaltigen Entwicklung"*, in: G.f. Umweltgeowissenschaften (Eds.), *Umweltqualitätsziele – Schritte zu ihrer Umsetzung*, Berlin u.a., 1997, pp. 9–49.
- [24] T. Chermack, *Improving decision-making with scenario planning*, *Futures* 36 (2004) 295–309.
- [25] J. Coates, *Scenario Planning*, *Technological Forecasting & Social Change* 65 (2000) 115–123.
- [26] B. Tress, G. Tress, *Capitalising on multiplicity: a transdisciplinary system approach to landscape research*, *Landscape and Urban Planning* 57 (2001) 143–157.
- [27] K.R. Kunzmann, *State Planning: A German Success Story?* *International Planning Studies* 6 (2) (2001) 153–166.
- [28] COM, *Communication from the Commission on Impact Assessment. 276 final*, 2002.
- [29] C.o. Europe, *Goteborg Strategy for Sustainable Development*, 2001.
- [30] C.o. Europe, *Renewed EU Sustainable Development Strategy*, 2006.
- [31] B. Sadler, R. Verheem, *SEA: Status, Challenges and Future Directions. Report 53*, Ministry of Housing, Spatial Planning and Environment, Report, 1996.
- [32] K. Ehrhardt, M. Nilsson, *Strategic Environmental Assessment. Sustainability-A Test*. <http://ivm5.ivm.vu.nl/sat/>, 2006 (accessed March 2008).
- [33] K. Arbter, *SEA and SIA—two participative assessment tools for sustainability*, in: *Conference Proceedings of the EASY ECO 2 Conference*, May 15–17, 2003, pp. 175–181.
- [34] M. Potschin, R. Haines-Young, *Sustainable impact assessments: limits, thresholds and the sustainable choice space*, in: K. Helming, P. Tabbush, M. Perez-Soba (Eds.), *Sustainability Impact Assessment of Land Use Changes*, Springer Verlag, Berlin, 2007, pp. 425–450.
- [35] M. Potschin, R. Haines-Young, *Improving the quality of environmental assessments using the concept of natural capital: a case study from southern Germany*, *Landscape and Urban Planning* 63 (2) (2003) 93–108.
- [36] R. Thérivel, *Quality of Life Capital*, in: P. Morris, R. Thérivel (Eds.), *Methods of Environmental Impact Assessment*, 2 edition, Routledge, New York, 2000, pp. 402–408, ISBN-10: 0415239591.
- [37] L. Albrechts, *In pursuit of new approaches to strategic spatial planning*, *International Planning Studies* 6 (3) (2001) 293–310.
- [38] L. Albrechts, P. Healey, K.R. Kunzmann, *Strategic spatial planning and regional governance in Europe*, *Journal of the American Planning Association* 69 (2) (2003) 113–129.
- [39] E. Commission, *European Spatial Development Perspective (ESPD)*. [http://ec.europa.eu/regional\\_policy/sources/docoffic/official/reports/pdf/sum\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/pdf/sum_en.pdf), 1999 (accessed March 2008).
- [40] P. Healey, *The treatment of space and place in the new spatial planning in Europe*, *International Journal of Urban and Regional Research* 28 (1) (2004) 45–67.
- [41] M. Gaede, M. Potschin, *Requirements on the Leitbild-term—a planning perspective*, *Berichte zur Deutschen Landeskunde* 75 (1) (2001) 19–32.
- [42] J. Treweek, *Ecological Impact Assessment*, Blackwell Science, Oxford, 1999.
- [43] W. Sheate, S. Dagg, J. Richardson, R. Aschemann, J. Palerm, U. Steen, *Main Report European Commission Contract No. B4-3040/99/136634/MAR/B4 Imperial College Consultants ICON*. Available online. URL, <http://europa.eu.int/comm/environment/eia/sea-support.htm#int>, 2001 (accessed 19 May 2008).
- [44] DETR [Department of Environment, Transport and the Resources], *Good Practice Guide on Sustainability Appraisal of Regional Planning Guidance*. Publisher: Stationery Office Books, 39 pages, ISBN-10: 0117535680, 2000.
- [45] H. Klug, *The Leitbild concept: A holistic transdisciplinary approach for landscape planning*, PhD Thesis submitted to the University of Salzburg, June 2006.