

NORWEGIAN UNIVERSITY OF LIFE SCIENCES



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Gesine Jiménez Martínez

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## Abstract

*Landscapes do not only generate means of livelihood for present and future generations, they are also exposed to dramatic changes through natural and human-related impacts, amongst others climate change, alteration of habitats, changes in species composition, and land use. The goal of spatial planning is to align economic, social, and cultural demands on landscapes with ecological sustainability. The objective of this thesis was to investigate the role which landscape ecology plays at present in order to achieve this goal. Landscape planners from three European countries were invited to participate in an online survey to share their knowledge, experiences and opinions. Results revealed a substantial interest of spatial planners in sustainable landscape planning, influenced primarily by policies and awareness of the public. However, the application of landscape ecology in spatial planning is to some extent perceived as problematic. Crucial factors for the consideration of landscape ecological principles when changing landscapes include knowledge, policies and personal attitudes of involved decision makers. Based on this, several respondents noticed a discrepancy between the theoretical application and the actual implementation of landscape ecological principles. Further, the need of a well-defined terminology, the role of a binding legislation, and required sources of information about landscape ecology are discussed. In order to advance further in the application of landscape ecology in spatial planning I suggest a closer collaboration between spatial planners and landscape ecologists: On the one hand information about landscape ecology has to be easily accessible and comprehensible for spatial planners, on the other hand landscape ecologists should be more involved in spatial planning processes.*

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## 1 Introduction

At present landscapes are in focus related to several grand challenges; among them are climate change, a high rate of species extinction, ecosystem degradation and the discontinuation of ecosystem services (Vitousek et al., 1997, Parry, 2007, Heywood, 1995). There is a strong scientific consensus about the influence of human activities on these phenomena. In particular, land use may modify not only the composition of landscapes and habitats but also the function of ecosystems and their ecological potential, as well as the availability of natural resources (Pielke et al., 2002, rev. in: Foley et al., 2005, e.g. Dupouey et al., 2002).

The global challenges in relation to landscape are further exacerbated by a steadily growing human population worldwide, which goes hand in hand with an increasing demand for natural resources to secure the supply of necessary goods and ecosystem services for a growing number of people (Matson et al., 1997). Hence, pressure on land as well as changes in land use are a growing concern (Millennium Ecosystem Assessment, 2005b).

Being in essence global, these concerns also affect Europe, since the pressure on land is already high and changes in land use have had a strong influence on the landscape (Antrop, 2004). Furthermore, population densities are increasing in many European countries. Spain, for example, had a population increase of 13% over the last decade (2002-2012) (Instituto Nacional de Estadística, 2013), while Norway increased its population by 10% in the same period (Statistisk Sentralbyrå [Statistics Norway], 2012). However, population increase is not the only driver of changes in land use. Germany, for example, had a negative population increase (~ -1% from 2002-2012, Statistisches Bundesamt, 2013). Still, the latest four-year average (2006-2009) of land use associated with newly developed settlement and traffic areas amounts to 94 ha per day (Umweltbundesamt, 2011). Half of this area is estimated to represent areas which are sealed due to development (Umweltbundesamt, 2011) for which the ecological function can be assumed to be reduced to a minimum (Burghardt, 2006).

The loss of living environment for many species, including the human being, is one of the effects of these changes. In this context a sustainable use of land is crucial to protect, recover and enhance natural resources (Ndubisi, 2003). This can only be done by careful, reasonable landscape planning which seeks to combine the different interests of landscape planners and ecologists to design and plan landscapes according to human needs, without neglecting the long-term availability of natural resources and ecosystem services.

### 1.1 Spatial Planning – caught between many interests for the common benefit

Many parameters which are crucial for land-use are subject to constant change (e.g. fluctuations in population and climatic changes); therefore there is a need to align land-use to this development, which is the role of spatial planning (Agriculture Organization of the United Nations (Interdepartmental Working Group on Land Use Planning), 1993). Having

this task, landscape planners find themselves caught between economic, social, cultural and, beyond that, ecological interests. Since usually at least some of the interests conflict with each other, planning targets have to be identified and prioritized (Forman, 2008), ideally in a hierarchy which is justifiable in the moment of implementation as well as in the long term.

Besides the identification of the role and function of landscape planning, the comprehension of landscape ecology and its principles is an essential step to investigate and enhance sustainable landscape planning.

## 1.2 “Landscape Ecology” - The crux of the definitions

In the scientific literature of (landscape) ecology and other related sciences, there are countless definitions of the term “landscape ecology” and its objects of research. The definitions do not only differ in details, as can be seen in many scientific disciplines, but involve such fundamental questions as: What is a landscape? (How) Does a landscape differ from an ecosystem? Several definitions state that a “landscape” covers larger areas of the Earth’s surface, including several ecosystems. On the other hand Krebs (2009) states: “The whole Earth can be considered as one large ecosystem”; so, consequently, is there a landscape level after all? These and other questions have been heavily debated among scientists, and discussions are still ongoing.

The different conceptions are often referred to as belonging to the “North-American” (e.g. works of Forman & Godron, Naveh, and Zonneveld) and “European” School (e.g. works of Neef and Wiens), respectively; but even within these substantial differences can be found (see Kirchhoff et al., 2012 for comparison). A possible reason is that the term “landscape ecology” describes a science which is interdisciplinary in its essence; a melting pot of ecology, geography and other natural and social sciences; the respective emphasis always being on the most relevant discipline for a defined goal.

The investigation of a discipline which is defined in such a versatile but at the same time vague manner requires special consideration of the definition of “landscape ecology” applied by the author. Hence, it is necessary to define the basic concept of landscape ecology as it will be used in this thesis.

I follow the definition of landscape ecology by Forman & Godron (1986), “landscape as a heterogeneous land area composed of a cluster of interacting ecosystems that is repeated throughout”. With regard to the size of a landscape Forman & Godron (1986) state that a landscape should have a minimum of a few kilometers in diameter. Turner et al. (2001) emphasize the specific characteristic of landscape ecology that it “often focuses upon spatial extents that are much larger than those traditionally studied in ecology”.

### 1.3 Integration of landscape ecology in planning

While there may be different definitions in use among landscape ecologists, there is a general consensus that landscape ecology is an applied science (Turner et al., 2001, Dramstad et al., 1996, Opdam et al., 2001). Accordingly, several authors have focused on how to “translate” findings of landscape ecology into applicable planning solutions (e.g. Opdam et al., 2001). These are mainly related to the following principles of landscape ecology, based on Forman and Godron (1986), that form the background for the application of landscape ecology in landscape planning:

- ❖ Landscapes are made up by landscape elements (i.e. several ecosystems), which consist of patches, corridors and matrix. The size of these components and the patterns which these components form, determine presence and distribution of species.
- ❖ Heterogeneity in the landscape creates core habitat (in large patches) as well as edge habitat. The variety of habitats enhances species diversity.
- ❖ The influence and effect of landscape components on species are reciprocal.
- ❖ Disturbances in a landscape include natural events like windstorms, fires, floods and pest outbreaks as well as disturbances with anthropogenic causes.
- ❖ Disturbances may alter the configuration of patches, corridors and matrix and hence species abundance and distribution (e.g. through habitat fragmentation and/ or habitat loss); it has an effect on nutrient and energy flow into or out of a landscape and can increase or decrease heterogeneity within the landscape.
- ❖ How resistant a landscape is towards disturbances or how quickly it can recover from disturbances is basically dependent on the absence or presence of biomass and species composition.

At the core of all these principles lies the importance of spatial patterns, be it for species distribution, habitat availability and quality, connectivity or response to disturbances.

### 1.4 The Relevance of Landscape Ecology for Landscape Planning

Landscape ecology and landscape planning can be seen as bordering disciplines; they differ from each other since landscape ecology focuses more on the natural sciences while landscape planning focuses more on the requirements of people. On the other hand, both landscape ecology and landscape planning share the same key object, the landscape. To be successful, both disciplines depend on the other; since landscape ecology meets its application in landscape planning and landscape planning requires principles of landscape ecology to ensure the sustainability of modified landscapes (Opdam et al., 2001).

Landscape ecology provides, amongst other things, the scientific background about how to manage or alter ecosystems to ensure their function; landscape planning in return has to reconcile ecologically sound development with social, economic and political interests (Ndubisi, 2003). The goal of landscape planning is optimizing the use of landscapes according



to human needs. This indicates that human and landscape can never be seen as two independent variables. The landscape with all its components, resources and services forms the basis of human existence and therefore has to be protected not for the sake of nature but for the sake of human persistence. On the other hand, and in order to ensure the benefit of landscape protection for humanity, there has to be room for land use and development at the same time.

## 1.5 Legislation and directives

Among the governments of Europe, the majority acknowledge sustainability as one of the main goals in their respective policies. As a consequence there are legally binding directives to consider ecological aspects (or landscape ecology) when planning landscape in all of the three European countries which will be in the focus of this study:

- Norway: Nature Diversity Act (*Naturmangfoldloven*)
- Germany: Federal Nature Conservation Act (*Bundesnaturschutzgesetz*)
- Spain: Land Law 8/2007 (*Ley 8/2007 del Suelo*).

All of these directives provide a legislative framework for the effective planning, which is mostly to be realized on a regional or local level.

Efforts for creating a European-wide directive for sustainable landscape planning have been culminating in the European Landscape Convention (ELC) (Council of Europe, 2000). Even though Norway is not a member state of the European Union, it was among the first states which ratified the convention in October 2001 (Entry into force: March 2004); Spain followed in November 2007 with the ratification and entry into force in March 2008.

Germany, however, did not ratify the ELC for several reasons: The ELC is not expected to contribute substantial improvement for environmental and nature conservation in Germany and in other participating countries, furthermore there is too little focus on nature conservation in the ELC; “the point is rather to confirm the human right of designation of the surrounding landscape” (Nicola Breier, Head of Division, German Ministry for the Environment, International Cooperation on Biological Diversity, personal communication, November 26, 2012).

## 1.6 Landscape Ecology in Planning – the present situation

Several studies revealed shortcomings when it comes to the application of landscape ecology principles in landscape plans and even more so in their effective implementation in the landscape (Kühn, 2003, Sandström et al., 2006, Termorshuizen et al., 2007, Pullin et al., 2004). The aim of this study is to investigate the present situation in the above-mentioned European countries. In order to obtain the needed background information to assess whether there are deficits in the application of landscape ecology and how to improve the situation (where required), the administrative units responsible for landscape plans of different scales, have to be addressed.

**The main questions this study will investigate are:**

- **How is the application and implementation of landscape ecology in landscape planning at present perceived by planners in Norway, Germany, and Spain?**
- **Which are the perceived shortcomings and virtues in the application/ implementation of landscape ecology?**
- **How can the shortcomings be addressed and virtues enhanced, respectively?**

## 2 Methods

### 2.1 Selection of potential respondents among landscape planners in three European countries

Landscape planners of three European countries (Norway, Germany and Spain) were invited to take part in a survey. The choice of these three countries was supposed to generate a profile of three geographically, politically and culturally different countries of Northern, Central, and Southern Europe. Norway and Spain ratified the European Landscape Convention (Council of Europe, 2000), in which the signatories commit themselves to “promote landscape protection, management and planning“.

Since the decision-making process in landscape planning is mainly carried out in administrative units or with the help of consulting companies, the survey subjects were identified through employee lists of environmental or spatial development units of all administrative levels of the states, whereas consultant companies were identified through the search engine “Google” using search words like “consultant company”, “landscape planning”, “landscape ecology”, combinations of these keywords and their equivalents in Norwegian, German and Spanish. In total the questionnaire was send out to 1066 e-mail addresses.

### 2.2 Questionnaire design and distribution

The questionnaire was designed to interview the landscape planners about how they assess their understanding of landscape ecology, their level and type of knowledge and their opinions/ experiences about the current situation of the application of landscape ecology in landscape planning.

The questionnaire was divided into four parts with questions regarding the following:

1. Application and implementation of landscape ecology in landscape planning
2. Tools and access to information about landscape ecology
3. Policy, changes and effects regarding the application of landscape ecology
4. Personal information about the respondent (such as age and educational background)

The questionnaire included closed-ended questions to ensure the comparability among answers as well as open-ended questions to pay regard to the different backgrounds (e.g. national, institutional) of the participants and giving possibility for them to express their opinions and experiences in their own words (e.g. Bradburn et al., 2004, Salant and Dillman, 1994).

### 2.2.1 *Introduction to the questionnaire*

The cover letter to the interviewees included a short introduction to the study, explicitly without phrasing a definition of landscape ecology and its principles, to ensure that the participants answered without bias. This was done in order to investigate their own knowledge and understanding about the different concepts of landscape ecology.

### 2.2.2 *Generating the questionnaire*

The questionnaire was initially set up in English and later translated by the author into German, Norwegian (Bokmål) and Spanish; the Norwegian and Spanish translations were checked additionally by competent native speakers. Every interviewee had the possibility to choose in which language (Norwegian, German or Spanish) he/ she wanted to answer the questionnaire. Each interviewee received the cover letter in the official language of the country (Norway – Bokmål, Germany – German, Spain – Castellano).

A pilot was run beforehand with landscape ecology students and acquaintances to test the comprehensibility and to check for possible misunderstandings in the questions and given answers, respectively.

For the design and distribution I used the internet questionnaire program QuestBack ([www.questback.no](http://www.questback.no)), a well-established, market-leading software for online survey solutions. The questionnaires were sent by e-mail to the interviewees. This method ensured fast and easy access to potential respondents in all three countries by keeping financial costs at a minimum. E-mail also enabled fast and easy response. The participants could, after opening the e-mail, click on a link to enter the survey. Interviewees who did not want to participate could either ignore the e-mail or click on an “exclude-link” in the e-mail. In this case no further reminders were sent to these potential respondents. A reminder e-mail was sent to the interviewees who did not answer the questionnaire within one month.

The concern, which is often mentioned with regard to e-mailed questionnaires, that the selection of respondents is limited and hence biased towards whether potential respondents have access to internet and the pre-condition to have an e-mail address, was in this survey relevant to only a minor number of randomly chosen small towns in Spain which did not have any e-mail address. The overwhelming majority in Spain as well as all of the administrative units and consulting companies in Norway and Germany, which were randomly chosen as potential respondents, also have e-mail addresses.

In the case that there was no direct access to the landscape planners via e-mail, an invitation to participate in the survey was sent to the central e-mailbox of the administrative unit or consulting company with the request to forward it “to whom it may concern”.

### **2.3 Statistical analyses**

Descriptive statistics were calculated and illustrated with Microsoft Excel (2007). For hypothesis testing I used Pearson's chi-square test in the software program R, version 2.15.2 (R Development Core Team, 2012).

### 3 Results

#### 3.1 Total response rate

Of the 1066 invited participants, 112 respondents answered at least one of the questions in the questionnaire. Twenty-three potential interviewees responded via e-mails that they did not feel themselves belonging to the target group of the survey and hence did not answer the questionnaire. This adds up to a total response rate of 10.7 %, which is a low response rate. Possible reasons for this will be further elaborated on in the discussion.

#### 3.2 Nationality, administrative level and personal information

Out of the 112 respondents, 66.1 % were Norwegian, 27.7 % German and 6.2 % Spanish. Due to the low number of Spanish participants, these results are not analyzed independently and compared to Norwegian and German results since the number of responses is too low to represent the true situation in Spanish landscape planning. However, if responses are mentioned as a whole and regardless of nationality, responses from Spain are included. The vast majority of respondents work at the local level (92.3 %). Only 4.8 % work at the regional level and 2.9 % in a consultant company. There were no responses from landscape planners working at the national level.

Most of the respondents are  $\geq 50$  years old (45.9 %), 21.4 % are between 40 and 49 years, 28.6 % between 30 and 39 and 4.1 % are younger than 30 years.

#### 3.3 Application and Implementation of landscape ecology in landscape planning

Almost half of the respondents (48.6 %) state that they apply landscape ecology in their work as landscape planners. Out of these, 74.5 % could specify which principles of landscape ecology they include in their work. Of the rest, 20 % of the interviewees replied that they did not apply landscape ecological principles, whereas 31.4 % did not know whether they apply them or not. Differences at country level are stated further down and are illustrated in Table 1.

When questioned if landscape ecology is stated as an element in their respective working contracts/ job descriptions, 92 % of the landscape planners answered “No”; only 8 % chose “Yes”: 7 respondents being from Germany, one from Spain. None of the ones answering yes were from Norway.

Also almost half, 46.4 %, of the respondents could name an example in which landscape ecological principles had been applied; 32 examples were taken from plans or studies regarding plans, 20 examples referred to actual projects in the landscape. With regard to examples in which landscape ecology was omitted, 22.3 % of all respondents named 14 examples from (not existing) landscape plans and 11 actual projects in the landscape. As for the reason as to why landscape ecology did not play a role in these plans or projects, 37.3 %

stated “Missing knowledge”, 33.9 % stated “Not relevant with regard to other interests”, while only 5.1 % specified “Insufficient funding”. Other reasons were indicated by 23.7 %; among those were the missing legal binding to implement landscape ecology in projects.

Ecosystem services, being an integral part of landscape ecology, were considered by 53.3 % of the interviewed landscape planners, whereas 46.7 % stated they did not consider them in their plans. The invitation to specify ecosystem services which were often and/ or rarely considered revealed deficits in the understanding of the term “ecosystem services”: four respondents stated not to know the actual meaning of ecosystem services, or named information services about ecosystems or nature instead.

There was no association found between the application of landscape ecology and the consideration of ecosystem services in landscape plans (Pearson's Chi-squared test with Yates' continuity correction:  $X^2 = 0.4293$ ,  $df = 1$ ,  $p\text{-value} = 0.5123$ ).

A clear association between nationality and application of landscape ecology was found (Pearson's Chi-squared test:  $X^2 = 23.2887$ ,  $df = 2$ ,  $p\text{-value} < 0.001$ ). The results indicate that responding Norwegian landscape planners (39.7 %) did not know whether they apply landscape ecology in their work or not. The results from the German landscape planners deviated greatly: The vast majority (88.0 %) stated that they apply landscape ecology. The consideration of ecosystem services, however, did not show the same distribution (Table 1), and no association between nationality and consideration of ecosystem services could be found (Pearson's Chi-squared test with Yates' continuity correction:  $X^2 = 0.0998$ ,  $df = 1$ ,  $p\text{-value} = 0.7521$ ).

Table 1: Given answers to the questions: Do you apply landscape ecology in your work as a landscape planner? And: Do you consider ecosystem services when planning landscapes? Total number of answers (excluding responses from Spanish landscape planners) N= 98 (LE); N= 85 (ES)

\*) This option was not given as a possible answer

	Norway		Germany	
	Landscape Ecology	Ecosystem Services	Landscape Ecology	Ecosystem Services
<b>Yes</b>	32.9 %	52.3 %	88.0 %	45.0 %
<b>No</b>	27.4 %	47.7 %	0.0 %	55.0 %
<b>Don't know</b>	39.7 %	*)	12.0 %	*)

Drivers and hindrances regarding the application of landscape ecology in landscape planning can be grouped into main and less important factors. For both drivers and hindrances, the main factors are identical even though the order of factors is different for both cases. The same applies for the less important factors (see Fig. 1 and 2).

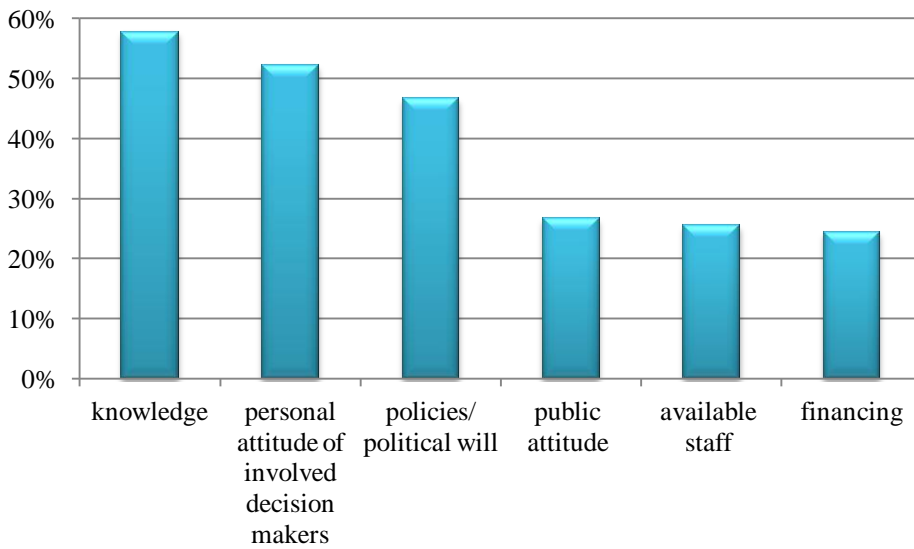


Figure 1: Given answers to the question: What would you define as the main success factors with regards to application of landscape ecological principles in your work as a landscape planner? Knowledge: 57.8 %; the personal attitude of involved decision makers: 52.2 %; policies/ political will: 46.7 %; public attitude: 26.7 %; available staff: 25.6 %; financing: 24.4 %. For this question multiple choices were permitted.

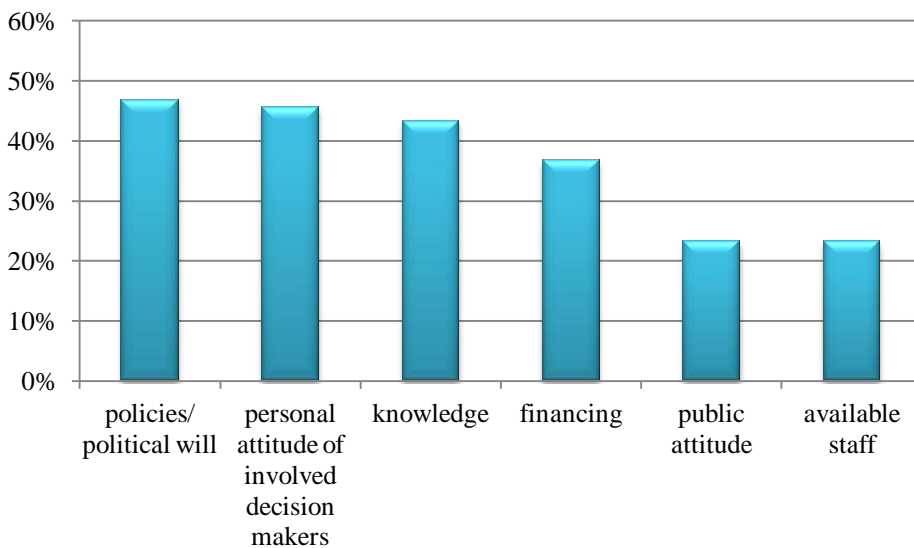


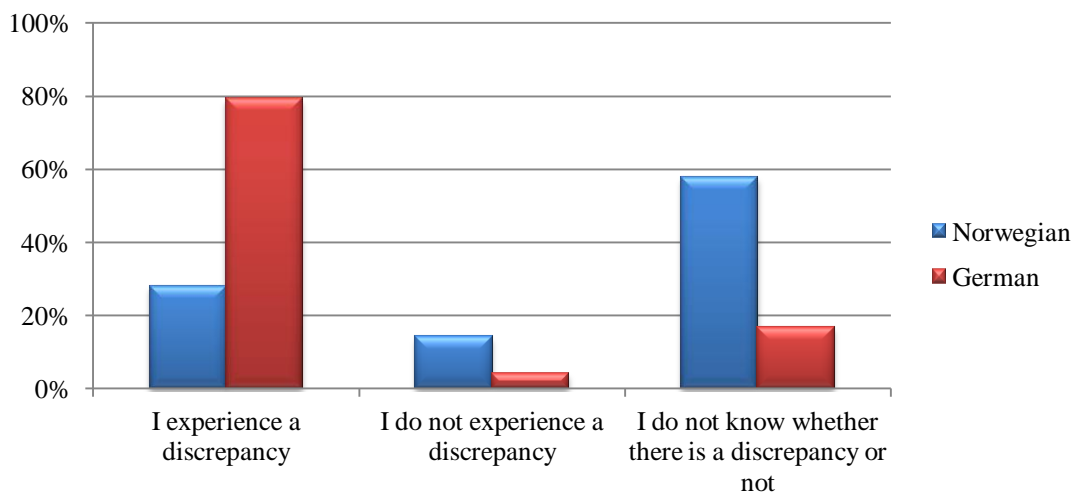
Figure 2: Given answers to the question: What would you define as the main inhibitors with regards to application of landscape ecological principles in your work as a landscape planner? Policies/ political will: 46.7 %; personal attitude of involved decision makers: 45.6 %; knowledge 43.3 %; financing: 36.7 %; public attitude: 23.3 %; available staff 23.3 %. For this question multiple choices were permitted.

Almost half (41.9 %) of the respondents apparently perceive a discrepancy between the application of landscape ecology in landscape plans and the actual implementation of landscape ecology principles in the landscape. However, 11.8 % did not experience this discrepancy, while 46.2 % of the respondents did not know if there was a discrepancy or not.



For the respondents who experienced a discrepancy between application and implementation of landscape ecology, 37.8 % think this is because other interests are perceived as more important (in particular by local politicians); 24.4 % stated that this discrepancy exists because of higher costs/ missing financing associated with the implementation of landscape ecological principles. Other perceived reasons include missing knowledge (13.3 %), theoretical approaches which are not applicable in practice (11.1 %), a missing legal binding to implement elements which are part of the landscape plan (8.9 %), and insufficiencies in the planning system (4.4 %).

Many more German respondents perceived a discrepancy between the application of landscape ecology in landscape plans and the implementation of measures in the landscape compared to the Norwegian respondents (Fig. 3).



**Figure 3: Grouped answers to the question: Do you experience a discrepancy between the application of landscape ecology in landscape plans and the implementation of measures in the landscape?**  
 Values (Norway): "I experience a discrepancy": 28,1%; "I do not experience a discrepancy": 14,1%; "I do not know whether there is a discrepancy or not": 57,8%; N=64  
 Values (Germany): "I experience a discrepancy": 79.2%; "I do not experience a discrepancy": 4.2%; "I do not know whether there is a discrepancy or not": 16.7%; N=24

However, for most of the interviewed landscape planners, landscape ecology is seen as an important part of planning (Fig. 4).

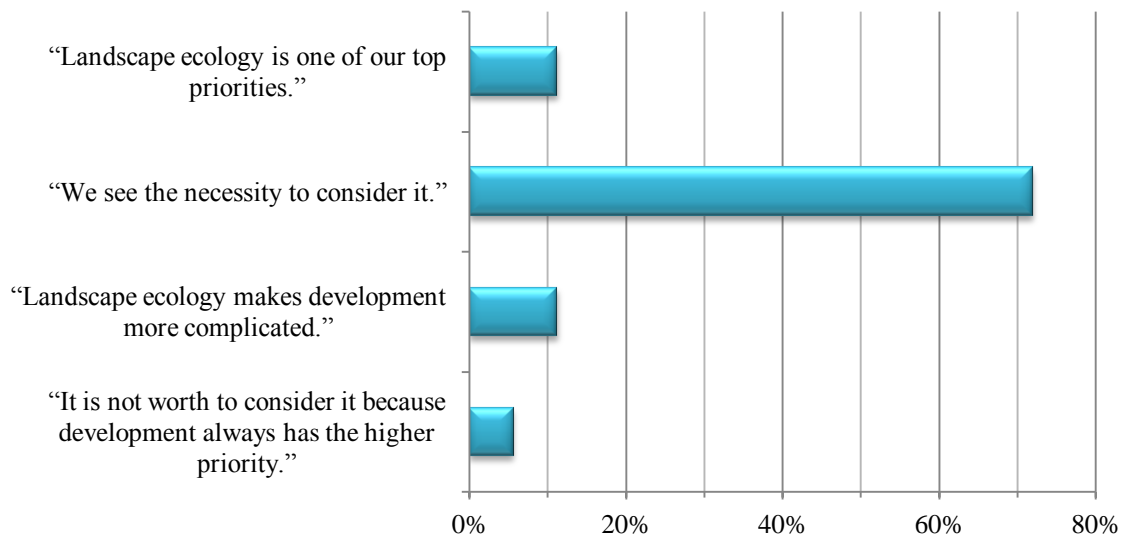


Figure 4: Attitude of respondents and their spatial planning team, respectively, towards landscape ecology. “Landscape ecology is one of our top priorities”: 11.2 %; “We see the necessity to consider it”: 71.9 %; “Landscape ecology makes development more complicated” 11.2 %; “It is not worth to consider it because development always has the higher priority”: 5.6 %.

### 3.4 Sources and Tools

Geographic Information Systems (GIS) is an inherent tool for 84.2 % of the respondents. A minority of 15.8 % does not use GIS for planning landscapes. The opposite result occurred when asked for the use of Spatial Pattern Analysis Programs like FRAGSTATS (McGarigal, 2012): Only 8.4 % of the respondents use it for their work, 91.6 % do not use it; mostly (30 %) because the program is not known or not available at the work place.

Participants of this survey expressed a high interest in scientific literature: 16.5 % of all respondents stated that they had read a scientific article within the last 3 days before answering the questionnaire, 27.8 % within the last week, and 27.8 % within the last month. In addition, 13.4 % had read a scientific article within the last 6 months and only 14.4 % stated “longer ago” or they could not remember.

In accordance with the previous result, the majority of respondents reported to have read several scientific articles during the last year (Fig. 5).

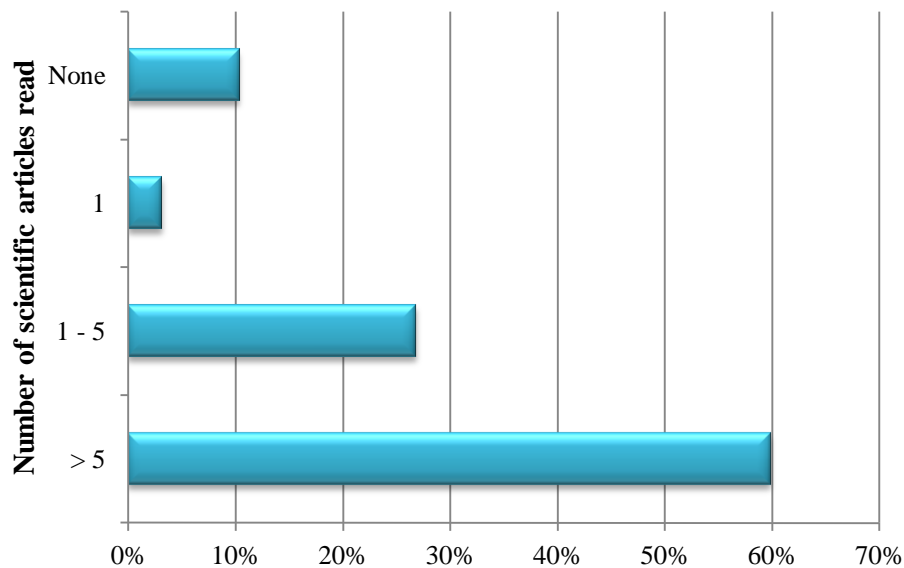


Figure 5: Number of scientific articles read by respondents during the last year. More than 5 articles: 59.8 %; 1-5 articles: 26.8 %; one article: 3.1 %; no article: 10.3 %.

None of the respondents was a member of the International Association of Landscape Ecology (IALE); to 88.5 % the web presence of IALE was unknown. A fraction of the respondents, 10.4 %, had at least heard about the webpage but did not visit it regularly; only 1 % of the respondents used the webpage at least once per month.

Many respondents, however, expressed that they miss useful sources of information or tools for the application of landscape ecology in spatial planning. The majority, 67.9 %, expressed that they would like a webpage which is directed particularly towards landscape ecology in planning. A further 38.5 % miss on-the-job training regarding landscape ecology, and for 29.5 % scientific articles translated into an easily comprehensible language would be desirable; 9.0 % stated other missing sources (multiple answers were permitted).

### 3.5 Policies, changes, effects

The vast majority of the respondents, 73.7 %, are informed about the European Landscape Convention (ELC); 26.3 % did not hear about it. Other factors, which have had an influence on the application of landscape ecology in spatial planning, include public awareness/ attitude (54.3 %), policies/ legislation (excluding the ELC; 29.8 %), and climate change (18.1 %); 5.3 % of the respondents named other factors.

The interviewed landscape planners had distinctive views on how these factors influenced their work. More than one third of the respondents experienced more focus on landscape

ecology due to these factors: 8.4 % stated that plans have been stopped because there was too little focus on landscape ecology, 30.5 % perceived more focus on landscape ecology in future plans. However, 28.4 % participants stated that the above mentioned factors did not influence their work, 32.6 % were uncertain whether or not the factors influenced their work.

## 4 Discussion

### 4.1 Total response rate

There are several ways to collect data about the current situation of landscape ecology in present landscape planning; asking involved landscape planners or ecologists is one of them. Each response reflects only a single opinion; hence the number of participants has to be as high as possible to generate a representative, nonbiased result.

The fraction of potential participants who effectively participated in this survey was fairly low (10.7%). In this case the reason for the low participation rate may be partly due to poorly available background information; if the addressed people were truly involved in a relevant kind of occupation for the survey or not. In most cases, e-mails could not be addressed directly to landscape planners but to a common e-mail for one or several departments. Consequently, I relied on other people to forward the invitation to participate in the questionnaire to the right persons. This might not have always happened.

### 4.2 Application and implementation of landscape ecology in spatial planning

#### 4.2.1 *The present situation of landscape ecology in spatial planning*

This study gives a diverse insight into the daily experiences and opinions of landscape planners about the application and implementation of landscape ecology. However, contrary to the negative picture of the situation at the beginning of the 21<sup>st</sup> century described by Termorshuizen, Opdam et al. (2007), this survey shows that the need to consider landscape ecological aspects in spatial planning has arrived in many of the minds of landscape planners.

The most often stated element of landscape ecology, which was considered in the work of the respondents, includes the protection of biodiversity; to a lesser extent corridors, protected landscapes and ecosystem services. Especially the loss of biodiversity, and hence the need to protect it, has received a large amount of attention (not only) throughout Europe within the last years. Examples of events and campaigns are: *2010 - The International Year of Biodiversity* declared by the United Nations, in Norway the *Nature Conservation Act* which was replaced by the *Nature Diversity Act* in April 2009, hiking events for biodiversity from May to July 2013 initiated by the German Ministry for Environment, as well as countless campaigns by local, national and international environmental organizations. The rising awareness of this topic may also be an important factor as to its consideration in landscape planning.

The ambitious goals of the German and Norwegian governments to enhance sustainability in planning, however, do not appear to be reflected in the job descriptions or contracts of landscape planners. Only a small minority of the respondents named landscape ecology as a stated element in their job description and/ or working contract. This fact may hinder

landscape ecologists in applying for positions related to spatial planning, and neither creates an advantage for landscape planners with ecological knowledge nor stimulates (prospective) landscape planners to acquire knowledge about landscape ecology.

The measures initiated by governments (e.g. through legislation) show a clear impact, but more work needs to be done to firmly entrench landscape ecology in spatial planning. This could include stating landscape ecology as an element in every job description related to spatial planning, and asking for knowledge in this field when employing new staff.

The examples the respondents gave to illustrate positive as well as negative attitudes towards landscape ecology in their work often stayed on the theoretical level, e.g. quoting goals of landscape plans. Concrete positive examples include primarily the conservation of species and habitats as well as the enhancement of connectivity and ecosystem services (among those especially the protection of arable land and clean water), which is in accordance with the considered elements mentioned earlier.

#### *4.2.2 Landscape Ecology vs. Ecosystem Services*

The fact that there was no association found between the application of landscape ecology and the consideration of ecosystem services, e.g. that the respondents who stated that they apply landscape ecology did not automatically state that they consider ecosystem services as well (despite the interlacement of both concepts with each other), shows a certain insecurity or potential misunderstanding in the use of one or both terms:

Contrary to the term “landscape ecology”, whose different perceptions and definitions have been illuminated already in the introduction to this thesis, the term “ecosystem services” has a clear definition but still evoked confusion in some of the respondents. This indicates that this term, though broadly used by scientists for a long time (e.g. Bahr Jr, 1982, Ehrlich, 1982, Josephson, 1982), has not yet arrived in the everyday speech of landscape planners. While other ecology related terms and concepts are promoted and receive a large amount of public attention (e.g. biodiversity and climatic change), “ecosystem services” seems to be a term which still strives for recognition outside the boundaries of the scientific world, despite gaining more public awareness after the Millennium Ecosystem Assessment (2005a).

#### *4.2.3 Success factors and hindrances for the application of landscape ecology in spatial planning*

Knowledge is perceived by the respondents as one of the key factors for the success of landscape ecology in spatial planning, as well as a main hindrance where sufficient knowledge is missing. This underlines the outstanding importance to educate landscape planners in landscape ecology, and encourage landscape ecologists to become more involved in landscape planning.

Policies have played an important role in promoting elements of landscape ecology. However, examples and personal comments of the respondents show how oppositional national, regional and local policies can act when environmental guidelines and landscape plans hit local, mostly economical, interests. Whereas in the national and regional guidelines the importance of sustainability for future ecological, economic and cultural welfare is frequently emphasized, the application of landscape ecology and economic development, and hence “welfare”, too many times conflict on the local level: “Communities often do not act according to their community statutes”, “Short-term benefits are more important than consideration of the best for society” are typical answers of respondents. The missing legal binding of guidelines regarding sustainable planning is another problem which was addressed by responding planners. This assigns responsibility to the last (in most cases local) instance before the plans are implemented in the landscapes. Consequently the landscape, and its development, have become subject to party political goals which may change according to what promises the most success in elections and is often associated with short-term benefits, opposing sustainable (long-term benefit) development (see above-mentioned citation).

The fact that the personal attitude of involved decision makers is perceived to be very powerful regarding the application or omittance of landscape ecology in planning appears to be alarming and appealing at the same time. However, the decision as to how to shape and plan landscape, the means of livelihood for future generations, should not be left to individual persons and is hardly compatible with a democratic society structure, be it in Norway, Germany, Spain or other democratic countries.

Interestingly, financing was not among the most important success factors or hindrances for most interviewed landscape planners, although financial issues often were named in examples and comments as to why ecological aspects could not be considered in the implementation of a planning project. This suggests that the problem of financing is to a large extent interlinked with interests behind a planning project. Finally, the interests behind a planning project define which contingent is used for which purpose: the stronger or more powerful the interest, the easier it may be to neglect other aspects which may influence or complicate the project. Missing financing could serve as a convenient but yet effective argument in this context.

#### *4.2.4 Application vs. implementation*

The importance of conflicting interests is at the same time central to more than one third of the respondents who experienced a discrepancy between the application of landscape ecology in landscape plans and the actual implementation of recommended measures in the landscape.

Especially for Germany, where the overwhelming majority of landscape planners experience this discrepancy, a tool is needed to ensure a higher implementation rate of theoretical measures. This could be done through a more powerful legislation, however, an important aspect, which has to be focused on at the same time, is the practicability of theoretical measures in the real landscape. The diverse nature of landscapes makes it impossible to create

theoretical blueprints which can be applied in reality. Landscape plans are limited to give a theoretical framework from which the landscape planner has to form feasible measures which cannot be identified without knowing the individual characteristics and potentials of the landscape in question.

The uncertainty of the Norwegian respondents as to whether or not they experience a discrepancy between the application and implementation of landscape ecology suggests a gap in the information flow between planners and executors. A good communication between both parties is crucial to identify shortcomings and to communicate suggestions for improvement on both sides, and should therefore be improved.

### 4.3 Sources and tools

Geographic Information Systems (GIS) have developed into a well-established tool for landscape planners; the respondents of this survey hereby confirmed other literature which emphasized the importance of GIS in present spatial planning (e.g. Sandström et al., 2006, Carsjens and Ligtenberg, 2007). Contrary to GIS, computer programs for spatial pattern analyses have been hardly utilized by responding landscape planners. This is in contrast to the wide-spread use of such computer programs among researchers, and may be due to a fairly complicated use and the extensive background knowledge about landscape metrics which is required to work with programs like FRAGSTATS (McGarigal, 2012), (Botequilha Leitão and Ahern, 2002).

Noteworthy is the extensive use of scientific literature by landscape planners, which is contrary to what appears to be general opinion. This gives scientists the possibility to communicate findings in research directly to the executive level, and may enhance the development of landscape ecology to become a truly applied science. To optimize this way of communication, frequented journals have to be identified and should be easily accessible to landscape planners.

The still existing gap between landscape planners and landscape ecologists becomes obvious when looking at memberships of the International Association of Landscape Ecology (IALE), or the absence of use of IALE's webpage by interviewed landscape planners. This suggests that members of IALE form a rather exclusive community with too little connection to (potential) practitioners of landscape ecology, even though the association states their interest in the application of landscape ecology and claims to "stimulate interaction across the disciplines" and to "promote communication between scientists, planners and interdisciplinary scientific research" (IALE, 2009).

The respondents expressed accumulated needs when it comes to supply and availability of information about landscape ecology. This indicates that the missing information exchange between ecologists and planners, as well as among planners, still inhibits more sustainable results in landscape planning.



A webpage about landscape ecology for landscape planners could include basic information about the principles of landscape ecology, as well as links to databases and background information which are needed to find applicable measures to implement the principles in the landscape. Examples from successfully implemented landscape plans could enhance the creative exchange of ideas among landscape planners and should therefore be included as well.

#### **4.4 Policies, changes, effects**

The work of spatial planners is not only affected by objectives and directives, this study shows an increased influence of the public awareness as well. However, the evaluation of the impact of these factors, together with climate change, on the work of spatial planners can be seen controversially: The public attitude towards landscape ecology and the attention towards climate change are highly dependent on both, individual perception and current events (combined with exposure in the media). The impact of such vague factors might therefore fluctuate. In contrast, directives and regulations, incl. the ELC, should show a strong and permanent impact. Based on this, the percentage (38.9 %) of spatial planners who definitely perceived an impact of these factors on their work appears to be rather low.

#### **4.5 Country comparison**

The application of landscape ecology seems to be an integral part of German (theoretical) landscape planning, though concepts behind this term may differ. Striking is the vastly perceived discrepancy between landscape ecology in theory and practice. In Norway the uncertainty about the term “landscape ecology” is high: While hardly one third of the respondents stated that they apply landscape ecology, more than half of them consider ecosystem services. A clear evaluation of the Norwegian situation is therefore difficult to formulate. However, for a better communication among Norwegian (and international) landscape planners, the use of clearly defined landscape ecological terminology should be promoted.

## 5 Conclusion

The importance of nature and ecological functions of landscapes as the basis of livelihood is growing more and more into the awareness of spatial planners. In Norway, Germany and Spain legislation exists which demands the consideration of landscapes, species and ecological functions, and most spatial planners meet these regulations with acceptance and appreciation.

Primarily, knowledge, the personal attitude of involved decision makers and policies determine either success or failure of the application and implementation of landscape ecology in spatial planning.

As can be seen from examples regarding policies, one factor can be oppositional in itself: while authorities on higher administrative levels promote landscape ecology, local authorities do not necessarily follow their guidelines.

The big role which individual people play for the process of integrating sustainability into planning projects is in conflict to the importance of sustainability for humanity in general. The responsibility should therefore be spread more evenly among democratically elected, competent decision-makers; this would eventually and ideally result in precise and legally binding standards on how to integrate landscape ecology into spatial planning. Such standards should not only focus on the theoretical application of landscape ecology, e.g. in landscape plans, but should ideally also ensure the practical implementation of measures to enhance sustainability in the landscape.

The importance of knowledge is not only a factor by itself; it is also crucial to policies as well as to attitudes and decisions of individual people, reaching into every level of society; it therefore plays a superior role. The promotion of sustainable planning should go hand in hand with the education of people about landscape ecology, be it to enhance acceptance among average people for environmental measures or to boost creativity among landscape planners on how to integrate economical, social and ecological interests. Especially the latter interest requires more effort from both sides, ecologists and planners, environmental organizations like IALE and landscape planning departments. Knowledge, especially scientific findings, should be communicated from landscape ecologists to planners in a more comprehensible and easily accessible way, whereas positions connected to landscape planning should be more accessible to landscape ecologists, not only landscape architects. The gap between ecologists and planners has become smaller over the last years; the challenge of the future is to close it.

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## **Appendix**

## Questionnaire incl. summarized answers

112 respondents

### 1. In which administrative division do you work?

Alternativer	Prosent	Verdi
1 National	0,0 %	0
2 Regional	4,8 %	5
3 Local	92,3 %	96
4 Consultant company	2,9 %	3
Total		104

### APPLICATION AND IMPLEMENTATION

### 2. Do you apply principles of landscape ecology in your work as a landscape planner?

Alternativer	Prosent	Verdi
1 Yes	48,6 %	51
2 No	20,0 %	21
-1 Don't know	31,4 %	33
Total		105

### 3. If yes, which?

I kommunen jobbes det med plantyper etter plan- og bygningsloven. Det er ikke noe som heter "landskapsplan". I reguleringsplaner er landskapsøkologi en av mange temaer som forsøkes vurdert og tatt hensyn til, under tema naturmangfold. vrient å si

Berücksichtigung heimischer Gehölze

Biotopvernetzung

Verbesserung des Naturhaushaltes

I forbindelse med forvaltning av kulturlandskap er det elementer av dette, da kommunen er inndelt i landskapsregioner i tiltakstrategiene. Riktignok en veldig enkel modell.

Erfassung von ökologisch wertvollen Biotopen

Pflanzensoziologie, Populationsdynamik, --- eben alles, was ein einschlägiges Biologiestudium mit Schwerpunkt Organismik hergibt.

implantación de actividades y fragmentación del territorio, redes de espacios naturales y corredores territoriales, conectividad territorial....

Beurteilung Landschaftsbild und Naturhaushalt, der Artenschutz

Påser at prinsippet om sammenhengende grønn- og blåstruktur hensyntas i arealplanleggingen i kommunen.

Bevaringsøkologi

øys prinsippet

Kvartærgeologi, og i nokon grad berggrunnsgeologiske prinsipper. Solinnstråling, vindpåvirkning, flompåvirkning.

kulturlandskapsøkologi i beite- og slåttemarker

Vegetasjon, sjekk/landskapsanalyse/KU oppimot biologisk mangfold, naturtypekartlegging /viltkartlegging/naturvern, INON mm,

kulturminner/kulturlandskap, landbruk, friluftsjntresser, visuelle tilhøve (eksponering/innsyn mm), strandsone, vassdrag/fiskeinteresser mm.

Delimitación Unidades de Paisaje, caracterización de Tipos de paisaje, valoraciones de calidad y fragilidad del paisaje...

Størrelse på grønne områder, korridorer, sammenheng i grønstrukturen, variasjon i vegetasjon

Verwendung von heimischer Vegetation (HPNV) bei Ausgleichs- und Bepflanzungsmaßnahmen, Durchsetzung der Forderung, dass Kompensation im naturräumlichen Zusammenhang, d. h. innerhalb des gleichen Naturraumes und in Form eines ähnlichen Biotoptyps erfolgt

Im Landschaftsrahmenplan des Landkreises (LRP 2008) werden im Zielkonzept räumlich konkretisiert die Entwicklungsziele für die einzelnen Landschaftsausschnitte beschrieben.

Bewertung von Vorhaben/ Handlungsabsichten Dritter vor dem Hintergrund ihrer Verträglichkeit auf den betroffenen Naturraum  
Vurderer hensynet til miljø/vilt i forhold til plassering/avgrensning av planer m.m

Bevaring av arter, ser dyretråkk etc.

Naturlig mangfold

Konsekvenser av utbygging av et område

Sikre biologisk mangfold gjennom å opprettholde en sammenhengende og variert blå- og grønstruktur. I størst mulig grad holde viktige områder for biologisk mangfold og trekkruter/sprednings- korridorer fri for utbygging/tekniske inngrep.

In der Arbeit einer Unteren Naturschutzbehörde ist es unumgänglich bei der Entwicklung von Zielvorstellungen landschaftsökologische Prinzipien anzuwenden.

Die Ermittlung des standörtlichen Potenzials ist hierfür unerlässlich.

Vurderes i forhold til miljøpåvirkninger

Preferencia de especies autóctonas frente a especies alógenas. Además se selecciona las especies por niveles de resistencias de las especies a las condiciones de suelo, agua y viento.

Arealplaner. Søknader om nydyrking. Fradelingssøknader m.m.

Planlegging nydyrking

Vurdering av omdisponeringssaker

Abschluß von Landschaftspflegeverträgen und landwirtschaftliche Beratung im Rahmen des Oberschwäbischen Seensanierungsprogrammes.

naturschutzfachliche Aufwertungen, Extensivierungen von Flächennutzungen, Beweidung nur mit 1,5 GV/ha

- Methoden der Umweltverträglichkeitsprüfung

- verschiedene Modelle der Eingriffs-Ausgleichsbewertung

- Methoden zur Flächenentwicklung

- grundsätzliche Bewertungsverfahren der Landschaftsplanung zur Abschätzung ökologischer Auswirkungen von Projekten

Der Arten- und Biotopschutz bildet einen Schwerpunkt in der Landschaftsplanung in NRW

Bevaring av skogsbiotoper og hensyntaken til artsmangfold i arealplansammenheng, grøn struktur i arealplanlegging.

De som fremkommer i faglitteratur som f.eks bøkene til Foremann/Godron , DNS håndbok nr 6 1994, for eks kantsoner, størrelse på områder, alder, sammenhenger/isloering, mønster/strukturer, form...

- Förderung Prozessschutz;

- Auswahl von Pflege- und Entwicklungsmaßnahmen nach naturräumlichen und abiotischen Gegebenheiten.

- Aretenschutz unterschiedlichster Weise nach abiotische und biotischen Gegebenheiten.

- etc

I forbindelse med reguleringsplaner, kommunedelplaner og annen planlegging.

Tilgjengelig data på naturbase, tilgjengelige registreringer og dokumenter og egne kommunale registreringer.

Landschaftsplanung, Naturschutz - Umweltgutachten, Biotoppflege, Artkartierungen

Es hängt von der Definition des Begriffs der Landschaftsökologie ab.

Bei der Aufstellung des landesweiten Landschaftsprogramms werden unter dem Gesichtspunkt des primär naturschutzrechtlich geprägten normativen Ziel- und Wertesystems die rechtlich relevanten Elemente des Naturhaushalts und des Landschaftsbildes priorisiert und in einen funktionalen Zusammenhang gestellt.

- sammenhengende grøntstrukturer og friområder av hensynet til folk



- sammenhengende grøntstrukturer av hensyn til vilt
- vassdrag og ivaretagelse av vassdrag med hensyn på dyreliv og forholdet til sikkerhet
- planters og dyrs leveområde og vandringsmuligheter

Als Naturschutzreferent bin ich ständig mit solchen Fragestellungen befasst.

urbanismo sostenible (basado en la concentración edificatoria y usos mixtos), control de los usos del suelo rural (evitando edificar en la medida de lo posible), apoyo a recorridos no motorizados (vías ciclistas)

Populationsbezogene, biozönlische und flachenbezogene

Diseño de Zonación en función del paisaje de la Reserva de la Biosfera de las Sierras de Béjar y Francia

Biotopvernetzung, Biotopvielfalt, Artenreichtum, Landschaftsbild

#### 4. Is landscape ecology stated as an element of your work in your job description/ employment contract?

Alternativer	Prosent	Verdi
1 Yes	8,0 %	8
2 No	92,0 %	92
Total		100

#### 5. Can you name an example of a planning project where principles of landscape ecology have been successfully applied?

ingen

Forprosjekt for reguleringsplan for gang.- og sykkelvei langs Larkollveien viste flytting av gamle steingjerder. I denne planen ble steingjerdene betydning som spredningskorridorer pekt på.

Kulturlandskap, sentrumsplanlegging, stedsutvikling, vassdragsplan, boligfelt

I vår kommune har det ikke vært aktuelt med landskapsplaner. Det er for øvrig for lite fokus i Kommuneneorge på økologi og landskapsplaner generelt.

Ziele der ökologischen Entwicklung von Fließgewässern als Maßnahmenkonzept

Du har ikkje definert landskapsøkologi.

All arealplanlegging i Norge skal etter lov vurderast etter naturmangfaldslova.

I praksis brukes planen i forvaltning av diverse miljøtilskudd.

Bewertung und Herleitung des Biotopverbundsystems für das Gebiet des Planungsverbandes

Endemenschutz

Red de espacios naturales fluviales

Ich nehme Stellung kommunalen Landschaftsplänen, Grünordnungspläne und landschaftspflegerischen Begleitplänen bei Eingriffen in Natur und Landschaft. Und fordere sie natürlich vorab, begleite teilweise die Umsetzung fachlich vor Ort.

Vi har ikke praktisert utarbeidelse av egne landskapsplaner, men grønnstrukturen fremkommer på reguleringsplankart jf. pbl § 12-5, ledd 3 og ledd 5. For lokaliteter med viktige naturtyper eller arter, benyttes også hensynssoner jf. pbl § 12-6, ledd c og ledd d.

Nydyrkingssaker

Detaljplanlegging av skredvoll mot rasutsatt bebyggelse. Her ble det gjort rede for prinsipp for gjenetablering av stadeigen vegetasjon.

(Det ble også greidd ut hvordan vollstrukturen ville påvirke landskapet visuelt, nært og fjernt)

Kommunedelplan for Etnesjøen 2011-2023

veit ikkje

Nei

Mapas de Paisaje comarcales de Aragón.

kommuneplanen

Forslag til Grøntplan for Oslo kommune.

<http://www.plan-og-bygningsetaten.oslo.kommune.no/getfile.php/plan->

[%20og%20bygningsetaten%20%28PBE%29/Internett%20%28P](#)

[BE%29/Dokumenter/Filer%20utlagte%20saker/2009/Forslag%20til%20Gr%C2%A2ntplan%20juni%202009.pdf](#)

Freihalten der Niederungsbereiche von Neuwald, Revitalisierung von gefährdeten und selten Biotopstrukturen z. B. durch Ausweisung von Schutzgebiets- und Biotopverbundachsen

im LRP 2008, dieser ist im Internet auf der Seite des Landkreises einsehbar, [www. Landkreis-Verden.de](http://www.Landkreis-Verden.de), der Plan ist im Maßstab 1:50.000 erstellt und dient als Arbeitsgrundlage für die Arbeit des Landkreises als untere Naturschutzbehörde

Aufstellung des kreislichen Landschaftsrahmenplans als übergeordneter Fachplan für die kommunale Bauleitplanung.

Allerdings ist der Plan bereits 15 Jahre alt und entbehrt einer gewissen Aktualität.

Har utarbeidet egen grønstrukturplan der landskapsøkologiske prinsipp er lagt til grunn.

Hadelandsparken. Planen er ikke realisert ennå

Bevaring av Lindetrær. Justering av plan pga dyretrakk.

Ved de fleste reguleringsplaner tar vi i bruk konsekvensutredninger ifm. mangfoldsloven.

2 planer har fått innsigelser pga. spes.arter og habitat.

Biologisk mangfold og konsekvenser for disse (endra biotop osv) blir alltid vurdert i nye utbyggingsområder

Vi prøver å ha et helhetlig fokus i all kommunal planlegging.

Prinsippene ovenfor er tatt inn i kommuneplanen, og skal derfor være førende for all planlegging i kommunen.

Vi mangler imidlertid dokumentasjon på omfanget av dette, men prinsippene forsøkes ivaretatt når det er relevant. Dette er uansett en løpende prosess. I forbindelse med utbyggingen av E6 gjennom kommunen, var særlig sikring av

trekkruiter/krysningsmuligheter et viktig tema.

Wiedervernässung von Mooren zur Verbesserung des Landschaftswasserhaushalts, der Klimabilanz und der Entwicklung

von moortypischen Lebensgemeinschaften

El parque periurbano del Andarax, el diseño y planificación de las plantaciones responde a la tipología de un parque de la

ribera mediterránea.

Jeg jobber ikke direkte med landskapsøkologi, men er opptatt av blågrønn infrastrukturens betydning for klimatilpasning,

folkehelse, miljøeffekt på luft, grønstrukturens temperering av bygningsmasse, håndtering av overvann m.m

Nei dette kjenner jeg ikke til.

Planlegging av nye boligfelt m.m.

Sentrumplan som omfatter blandt annet jordbruksarealer og våtmarksområde.

Områderegulering Vindsneset, ikkje vedteken enda.

Blir truleg gjennom ført når den er vedteken

wir arbeiten auf der Ebene der Landschaftsrahmenplanung

Die auf Gemeindeebene erstellten Landschaftspläne basieren im Regelfall immer auf landschaftsökologischen

Arbeitsansätzen und \_prinzipien. Eine Umsetzung der Planungen erfolgt jedoch nur in sehr geringem Umfang.

Landschaftspläne dienen im Regelfall der Sanktionierung der im Flächennutzungsplan gewünschten baulichen

Entwicklungen.

Ausweisungen von Schutzgebieten (Naturschutzgebiete etc.)

Sicherung ertragreicher Böden

Festlegung von Naturschutzmaßnahmen

Nei, jobber med ny arealplan hvor landskapsplanlegging og artsmangfold ivaretas.

Kommuneplanprosessen 2011

Vedrørende neste spørsmål så gir planen viktige føringer for videre planlegging, derfor har jeg svart "ja"

Byggegrense mot sjø

Ikke som jeg vet!

- Durchführung LIFE-Natur-Projekt "Natürliche Flussdynamik an der niedersächsischen Ems" [www.ems-life.de](http://www.ems-life.de)

Erprobungs- und Entwicklungsvorhaben "Hasetal" Wiederherstellung naturnaher Fließgewässerdynamik und auetypischer

Biotope.

Faunistische , floristische Grundlagenerhebung zur Konzeption von Pflege- und Entwicklungsmaßnahmen in Schutzgebieten

Kommuneplanens arealdel.

Landskapsanalyse ble gjennomført

Som over. Konkret - kommunedelplan for Bjerkvik. Til "ja" under. den er under utarbeidelse

Vi tar utgangspunkt i biologisk mangfoldregistreringer som er gjort i kommunen i 2001. Disse registreringene brukes som et grunnlag for konsekvensutredninger i forbindelse med regulerings-/kommuneplaner.

Begutachtung/Stellungnahmen zu Grünordnungspläne, Bebauungsplänen, Flächennutzungsplänen.

In einen Landschaftsplan nicht!

Biotopverbundplanung, Vernetzte Gesamtschau der Ziele und Maßnahmen des Naturschutzes und der Landschaftspflege sowie die Wirkungen der geplanten oder ergriffenen Maßnahmen. Die Planung befindet sich in Aufstellung.

- vi har ingen plan som defineres som landskapsplan, men prinsippene er benyttet i arealdelen av kommuneplanen, kommunedelplaner og videreført i reguleringsplaner

- det arbeidet som er gjort er ikke flagget som landskapsøkologiske prinsipper

Diverse Landschaftspläne für Kommunen in Bayern;

Landschaftspflegerische Begleitpläne zu Hochwasserfreilegungen etc.

Grünordnungsplanung im Rahmen der Bauleitplanung nach Baugesetzbuch etc.

Vernetzungsstrategien

Catálogos y Directrices del Paisaje en 3 Áreas Funcionales

Landschaftsplan Trier-Land, Kreisstudie Auswirkungen Windkraft auf Artenschutz

Estudio de las Unidades Paisajísticas de la Reserva de la Biosfera de las Sierras de Béjar y Francia

Harz, verschiedene Beispiele, siehe E-mail

## 6. Has this plan been implemented?

Alternativer	Prosent	Verdi
1 Yes	39,5 %	32
2 No	18,5 %	15
-1 Don't know	42,0 %	34
Total		81

## 7. Is there a possibility for me to find out more about this project (websites, reports etc.)?

Alternativer	Prosent	Verdi
1 Don't know	27,7 %	23
2 No	31,3 %	26
3 Yes	41,0 %	34
Total		83

Planen er i startfasen i regi av Statens vegvesen, kommunens uttalelse til forprosjektet kan skaffes ved henvendelse til e-post: [paivi.hilska@rygge.kommune.no](mailto:paivi.hilska@rygge.kommune.no)

ks.no

[info@region-frankfurt.de](mailto:info@region-frankfurt.de)

Landschaftspflegeverband Forchheim

Alle vedtatte reguleringsplaner skal være tilgjengelige på de respektive kommunenes kartsider/nettsider

Planleggingsprosjektet pågår, det er utarbeidd diverse materiale som kan oversendast på førespurnad.

<http://www.etne.kommune.no/kommunedelplan-for-etnesjoeen-2011-2023-arealdelen.5070806-130335.html>

[www.aragon.es/SITAR](http://www.aragon.es/SITAR) (dentro de unos meses, no en la actualidad).

på kommunens nettside [www.royken.kommune.no](http://www.royken.kommune.no)

[http://www.plan-og-bygningsetaten.oslo.kommune.no/getfile.php/plan-](http://www.plan-og-bygningsetaten.oslo.kommune.no/getfile.php/plan-%20og%20bygningsetaten%20%28PBE%29/Internett%20%28P)

[%20og%20bygningsetaten%20%28PBE%29/Internett%20%28P](http://www.plan-og-bygningsetaten.oslo.kommune.no/getfile.php/plan-%20og%20bygningsetaten%20%28PBE%29/Internett%20%28P)

[BE%29/Dokumenter/Filer%20utlagte%20saker/2009/Forslag%20til%20Gr%C2%A2ntplan%20juni%202009.pdf](http://www.plan-og-bygningsetaten.oslo.kommune.no/getfile.php/plan-%20og%20bygningsetaten%20%28PBE%29/Internett%20%28P)

[http://www.hannover.de/de/umwelt\\_bauen/umwelt/nat\\_schuLHH/index.html](http://www.hannover.de/de/umwelt_bauen/umwelt/nat_schuLHH/index.html)

[www.Landkreis-Verden.de](http://www.Landkreis-Verden.de)

Gedruckte Exemplare

<http://www.orkdal.kommune.no/gronnstrukturplan>

temarapporter m.m

Henvendelse til kommunen

Finnes sikkert tilgjengelig på nettsidene til fellesprosjektet E6/Dovrebanen.

Großes Torfmoor bei Todtshorn; Intnet

mas adelante, en estos momentos se está trabajando en este tema

<http://www.averoy.no/Artikkel.aspx?Ald=1643&back=1&Mld1=421&Mld2=&Mld3=&>

die Unterlagen sind generell öffentlich, aktuell sind die Pläne allerdings nicht ins Internet eingestellt

Kommuneplanen med KU ligger ute på nettet

[www.ems-life.de](http://www.ems-life.de); [www.Haseauenverein.de](http://www.Haseauenverein.de)

[www.biostation-neuss.de/](http://www.biostation-neuss.de/)

på hjemmesiden til Aurland Naturverkstad

Umweltbericht in : <http://www.landesplanung-hessen.de/landesentwicklungsplan/anderungsverfahren-2012/>

tilgang via våre nettsidene til Østre Toten kommune og webkart via Plandialog

[http://www.ingurumena.ejgv.euskadi.net/r49-cpaisaia/es/contenidos/informacion/paisaia\\_2011/es\\_paisaia/indice.html](http://www.ingurumena.ejgv.euskadi.net/r49-cpaisaia/es/contenidos/informacion/paisaia_2011/es_paisaia/indice.html)

teilweise ins LANIS eingestellt

[jesuspierna@hotmail.com](mailto:jesuspierna@hotmail.com)

## 8. Can you name an example from a planning project where principles of landscape ecology have been TOTALLY OMITTED?

I de fleste eldre reguleringsplaner er landskapsøkologiske prinsipper ikke blitt synliggjort.

eldre reguleringsplaner

Verwendung von Gehölzen aus regionaler Herkunft

Erfassung der Fauna

no

Freihalten von Talräumen und Hangterrassen durch Bebauung, Aufforstungen.

Tidligere var dette ofte tilfelle, men dersom dagens standard for utarbeidelse av kommuneplaner og reguleringsplaner følges, skal det ikke lenger forekomme. Særlig ikke etter at fylkesmennene begynte å sette krav til overholdelse av §§ 8-12 i Naturmangfoldloven.

Detaljplanlegging av boligområde

Litt eldre reguleringsplaner, gjerne som var i tråd med kommuneplanen.

Ja

reguleringsplan for Selfallet bustadfelt

No en Aragón.

Alnabru terminalområde

Erhalt von Dauergrünlandflächen wurde nicht umgesetzt, sondern dem ungezügelten Anbau von Agrarmais geofert

Nein

Nein

Diverse reguleringsplaner for bolig og næringsplaner

nei

I sentrumsplaner

Sentrumsregulering

Kommer ikke på noen gode eksempler

Nei ingen konkrete, men det er nok en del reguleringsprosjekter der det rett og slett ikke er relevant.

nein

Hay bastantes casos, principalmente se dan en los parques urbanos

Mange planer i kystnære strøk der dette ikke anses som relevant.

KOMMUNEPLANEN

I større eller mindre grad blir landskapsøkologiske prinsipper brukt

Kommuneplanens arealdel for Karmøy

Kommunedelplan for Eike, Kolnes, Skre i Karmøy.

Wir arbeiten auf der Ebene der Landschaftsrahmenplanung

Nein

grundsätzlich werden die Inhalte der Landschaftspläne vom Kreistag beschlossen, hier erfolgt eine Abwägung aller Belange, dabei können natürlich auch Belange des Naturschutzes und der Landschaftspflege zurückstehen.

Nei

Jeg håper og tror de landskapsøkologiske prinsippene alltid er med og trekkes frem der de er relevante, men det som oftes fremkommer det ikke eksplisitt at de er blitt anvent eller tatt inn i vurderingene. Det er forbedringspotensiale når det gjelder å synliggjøre vurderingene.

Sikkert nok!

Ja, gelegentlich bei der einfachen Anwendung der Eingriffsregelung (§15ff. BNatSchG), z.B. bei reinen

Begrünungsmaßnahmen.

Reguleringsplan E6 Fallhei - Sandhei

Nei

Forskrift om differensiert strandsonerforvaltning

- mindre reguleringsplaner i sentrumsområder og på dyrket mark

Nicht bei aktuellen Landschaftsplänen

no

nein

Harz, Kommunen ohne Landschaftsplan

### 9. What were the reasons for not applying principles of landscape ecology in this case?

Alternativer	Prosent	Verdi
1 Missing knowledge	37,3 %	22
2 No sufficient funding	5,1 %	3
3 Not relevant in comparison to other interests	33,9 %	20
4 Annet	23,7 %	14
Total		59

Flere grunner: Mangel på kunnskap, ikke relevant og ikke lovpålagt

Gehölze nicht im ausreichenden Umfang erhältlich

Blanding av forhold, mindre strengt regelverk mm

kjenner ikke til begrepet

For ny i jobben til å kunne svare på dette

Ingen landskapsplaner er utført.

s.o.

politische Abwägung

Se forrige svar

### 10. Has this plan been implemented?

Alternativer	Prosent	Verdi
1 Yes	36,5 %	19
2 No	21,2 %	11
3 Don't know	42,3 %	22
Total		52

### 11. If yes, are there any plans for following up on effects or development of this site, e.g. through monitoring?

Alternativer	Prosent	Verdi
1 Yes	33,3 %	6
2 No	55,6 %	10
3 Don't know	11,1 %	2
Total		18

**12. Is there a possibility for me to find out more about this project (websites, reports etc.)?**

Alternativer	Prosent	Verdi
1 Don't know	32,8 %	20
2 No	47,5 %	29
3 Yes	19,7 %	12
Total		61

Alle ca. 100 vedtatte reguelringsplaner er offentlige dokumenter i Rygge kommune  
fmtr.no

info@region-frankfurt.de/RegFNP

Skog- og landskaps nasjonale bildebank der bl.a kulturlandskapet gjenfotograferese men noen tiårs mellomrom.

<http://braplan.geoweb.no/braplan/>

Plan- og bygningsetatens saksinnsyn

Monitoring ist bei sämtlichen FFH- Gebieten des Landes schleswig- Holstein umzusetzen

avd. for landbruk og skogsforvaltning har kompetanse

Kommunens nettsider. [www.karmoy.kommune.no](http://www.karmoy.kommune.no)

Internetdartellung des zuständigen Landesamtes

Østre Toten kommune sin internettside

**13. Do you or a member of your team carry out field-based impact assessments with regard to your plans?**

Alternativer	Prosent	Verdi
1 Yes	85,2 %	75
2 No	14,8 %	13
Total		88

**14. If not, why?**

Alternativer	Prosent	Verdi
1 There is no/ not enough funding.	9,1 %	1
2 There is no/ not enough knowledge.	27,3 %	3
3 There is no/ not enough available staff.	27,3 %	3
4 It is not necessary for planning landscapes.	18,2 %	2
5 Other	54,5 %	6
Total		11

anderes Resort ist zuständig

Ikke direkte involvert

Jeg henter fagfolk fra fylkesmannen

For ny i jobben til å kunne svare

Antragsteller hat die für die Eingriffs-/Ausgleichsbewertung erforderlichen Angaben in den Antragsunterlagen zu liefern.

Meine Tätigkeit an der obersten Naturschutzbehörde beinhaltet keine Einbindung mehr direkt in Planungsvorgänge

## 15. Do you consider ecosystem services when planning landscape development?

Alternativer	Prosent	Verdi
1 Yes	53,3 %	48
2 No	46,7 %	42
Total		90

## 16. If yes, can you name examples of ecosystem services which you often/ rarely consider?

Forstår ikke begrepet økystemTJENESTER.

våtmarksområder for hekkefugl

oft: Biotopvernetzung, Lebensraumfunktion

selten: Bodenfunktionen, Leistungsfähigkeit des Grundwasserleiters

Naturbasen

oft: Forstwirtschaft - Wald, Strukturelemente

selten: Artenschutz

se consideran: biodiversidad, control CO2, ciclo del agua

Vannkretsløp, vegetasjon, kulturlandskap

øyprisippet og randsoner

Mat/råvareproduksjon/vannkvalitet/drikkevann, friluftsliv/hels/turisme/estetikk.

biologisk mangfold, er ikke dette dørme på dette?

No entiendo bien la pregunta. Lo siento.

Moor und Wald im Zusammenhang mit dem Klimaschutz

fangdam rensing av avløpsvann

Naturbase, nettbaserte informasjonstjenester innen aktuelle tema/sectorer.

La repoblación con fauna local en espacios verdes públicos de amplia extensión.

Absorpsjonsevne, karbon- og oksygenyklus, luftrensning/støv, biologisk mangfold, økt eiendomsverdi, temperering av bygningsmasse og byrom, grønne tak

Planteliv, dyreliv, fugleliv, hydrologi, estetikk.

Kystlynghei, våtmarksområder.

Disse blir forørig vurdert på kommuneplannivå og således vurdert før det kommer til reguleringsplan-nivå.

Vurderer om planlagte inngrep har negativ innvirkning på kjent dyre- og planteliv

Vurdere artsmangfold, kulturmarkstyper, beliggenhet i forhold til vassdrag

KNYTTER SEG TIL OMRÅDER DER DET ER KJENT OG SPESIELL ØKOLOGI, SPESIETT KNYTTA TIL RØDLISTA

Fauna og flora blir vurdert ved alle planar, vannsystem der det er vassdrag med i planen.

Belange des Arten- und Biotopschutzes stehen im Vordergrund, Aspekte des Ressourcenschutzes sind eher nachrangig

Ofte: Produksjonsevne skog (bonitet), produksjonseven matjord, biotop vilt, biologisk mangfold, opplevelseskvaliteter rekreasjon,

Ikke meg personlig, men kommunen i forhold til kartlegging av biologisk mangfold NINA. (Norsk institutt for naturforskning).

Fugler og dyreliv.

Oft: Arten, Klima, Wasser, Bode, Luft, Erholung

Vi benytter Naturfaglige konsulenter for undersøkelse av områder og vurdering av konsekvenser av utbygging

- kommuneplansammenheng

Oft: Artenvielfalt, sauberes Wasser

Leistungen für den Biotopverbund, Bedeutung des Schutzgutes Boden für die Biotopentwicklung

PAgos por servicios ambientales a ganaderos y agricultores



**17. What would you define as the main success factors with regard to application of landscape ecological principles in your work as a landscape planner?**

Alternativer	Prosent	Verdi
1 Policy/ Political will	46,7 %	42
2 Personal attitude of involved decision makers	52,2 %	47
3 Public attitude	26,7 %	24
4 Funding	24,4 %	22
5 Available staff	25,6 %	23
6 Knowledge	57,8 %	52
7 Other	4,4 %	4
Total		90

Det er private utbyggerinteresser og tilgang til areal som er styrande.

Gode planprosesser og kompetanse i kommunene

Naturschutzfachliche Begründung naturschutzrechtlicher Planungen und Entscheidungen

Gesetzliche Vorgaben

**18. What would you define as the main inhibitors with regard to application of landscape ecological principles in your work as a landscape planner?**

Alternativer	Prosent	Verdi
1 Policy/ Political will	46,7 %	42
2 Personal attitude of involved decision makers	45,6 %	41
3 Public attitude	23,3 %	21
4 Funding	36,7 %	33
5 Available staff	23,3 %	21
6 Knowledge	43,3 %	39
7 Other	2,2 %	2
Total		90

Aufbau der Verwaltungsstruktur in Brandenburg sowie Aufgabenverteilung

Blir ofte underordna andre målsettinger

**19. Do you experience a discrepancy between the application of landscape ecology principles in plans for landscapes and the actual implementation in the landscape?**

Alternativer	Prosent	Verdi
1 Ja	41,9 %	39
2 Nei	11,8 %	11
3 Vet ikke	46,2 %	43
Total		93

## 20. If yes, why do you think this discrepancy exists?

Økonomi

fehlendes Interesse

keine Finanzierungsmöglichkeit

Durch die Zuständigkeiten und Genehmigungsverfahren

Diskrepanz zwischen Theorie und Praxis

Fehlendes Wissen bei Führungskräften und politischen Entscheidern, Meist geht pers. Eigennutz vor öffentlichem Interesse

Gemeinden wollen oft sich nicht an ihre gemeindliche Satzung (Landschaftspläne als Teil der Flächennutzungspläne) halten z.B. Nichtaufforstungsgebiete werden festgelegt und später wird einem Aufforstungsantrag hier zugestimmt oder ein frei zu haltendes Gelände soll doch bebaut werden.

politisk vilje til å bygge ut maksimalt, eller at det ikkje blir oppdaga før det er for seint

Porque los planteamientos más o menos teóricos de la Ecología del Paisaje no siempre pueden ser llevados a la práctica, por diferentes motivos (intereses políticos, falta de financiación...)

Fehlende Rechtsverbindlichkeit der kommunalen Landschaftspläne und deren Inhalte.

Vor allem in ländlich geprägten Räumen fehlt die Einsicht in die Notwendigkeit, da man ja praktisch von Natur umgeben ist und "hier hat sich die Natur schon immer selbst geholfen". Planung hilft da wenig, weil immer noch die Natur darüber entscheidet, was sich wo, wie und wann entwickelt.

Mangel på helhetlig fokus i organisasjonen.

Generell manglende kunnskap fra aktører i alle ledd. (fra saksbehandler og bruker til politiker)Viljen til å få prosjekter til å lykkes (evt. økonomisk vekst) er ofte styrende i behandling av saker. Kortsiktig gevinst fremfor hensynet til samfunnets beste. Kostnadsspørsmålet er alltid det som veier tyngst når flere hensyn veies mot hverandre.

Fordi de mest egnede plassene fysisk sett ikke alltid er de best egnede med tanke på det landskapsøkologiske bildet. OG fordi det i mange tilfeller fordyrer prosjektene ved å gjøre nødvendige grep.

Det kan endevende planen.

"Ser du en salamander, spis den og hold skjett"-mentalitet.

Krysspress mellom økonomiske interesser og landskapsøkologiske interesser

Manglende kunnskap og økonomi

Es fehlt der grundsätzliche politische Gestaltungswille, zu dem entstehen im Regelfall Kosten, die gerne vermieden werden.

Die Diskrepanz besteht m.E. bei der Umsetzung der freiwilligen Naturschutzmaßnahmen

Die Umsetzung der Naturschutzmaßnahmen ist zeit- und kostenauswendig.

Mangel på kunnskap, øvrige motiver er viktigere.

Motstridende interesser

Umsetzungsdefizite z.B. bei Eingriffsregelung;

zu kleine Maßnahmen um in landschaftsökologischen Zusammenhängen Konzepte zu entwickeln.

Pfprobleme in der Umsetzung der Ziele und Maßnahmen

med bakgrunn i det som er nevnt tidligere, mangel på kunnskap, liten politisk vilje, mangel på ressurser i kommunene.

Anforderungen verschiedener Fachdisziplinen zusammenführen.

Die Landschaftsplanung hat keine eigenständigen und verbindlichen Umsetzungsinstrumente. Der rechtliche Rahmen und der demografische Wandel (und mangelnde Planungskultur in der Querschnittsplanung) lassen kaum noch Vorteile erkennen.

- manglende kapasitet til å følge opp planers bestemmelser for fellesområder samt grøntbelter

Aufgrund mangelnder Kontrolle der Umsetzung

Fehlende Finanzen, Fehlende Akzeptanz

Der wille zur Umsetzung der Planungen in den LP durch die Gemeinden

Planungen werden über Satzungen bzw. Genehmigungsverfahren nur teilweise umgesetzt

**21. How would you describe the attitude towards landscape ecology in your planning team?**

Alternativer	Prosent	Verdi
1 It is one of our top priorities.	11,2 %	10
2 We see the necessity to consider it.	71,9 %	64
3 It makes development more complicated.	11,2 %	10
4 It is not worth to consider it because development always has the higher priority.	5,6 %	5
Total		89

SOURCES AND TOOLS

**22. Do you have access to Geographic Information Systems (GIS) at your workplace?**

Alternativer	Prosent	Verdi
1 Yes	92,8 %	90
2 No	7,2 %	7
Total		97

**23. Do you use Geographic Information Systems (GIS) when you develop plans or analyze input data?**

Alternativer	Prosent	Verdi
1 Yes	84,2 %	80
2 No	15,8 %	15
Total		95

**24. If no, why not?**

- fehlendes technisches know how
- Ich bin in einer Naturschutzbehörde und plane nicht selbst
- Ikke tilgang
- Mangler kunnskap
- ikke tilgjengelig programvare - kun innsynsmodul
- No está muy desarrollado el plan
- Har ikke tatt det i bruk ennå
- kein Interesse der Leitung
- Bruker gis til å lage ulike temakart, samt plankart

**25. Do you have access to Pattern Analysis Programs at your workplace (e.g. FRAGSTATS)?**

Alternativer	Prosent	Verdi
1 Yes	10,4 %	10
2 No	89,6 %	86
Total		96

**26. Do you use Spatial Pattern Analysis Programs (e.g. FRAGSTATS)?**

Alternativer	Prosent	Verdi
1 Yes	8,4 %	8
2 No	91,6 %	87
Total		95

**27. If no, why not?**

Har neppe tilgang/har ikke lært til å bruke  
 økonomi, kompetansebrist  
 Er ikke prioritert i kommunen  
 Ist bisher nicht bekannt  
 no disponibilidad  
 Har ikke tilgang!  
 Jobber manuelt  
 Ikkje kjent  
 Kjenner ikke til det, har ikke lisens  
 har ikkje blitt introdusert  
 Min utdanning i landskapsøkologi er fra 1970-åra.  
 Vi har nytta landskapsarkitektar som konsulentar  
 Ukjent  
 Zugänglichkeit besteht nicht  
 hier nicht bekannt  
 Ist für das tägliche ordnungsbehördliche Verwaltungshandeln nicht erforderlich.  
 Har ikke tilgang  
 Ser ikke behovet  
 Vi har en kartansvarlig som har tilgang.  
 Kjenner de ikke  
 Vet eg. ikke...  
 Det er ikke tilgjengelig på arbeidsplassen.  
 Har ikke programmet.  
 Mangel på kapasitet.  
 har ike  
 har ikke tilgang  
 KUNNSKAPSMANGEL, MANGEL PÅ PRIORITERING  
 Har ikkje kjennskap til dette  
 Kjenner ikke programmet  
 manglende ressurser  
 Aus unsere Sicht reicht das GIS, einzelfallbezogen werden Landschaftsplanungsbüros herangezogen  
 Kein Zugang.

programm ist nicht bekannt  
 Ikke tilgang, ukjent  
 Ikke tilgjengelig  
 kein Interesse durch Leitung  
 Har ikke hørt om det  
 Steht in unserer Einheit nicht zur Verfügung bzw. ist eher auf Sachbearbeiterebene angesiedlet  
 Har ikke hørt om det  
 Visste ikke at de fantes  
 Har ikke disse tilgjengelig, har ikke kunnskap om det heller.  
 Nicht verfügbar  
 Externe Datenaufbereitung  
 lite tjenelig  
 derzeit keine direkte planerische Tätigkeit  
 keine Erfahrung  
 Falta de personal con conocimientos adecuados

**28. Which is your preferred tool to get more information about landscape ecology?**

Alternativer	Prosent	Verdi
1 Books	10,5 %	10
2 Scientific journals	13,7 %	13
3 Websites	63,2 %	60
4 Other	12,6 %	12
Total		95

Har gått på kurs om landskapsøkologi  
 Befaring og undersøkelse av stedet  
 Blanding, off. veiledere, litteratur, nett o.l.  
 DN's naturbase  
 ressurspersoner  
 foredrag  
 skogoglandskap, GiNT, Naturbase mfl  
 Kurs, seminar  
 Was gerade verfügbar ist, Landesweite Datenbanken,  
 gå i marka  
 Seminarer, kurs  
 Consejo Científico de la Reserva de la Biosfera

**29. When was the last time you read a scientific article?**

Alternativer	Prosent	Verdi
1 Within the last 3 days.	16,5 %	16
2 Within the last week.	27,8 %	27
3 Within the last month.	27,8 %	27
4 Within the last 6 months.	13,4 %	13
5 Longer ago/ Can't remember	14,4 %	14
Total		97

**30. How many scientific articles would you say you read during the last year?**

Alternativer	Prosent	Verdi
1 One	3,1 %	3
2 1-5	26,8 %	26
3 More than 5	59,8 %	58
4 None	10,3 %	10
Total		97

**31. Are you a member of the International Association for Landscape Ecology (IALE)?**

Alternativer	Prosent	Verdi
1 Yes	0,0 %	0
2 No	100,0 %	97
Total		97

**32. Do you visit the website of the International Association for Landscape Ecology (IALE)?**

Alternativer	Prosent	Verdi
1 At least once per week.	0,0 %	0
2 At least once per month.	1,0 %	1
3 I don't visit the website regularly but I have heard of it.	10,4 %	10
4 I don't know it.	88,5 %	85
Total		96

**33. Are there any other websites where you find useful information on Landscape Ecology?**

Vet ikke

ikke spesielt om landskapsøkologi

fin-view

Skog og Landskap

ja

behördeninterne Infos, Landes- und Bundesamt für Umwelt

Skog og landskap

<http://www.fylkesmannen.no/fagom.aspx?m=53998>

Svensk litteratur

<http://norgebilder.no/>

Sí. Asociaciones profesionales de geógrafos, ecólogos, webs de Gobiernos que realizan cartografías del paisaje...

Floraweb.de

nein

skog og landskap.no nios

FM, DN, MD

No he consultado esta web antes

[www.planlegging.no](http://www.planlegging.no), [www.mrfylke.no](http://www.mrfylke.no), [www.fmmr.no](http://www.fmmr.no)

Artsdatabanken, Naturbase

Fachbehörden wie das Landesamt für Natur, Umwelt und Verbraucherschutz

Miljøverndepartementets plansider, fylkesmannen

Jeg bruker nattet mye i jobbsammenheng, men viss spesifikt dreier seg om å lære mer om landskapøkologi, så er bøker nyttigere.

DN, Fylkesmannen, Miljøverndep.

Das Netz ist voll, man bedient sich je nach Fragestellung

www.lanuv.nrw.de

NINA, UMB, andre

Direktoratet for naturforvaltning sine nettsider

Umweltministerien des Bundes und der Länder

Universitäten, Planungsbüros, Zeitschriften, Planungsträger

vey ikke

observatorio de cataluña, andaluza, valencia

über 100

**34. Is there any tool to get more information about landscape ecology you are missing in your work? Multiple answers are permitted.**

Alternativer	Prosent	Verdi
1 Scientific articles translated into "easy" language which can be interpreted faster	29,5 %	23
2 On-the-job training	38,5 %	30
3 Website directed particularly to landscape ecology in planning	67,9 %	53
4 Other	9,0 %	7
Total		78

es gibt genügend Quellen

Spør fagfolk

Hovedproblemet er manglende tid til å holde seg oppdatert.

Landschaftsökologische Modelle und Modellierungen

helt sikkert

**35. Do you consider yourself competent enough to apply the principles of landscape ecology?**

Alternativer	Prosent	Verdi
1 Yes	43,9 %	43
2 No	33,7 %	33
-1 Don't know	22,4 %	22
Total		98

POLICY, CHANGES, EFFECTS

**36. Have you heard about the European Landscape Convention?**

Alternativer	Prosent	Verdi
1 Yes	73,7 %	73
2 No	26,3 %	26
Total		99

**37. Have there been other factors increasing the application of landscape ecology in landscape planning?**

Multiple answers are permitted.

Alternativer	Prosent	Verdi
1 Climate change	18,1 %	17
2 Legislation, National/ Regional policies which are not referred to the European Landscape Convention	29,8 %	28
3 Public awareness/ attitude	54,3 %	51
4 Other	5,3 %	5
Total		94

conocimiento

Lokale prosjekter

Demografische und wirtschaftliche Entwicklung; die Landschaftsplanung "rennt hinterher"

sikkert

Manglende kapasitet og kunnskap

**38. Do you think these factors, including the European Landscape Convention influenced the work of landscape planners? How?**

Alternativer	Prosent	Verdi
1 Yes, plans have been stopped because of too little focus on landscape ecology.	8,4 %	8
2 Yes, it directed more attention towards landscape ecology for future plans.	30,5 %	29
3 No, it did not change anything.	28,4 %	27
4 Don't know.	32,6 %	31
Total		95

PERSONAL INFORMATION

**39. Which age group do you belong to?**

Alternativer	Prosent	Verdi
1 Under 30	4,1 %	4
2 30-39	28,6 %	28
3 40-49	21,4 %	21
4 Over 50	45,9 %	45
Total		98



**40. What kind of educational background do you have in landscape ecology?**

Alternativer	Prosent	Verdi
1 Academic degree	72,4 %	71
2 Academic courses	4,1 %	4
3 Professional education	2,0 %	2
4 On-the-job training	4,1 %	4
5 Self-study/ personal interest	2,0 %	2
6 None	15,3 %	15
Total		98