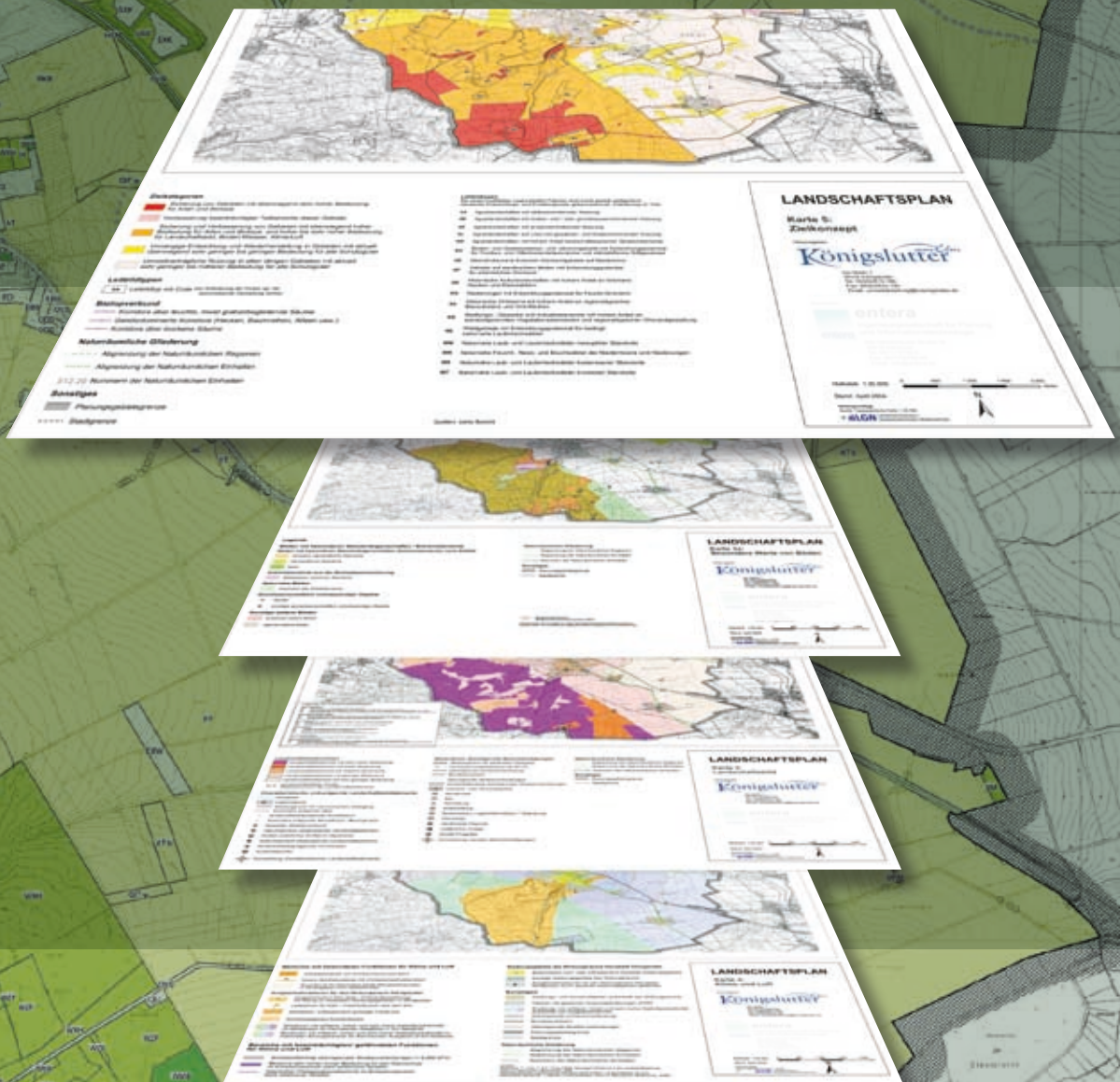


Landscape planning

The basis of sustainable landscape development



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Foreword

Social challenges, eGovernment programmes, continued development of European and German nature conservation, environmental and sectoral (planning) law as well as technological progress open up new opportunities for landscape planning and at the same time require efficient completion of tasks.

With the adoption of the „National Biological Diversity Strategy“ by the Federal Cabinet in November 2007, the Convention on Biodiversity, which was passed at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, was placed on a reliable political basis in Germany. Various levels are mentioned – species, habitats and landscapes - and different social players. In this context, greater demands will be made of landscape planning in future to develop and consolidate appropriate contributions for implementation of the biodiversity strategy at local, regional and national level.

Another increasing challenge in the coming years is related to the strategies necessary to adapt to climate change. According to current forecasts, in future climate change will become a main risk factor for biological diversity in Germany too. This situation therefore demands, on the one hand, the development of a protection and management approach to nature conservation which anticipates and takes into account momentum and changes in nature and the landscape, which is ultimately to be provided by the existing planning instruments. On the other hand the aim is to make clear the contributions which nature conservation can actively make to reduce the consequences of climate change (for example through the services of certain ecosystems).

The requirements related to the European Water Framework Directive, for flood protection, for the Natura 2000 network and for environmental assessment of projects, plans and programmes, as well as the rapid structural change taking place in rural spaces and the dynamic development of many urban areas; all these require an information system which integrates all natural resources such as the one provided by landscape planning with its different levels.

This brochure therefore focuses strongly on these relevant socio-political questions about the future, the development of landscape planning into a comprehensive information system and the necessity and possibilities of involving the public in planning. Landscape planning therefore proves to be a flexible, problem-related and, where necessary or useful, modular planning instrument oriented to the need for action to solve the tasks outlined above.

I very much hope that this brochure is a useful tool for you as planners in nature conservation authorities, in sectoral planning authorities and in other authorities, in landscape planning & design consultancies, as well as for those of you studying in technical colleges and universities, and that it helps to show landscape planning's contributions to sustainable landscape development and to direct them with an eye to the future.

Prof. Dr. Beate Jessel

President of the Bundesamt für Naturschutz ¹⁾

¹⁾ Bundesamt für Naturschutz = German Federal Agency for Nature Conservation

Summary

The task of nature conservation and landscape management has broadened and has become more differentiated as social changes occur and as European influence on environmental protection policies increases. Landscape planning is needed, now more than ever before, as a comprehensive information base and to coordinate the different instruments in addition to being a precondition for efficient use of funds. In many federal states, especially in southern Germany, landscape planning is therefore experiencing a renaissance and renewal with the objective of adapting it to the new challenges.

As a supplement to the brochure directed at the public²⁾ and politics „Landscape Planning for Sustainable Local Community Development“ published by the „Bundesamt für Naturschutz“, this document is on the one hand directed at nature conservation authorities and planning & design consultancies. It exemplarily describes how landscape planning can be used to coordinate and implement individual nature conservation tasks. At the same time the brochure can be used as a guideline for dealing with landscape planning issues for the purposes of harmonisation at federal level. On the other hand it is also directed at regional planning and urban development planning authorities as well as sectoral administrations and sectoral planning authorities. They are given indications of the content they can expect and how they can use it for their tasks.

One aim of the brochure is to clearly show the substantial benefits to local communities and regions associated with the preparation of landscape plans and landscape structure plans. In particular, the following advantages are worth naming here:

- The descriptions as well as the landscape planning development concepts provide a consistent information and evaluation basis for project-related planning and assessments and help to efficiently organise these with respect to their surveys of existing situations and the evaluation steps.
- Landscape planning provides a coordinated information basis for all natural resources, which enables us to rapidly obtain an overview of the nature and landscape situation within the planning area; fragmented changes to individual parts of nature and the landscape can be assessed with respect to their effect on the whole existing condition; planning and nature conservation experts in the administration can use this as the basis for quick and uncomplicated comments.
- Measures which benefit different natural resources such as the soil, water, climate, plants and animals or natural scenery and recreation, can be coordinated and matched with each other and therefore be used with multifunctional effects.
- Intrusions can be conceived in an ecologically sound way from the very first planning stage, as a result of which the administration can save staff resources and the project sponsor can save costs.
- The compensation concepts contained in landscape plans ensure quick mitigation and environmental compensation measures which are coordinated with each other.
- Regional and urban development planning receive plans translated into „their language“, which can be easily incorporated.
- Habitats Directive assessments, strategic environmental assessments, environmental impact assessments and the impact mitigation regulation can be precisely tailored from the outset; they can be kept streamlined and quickly implemented, all on the basis of landscape planning.
- Planning according to the Water Framework Directive, agricultural structural planning, village renewal and other sectoral planning, obtain an information and objectives basis which reduces the survey and data acquisition work required and simultaneously enables classification of the sectoral planning objectives in a coordinated, overall concept for all the different natural resources.
- Often deplored shortcomings in the efficiency and objectives-orientation of funding from the EU's agricultural and structural funds are removed if the grants are oriented to landscape planning: The funding can concentrate on land which has been identified as needing action or for which it has been determined that specific measures would be highly effective.
- Land users such as agriculture, forestry and water management can use the landscape planning statements to integrate nature conservation aspects in their operational management, for product certifications as well as for public relations (PR) on nature conservation services & performance and in the landscape management of the farm or firm.
- Members of the public and organisations receive an information basis on the condition of the nature and landscape in the community („environmental check“); they are enabled to participate and can make their own contributions to the development of nature and the landscape as well as to securing biodiversity.
- Regions and local communities ensure that recreational facilities are available in the nature and landscape and show these in the landscape planning; members of the public can use the landscape plan to obtain information on recreational facilities, landscape history, etc.

²⁾ The third person form „they“ is generally used in the text. It simultaneously indicates both „he“ and „she“.

- The soft location factors of nature and landscape can be presented as a decisive contribution to the quality of life in the region or local community.

These advantages can only be utilised if landscape planning is drawn up at different planning levels and on different scales just like the overall spatial planning and urban development planning or other sectoral planning affecting space. Here it is especially important that the content priorities and tiering are set according to the special control tasks and possibilities of the individual levels, but at the same time enable compelling interconnection of the statements across the levels. Here the regional planning level (landscape programmes and landscape structure plans) is to be understood as being the strategic planning level with higher level, regionally significant setting of priorities (e.g. for the habitat network, for focal spaces, for implementation of the Water Framework Directive, etc.), while the local level is to be interpreted, above all, as being the implementation-oriented and cooperative planning.

A further aim of the brochure is to show ways in which landscape planning can be used to overcome new challenges which result from the change in requirements and legal basis.

- In future the information presented in landscape planning should also be interpreted in relation to new fields of application and worded according to its target group to enable the landscape planning
 - to offer directly transferable contributions to environmental assessments and plans, which will become necessary according to the EU Directives (Habitats Directive, SEA, Water Framework and Flood Directives); to this end it must be possible to easily translate landscaping planning into the concepts of the European instruments,
 - to show the requirements of good agricultural, forestry and fishery practice with their specific land and spatial consequences,
 - to identify areas which support precisely targeted financial support from the agricultural and structural funds of the EU or from other development fund sources,
 - to make statements on climate protection (greenhouse gas relevance of changes in land use, to show measures for adapting nature conservation to the altered living conditions for animals and plants) as well as nature conservation contributions for adapting to climate change (CO₂ sink function of certain ecosystems).
- Modular extensions, with customised content and timing, should be provided for tailoring the landscape planning to satisfy the precise needs of the constellation of circumstances and problems of the respective space.

- In particular, the landscape structure plans should, on the one hand include data from the surveys of the condition of surface water systems performed for implementation of the Water Framework Directive and on the other hand they should make statements based on the whole spatial area, which can be used for the management plans, water resource plans and programmes of measures.
- Landscape planning can be made more processual, flexible and can better reflect the general public's interests by using new technologies.
 - Publication on the internet makes it easier to fulfil the obligations resulting from the Aarhus Convention, implemented in federal law, and enables many other functions and offers.
 - Combination with consultation software enables active contribution of the public and organisations via the internet.
 - Children and young people's interest in the indigenous nature can be indirectly awakened by using electronic media.
- The landscape plans must satisfy the data transfer requirements (digital formats) set by other sectoral administrations.
- Due to its cross-sectional orientation and overall spatial planning approach, landscape planning is also very important for implementation of the national biodiversity strategy with its equally cross-sectoral set up. To this end, appropriate operationalisation approaches (biodiversity function) should be developed, which utilise the strength of the landscape planning and, in addition to maintaining the diversity of species and habitats, also enable implementation-oriented protection and sustainable use of biodiversity at the level of landscapes.

The brochure therefore serves as an argumentation and information basis for the decision to draw up or update landscape planning, for development of the performance profile and for efficient realisation and the content concept.

The effects of landscape planning are frequently not reflected in spectacular major projects. Instead they manifest themselves in efficient procedures, early, low-conflict and cost-saving consideration of environmental issues in the event of changes to nature and the landscape as well as in many small steps and changes in awareness of members of the public, local authorities, land users and organisations. All the more reason for drawing landscape planning back into the awareness of decision makers as the indispensable basis of sustainable development.

1. Landscape planning – a proven instrument with new tasks

Landscape planning tradition

Landscape planning has a long tradition in Germany and is well-established as a central planning instrument of prevention-oriented nature conservation. Since the Federal Nature Conservation Act was passed in 1976, landscape programmes have been drawn up for the federal states, where provided for, and regional landscape structure plans have been prepared for virtually all parts of the country. Local landscape plans currently exist for almost half the area of Germany, local landscape plans for approximately one fifth the area of Germany are currently being prepared. In this way an information base and objectives system was set up, beyond the planning levels, over virtually the whole area of the country and represents an important basis for the success of nature conservation work in past decades. Landscape plans are one of the standard tools of nature conservation, spatial planning and sectoral authorities as well as local communities, all of which can make fast and reliably relevant decisions on the basis of the differentiated comments on the condition and development of nature and the landscape.

Landscape planning in change: Control, coordination

Landscape planning is undergoing change due to new requirements. Its previous main task of controlling spatial uses and the development of nature and the landscape has extended. Implementation of the European requirements for the Natura 2000 network, for the Water Framework Directive (WFD), the Floods Directive as well as the Strategic Environmental Assessment (SEA) can be made considerably easier and can be coordinated with the help of landscape planning. It is ideally suited, for example, as the basis of the Strategic Environmental Assessment or as an extensive information base for river basin planning covering all natural resources.

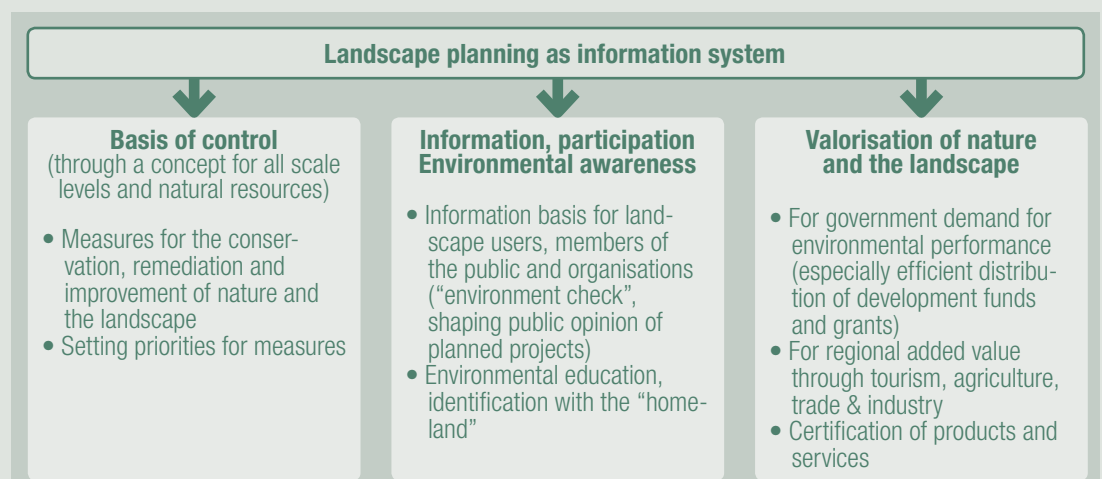
Landscape planning in change: Environmental information and participation

In addition, landscape planning increasingly supports the tasks of providing members of the public with environmental information and their participation in sustainable local community and landscape planning (cf. Fig. 1). Landscape planning is currently developing away from rigid planning to a generally accessible and easy to update information base and a basis for action. By using new data processing and transfer technologies, landscape planning can be developed into an information and communication platform, which also communicates data and knowledge about nature and the landscape to the public and makes simple consultation and participation possibilities available via the internet. This development is borne by a new understanding of government action which is characterised by more proximity to citizens and transparency in politics and the administration. Landscape planning therefore supports implementation of Agenda 21 as well as the objectives of the Aarhus Convention and the associated EU Directives and federal laws for the introduction of more democracy in environmental issues. It promotes the enlightenment of members of the public and businesses as well as their commitment to their environment and homeland. Because landscape planning creates fundamentals, competence and incentives for own initiatives, resourcefulness and commitment to the integration of environmental aspects in landscape usage.

Landscape planning in change: Economic significance

Landscape also obtains impetus for further development because the economic importance of nature and landscape is increasingly recognised as being a „soft“ economic factor. It is now also obvious that the scarce public funds available for nature and landscape should be spent more effectively and therefore more efficiently.

Fig. 1:
Tasks involved in sustainable development



Landscape planning shows spatially, in concrete terms, where there is an increased need for action under nature conservation aspects and therefore where European agricultural and structure funds can be efficiently deployed. It is probable that in future landscape planning will become increasingly important as the basis for environmentally friendly land, farm and operational management, for which funds are already available in many federal states.

Rapidly growing biomass cultivation and the construction of plants for the utilisation of renewable energies as well as reduction and adaptation measures for the effects of climate change are current developments whose sustainable organisation is hard to imagine at present without landscape planning contributions. Landscape planning can also make contributions to reduce the still very high use of land and landscape fragmentation and to control unavoidable usages in an environmentally compatible way. In addition, particular need for action continues to exist in Germany for conservation of biodiversity at the level of species, habitats and landscapes. Above all, the development of a biotope network must be highlighted here, which is assigned to landscape planning at the different planning levels according to the Federal Nature Conservation Act (2002).

All the named tasks require a common, coordinated approach in various political areas and activities – frequently across national borders too. New political approaches, which are quality objective oriented, – such as, for example, those pursued in the water industry with the WFD – generate a need for clear, integrated environmental information systems and for environmental monitoring, both at regional and at local level. The ecosystem approach of the biodiversity convention and the national biodiversity strategy [1] as well as the increasingly integrative orientation of European and national environmental law require an approach long since practiced in landscape planning. Nature and the environment are not only segmented into individual types of environment, but are treated as a „unit“, different environmental issues are linked to form multifunctional strategies and measures and general concepts are developed. Landscape planning is the only environmental planning which realises this principle of cross-environmental, extensive and multifunctional consideration, which has increasingly come to the fore in the recent past, also through the EU, with fully developed methods system.

To efficiently fulfil the new tasks, the landscape planning functions should be optimally coordinated with other relevant planning and assessment instruments. Due to the pending and anticipated changes, continuation and updating of landscape planning will be particularly important. Flexible, modular and conclusive digital processing, which is aimed at problem-related planning statements oriented to the need for action, is indispensable for this.

Germany is a pioneer in Europe when it comes to landscape planning. The wealth of experience available here currently enjoys lively interest in many European countries. This results from the insight that a uniform information base is required for handling the various instruments prescribed by the EU; in many countries the need for extensive, national landscape planning is also topical due to their entry to the Council of Europe's European Landscape Convention.

The tried and tested contents, procedures and functions of landscape planning have been described many times [2] and should therefore be listed as an overview only. The descriptions are focused on the new landscape planning requirements. Guidance notes are given such as

- how current tasks, e.g. biotope network planning, environmental information and public consultation and participation can be integrated,
- how to respond to challenges in regard to content, e.g. climate change or land use,
- how interaction with new planning instruments such as the EIA, the SEA, the programmes of measures and management plans according to WFD or environmental monitoring can be arranged and optimised.

Contributions to solving current problems

Need for general environmental information and environmental monitoring of all natural resources

Landscape planning in Europe

Contents of this brochure

2. Landscape planning tasks and target groups

Landscape planning task

Landscape planning is the central planning instrument for realising the objectives of the Federal Nature Conservation Act. The results of the landscape planning are the programme of work for the authorities responsible for nature conservation and landscape management. At the same time the contents of the landscape planning support other agencies and planning authorities to realise environmentally friendly and resource-sparing development.

Landscape planning subject

The complex interaction of all the factors affecting the balance of nature such as soil, water, air and climate, plants and animals, as well as diversity, characteristic features and beauty and the recreational value of nature and landscape as well as the effects of existing and foreseeable land usages, are analysed and assessed within the landscape planning. As a result, extensive **basic information about nature and the landscape** (their condition as well as their past and foreseeable development) is available for the whole area. On the basis of this, the legal objectives generally specified in the Nature Conservation Act are transferred to the respective planning area, are defined in greater detail for specific areas and implementation routes are proposed. The spatial objectives, measures and requirements developed in the landscape planning form a **comprehensive nature conservation concept**, which contains statements on the protection, maintenance and development of nature and the landscape (cf. Chap. 3.1). Landscape planning is the only sectoral spatial planning in which the environments are treated globally and from which measures are developed, which simultaneously benefit several different functions of the balance of nature (**multifunctional measures**). The objectives, requirements and measures are oriented so that they can be implemented in the field of tasks and activities of the various sectoral planning and land usages (**cross-sectional orientation**).

Landscape planning target group

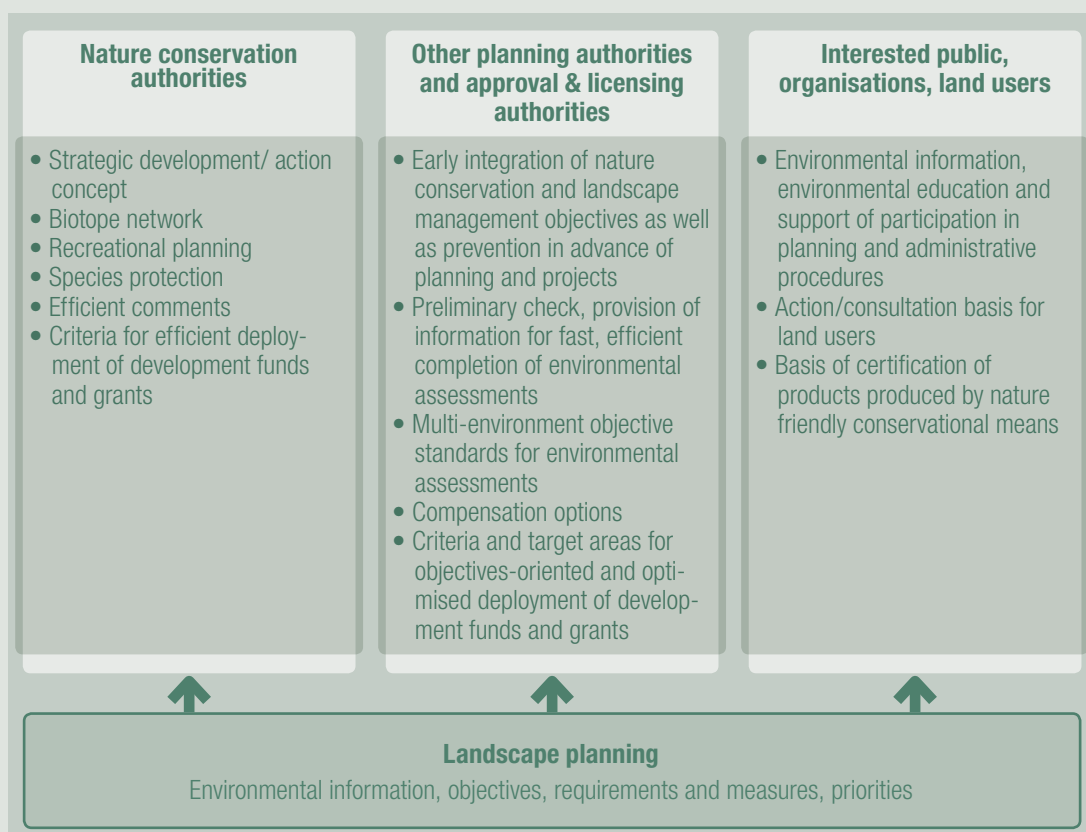
The landscape planning addresses different target groups: the nature conservation authorities, other planning authorities and approval & licensing authorities as well as the interested public (Fig. 2).

The target groups use the landscape planning for different tasks:

- With the results of the landscape planning, the information necessary to take into account nature and landscape issues is available to all planning authorities and approval & licensing authorities „at a glance“ (cf. Chap. 2.1).

Fig. 2:

Landscape planning output for different target groups



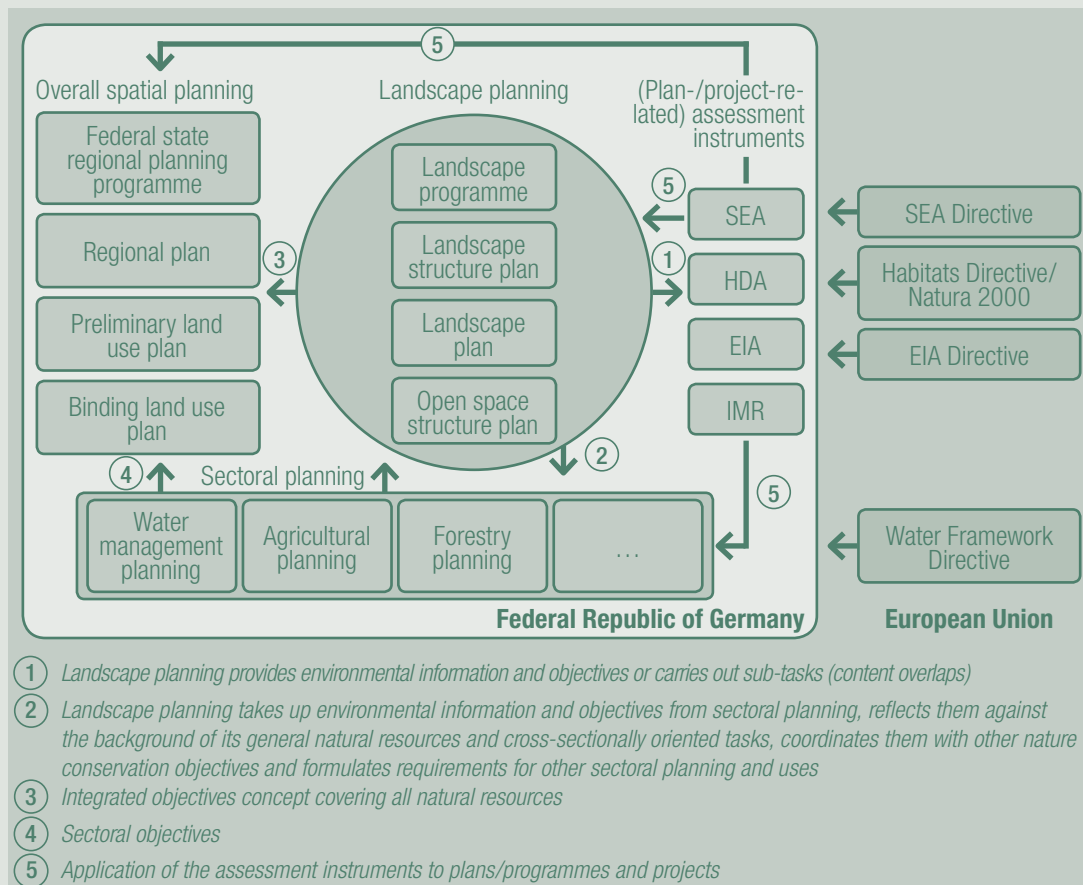
- For nature conservation authorities landscape planning is a central working basis as an environmental information system for the response to the public's wishes and sectoral planning as well as a development concept for their own measures (cf. Chap. 2.2).
- Criteria for the efficient deployment of funds under nature conservation aspects are made available for authorities of first instance (awarding funds) and applicants. Farmers can use the information for their operational management (cf. Chap. 2.3).
- The landscape planning is an environmental information and consultation & participation basis for the public (cf. Chap. 2.4). It can also be actively used as an instrument for increasing awareness and improving environmental education.

2.1 Environmental information for planning authorities and for authorities involved in approval & licensing procedures

The contents of the landscape planning can show all planning authorities and agencies how the nature conservation objectives and principles can be incorporated, supported and therefore realised within the scope of their areas of responsibility.

The landscape planning descriptions and definitions help to enable a preliminary assessment of conflicts with nature and landscape issues anticipated as a result of planning and projects. They are therefore the basis for optimisation of planning under prevention aspects. For example, clever location selection at a very early planning stage on the basis of the landscape planning can avoid conflicts and therefore loss of time and costs for compensation measures.

The landscape planning information can be used within the scope of screening, often without any further cost or effort, to determine which environmental legislation requirements must be taken into account and observed in planned planning and which environmental assessments and / or preliminary checks need to be performed (in particular SEA, EIA, HDA). In addition, the extensive database is indispensable for defining the investigation framework (scoping) and selection of any options to be examined. The landscape planning information, partly valid long-term, partly requiring regular updating, reduces the scope of surveys required for many planning and approval & licensing procedures.



Environmental information „at a glance“

Conflict assessment and minimisation

Basis of information for screening and scoping

Fig. 3:
Position of landscape planning in the planning system [3]

SEA
Strategic Environmental Assessment

HDA
Habitats Directive Assessment

EIA
Environmental Impact Assessment

IMR
Impact Mitigation Regulation

Scale for environmental assessments

When landscape planning is prepared, assessments are made and the environmental quality objectives and standards are defined. These are used as assessment criteria for the application of checking instruments such as the Strategic Environmental Assessment of plans (SEA) and programmes, the Environmental Impact Assessment (EIA) of projects or the Habitats Directive Assessment (HDA).

Orientation for compensation

In the event of intrusions in nature and the landscape, unavoidable impairments must be mitigated or compensated in some other way (impact mitigation regulation). The development objectives of the landscape planning should be incorporated. The landscape planning information regarding the functional capability and development possibilities of nature and the landscape as well as the urgency or priority of measurements and requirements (development requirements) in the respective planning area are a decisive basis for the placement and arrangement of mitigation and compensation measures.

In future, landscape planning will also have to be used to a greater extent to comply with species protection legislation requirements (Habitats Directive). In particular, within the scope of the objectives and measures concept of the landscape plans, it is possible to work towards stabilising and developing the populations of the strictly protected species. For example, a population-related approach can be enabled in the event of intrusion.

Contribution to spatial and urban development planning

For the regional and urban development planning authorities, landscape planning is the overall concept on which they orient themselves to align spatial development with ecological and landscape design criteria. Performance monitoring and reviews have shown that environmental aspects were far more effectively incorporated in the urban development planning if qualified landscape plans were available [4]. The local authorities are not only responsible for taking into account nature conservation issues within their area but also for active implementation of the local nature and landscape needs. Landscape planning is therefore particularly important for them.

Benefits of landscape planning for the spatial planning authorities

Landscape planning supports the Länder (federal states) and regional planning authorities in their task of coordinating building plans and other regionally significant plans, programmes and projects with and against each other with respect to a low-conflict usage pattern and environmentally compatible development. It provides – on the same planning scale as the regional planning (cf. Fig. 6) – the basis for taking into account all nature conservation and landscape management issues when weighing up the different usage claims. At the same time, the landscape planning plans provide decisive building blocks for performing a strategic environmental assessment of the regional planning plans and programmes (cf. Chap. 5.1). In future the landscape planning can be used to minimise the time and cost required for strategic environmental assessment of the overall spatial planning – including with respect to monitoring.

Benefits of landscape planning for the towns, cities and local authorities

The towns, cities and local authorities, as the urban development planning authorities, are required by the building code (“Baugesetzbuch” – BauGB) to take into account environmental and nature conservation issues, as well as landscape management, in urban planning development. The landscape plan is the information and decision-making basis for this. It is also used by the local authority for making comments on projects in outdoor areas under the building code or on planning by other sectoral planning authorities. On the basis of it, urban planning decisions can be made, e.g. on keeping open bioclimatically important fresh air corridors. In addition, a recreation as well as a compensation concept (e.g. in the form of a land and measures pool) are developed in the landscape plan. The local authority can also use it to set itself new tasks, for example to define compatible locations for biomass processing plants.

Towns, cities and local authorities profit from a good landscape plan especially when it comes to performing the environmental assessment for urban development plans. This consolidates the environment-related checking tasks of the urban development planning: Environmental impact assessment, impact mitigation regulation, Habitats Directive assessment, species protection legislation provisions as well as the requirements of the extended soil conservation clause. The surveys and assessments of landscape plans are to be used in the environmental assessment (Article 2 (4), Article 2a and Annex to BauGB) and reduce or make unnecessary other information to be determined by the local authority to take into account nature conservation issues in their weighing up. Local authorities which prepare a landscape plan in advance of or in parallel with the urban development procedures or update (the relevant building blocks); therefore cover virtually the whole environmental report of the environmental assessment. In this way they can „kill several birds with one stone“, because the landscape plan is also used by the local authority as a programme with priorities for its own conservation, remediation and development measures for nature and the landscape (e.g. measures to develop open spaces, designing recreation areas near to the town). The survey as well as the updating of the plan gives the local authority the opportunity to present the environmental status to the local community (community „environmental check“) as well as to present progress in the development of nature and landscape and as a result to improve the image and attractiveness of the community as a place to live.

While natural resources are presented in the landscape planning above all in their interaction for the capacities and functions of the balance of nature, other sectoral spatial planning (for example water management or forestry planning) specifically deal with individual natural resources or land uses. For the authorities responsible for this sectoral planning as well as the approving & licensing authorities, the landscape planning is a decisive information and action base for placing their objectives or decisions in a general landscape context for all natural resources.

Benefits of landscape planning for other sectoral planning

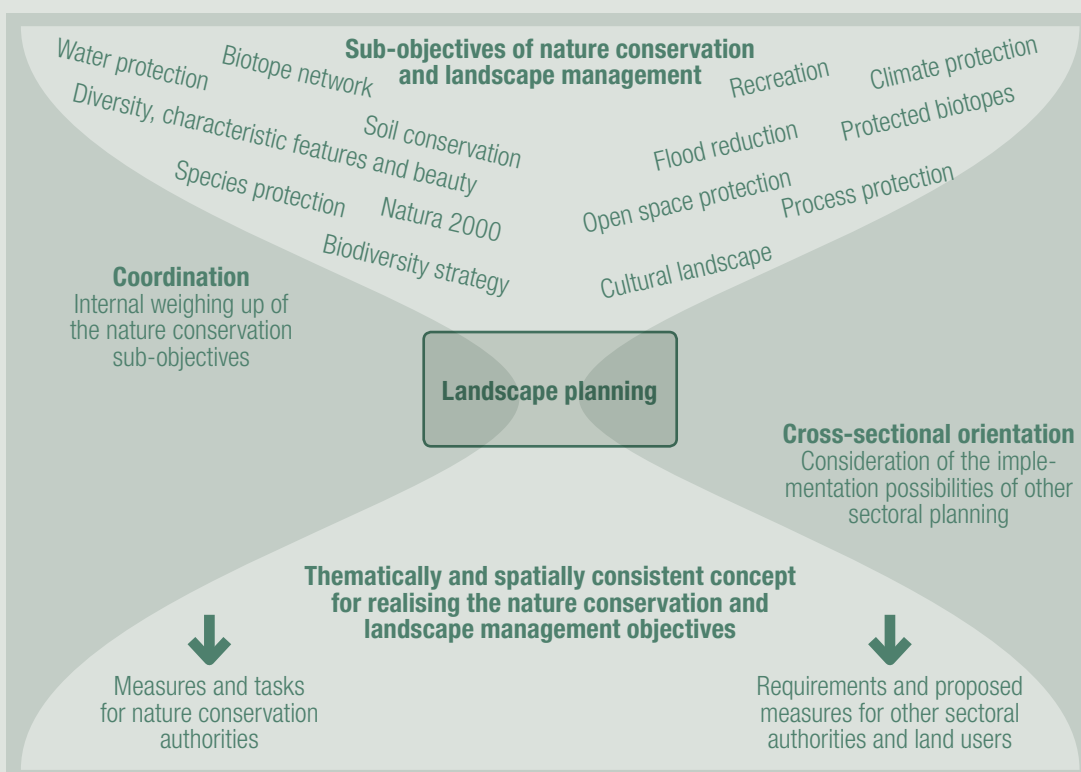
With the landscape planning the sectoral planning authorities have environmental information available to deal with their tasks such as SEA, EIA and impact mitigation regulation. By incorporating nature and landscape issues early, project sponsors and sectoral planning can save unnecessary planning costs and shorten planning times. The landscape planning can be used in environmental planning, e.g. flood plain management or the preparation of programmes of measures under the Water Framework Directive, to deal with the integration of multi-environment objectives required by the EU, e.g. for surface water structure or for conservation and development of groundwater-dependent habitats (cf. Chap. 4.3). Multifunctional measures are also required in flood protection, and can be taken from the landscape planning or can be directly developed from it.

Last but not least, landscape planning has proven its worth in groundwater protection as a basis for multifunctional development of water protection areas in which, apart from groundwater protection, soil conservation as well as species and biotope protection objectives are pursued. The consolidation of compensation measures and funds from the „water penny“ within the scope of a planning concept result in remarkable successes here.

2.2 Special functions for nature conservation authorities

The landscape planning information about nature and landscape, the natural scenery, impacts, pollution, environmental impacts, objectives and measures forms an indispensable basis for the efficient day-to-day working of the nature conservation authorities: They can quickly obtain an overview of the consequences of planning and projects and prepare comments or advice project funders. Landscape planning is also the most important basis of their own active nature conservation work, i.e. protection, management and development measures, e.g. to develop a biotope network.

As general, coordinating planning, within the scope of landscape planning, existing nature conservation concepts are merged and the nature conservation sub-objectives are coordinated with each other and possible alternative objectives and measures are named. The landscape planning plans are therefore also the suitable instrument for cross-sectionally oriented coordination of nature conservation and landscape management issues with other interests and claims (Fig. 4).



Contribution to other sectoral planning

Information system

Coordination of individual nature conservation planning

Fig. 4: Coordination and cross-sectional orientation in landscape planning

Within the scope of the preparation and updating of landscape planning, nature conservation authorities can evaluate and reconsider their nature conservation work. Technical or functional proposals for setting priorities and implementation enable strategic orientation of the nature conservation action concepts.

Benefits of landscape planning for nature conservation authorities

Regional landscape planning is the programmatic foundation for actions and decisions by nature conservation authorities. It is the technical basis for bringing about and justifying decisions. In addition, it specifies objectives for the actions of the subordinate (local) nature conservation authorities. For example, landscape planning is a quickly usable information basis for putting areas under protection, for comments by the authorities, for the decision regarding afforestation approvals or for the creation of compensation land pools. The drawing up of a comprehensive nature conservation concept is also used by an authority or body to optimally coordinate their own sub-tasks (such as species and biotope protection, soil conservation, provision of recreation facilities) with each other. Coordination of biotope networks, safeguarding and developing the coherent Natura 2000 network as well as protection and reintroduction concepts for animal and plant species (protection of European species, recolonisation by wolves, lynxes, etc.) and linking them with objectives for other natural resources is of decisive importance, especially for implementation of Germany's national biodiversity strategy. Such integrative planning can make the nature conservation authorities' issues and decisions easier to understand and can improve presentation to the public and external bodies as well as the ability to assert the interests and issues.

„Up to date“ landscape planning can also be used as the basis for checking several conditions for good technical agriculture and forestry practice and the „cross compliance“ [5] provision of the EU. These are partly checked by the nature conservation authorities. Area-specific pointers for compliance with good technical practice can also be used by nature conservation authorities as the basis for informing and gradually leading farmers to sustainable management methods.

Last but not least the authority needs a concept with agreed, coordinated priorities to enable them to spend nature conservation funds effectively and efficiently instead of randomly (cf. Chap. 2.3). Against this background, costs incurred for drawing up or updating landscape planning are a well made investment in efficient administrative action.

2.3 Provision of criteria for the efficient deployment of funds for nature and the landscape

Limited public funds for nature conservation and environmental protection should be spent with the best costs-benefit ratio. Landscape planning information allows statements to be made on where the need for nature conservation measures is particularly urgent or where particularly large benefits can be achieved. Planning authorities and political decision-making bodies can make qualified decisions regarding the necessary deployment of resources and control of the available funds on the basis of the remediation, protection, management or development measures. In particular, areas can be identified where the utilisation of funds is especially effective, for example for measures to compensate for intrusions.

Against the background of the EU's strategy of integrating environmental issues in other political areas, the implementation of environmental objectives in rural areas is not funded separately but instead is integrated in the existing development instruments from the agricultural and structural funds. In this context too, in view of scarce funds for the development of rural areas, it is necessary not to distribute development funds for agricultural environment measures with a watering can but to steer it into areas where there is an increased need for action from a nature conservation point of view. Showing areas with development potential and action priorities at an appropriate scale, landscape planning represents the decisive information basis. It is therefore the only extensive information basis on which efforts to achieve objective and success-oriented award of development funds and grants can be based. Displaying maps of eligible areas in landscape (framework) plans can help – interlinked with the existing development fund instrument – in particular to control energy crops in an environmentally compatible way [6].

Land users and land owners can use this information to organise their operational management in an environmentally friendly way and to direct their nature conservation and landscape management contributions so that their environmental performances can be acknowledged and rewarded. This use of landscape planning will become far more important in future especially as part of the introduction of environmental consultancy, certification and management systems in agriculture [7]. Similar trends towards external audits also exist in forestry.

Benefits of landscape planning for farmers

The challenge currently faced by farmers is that they do not only have to document good technical and functional practice but also fulfilment of the „cross compliance“ requirements. In addition, many processors and markets require compliance with special environmental conditions or certification of the farms or businesses under different seals. Agriculture in general and in particular direct marketing farmers or farms with „farm holidays“ offers are also very interested in improving their public image and in documenting which environmental services they provide. Farms which have developed landscape management into a relevant branch of their business or plan to do so also require basic information for nature conservation management of their land.

The environmental advice for farmers promoted by the EU and the procurement of advisory systems helps to deal with the new requirements in agriculture. However, this requires a nature and landscape survey on the farmland and a management in connection with the surrounding landscape. Landscape planning makes this service available. In interaction with the farm's own production-relevant data, specific starting points can be named for reducing environmental impacts. Surveying costs for managers or consultants are therefore minimised – especially as surveys at farm level are less efficiently performed than for large landscapes. An example of how farmers can independently improve environmental management on their land on the basis of the landscape planning contents is the erosion management tool „elbes“ (cf. www.koenigslutter.de/landschaftsplan.php).

2.4 Informing and involving the public

Landscape planning can be the centre-piece of an environmental information system or in particular can take its place at a local level. By using new technologies and the internet, landscape planning can be a platform for communication, participation and consultation and environmental education, independent of place and time.

Active informing and participation of the public make decision making processes clearer, more understandable and more transparent and promote the willingness of the public to support the adopted decisions and to participate in their implementation (cf. Chap. 6.3). The proposed measures shown in the landscape plan can also stimulate the public to implement nature conservation and environmental protection in their own garden or to take on voluntary work.

This is in line with the intentions of the Aarhus Convention. Through the EU Directives to implement this convention and their implementation in national law [8] all authorities and planning authorities are required to make existing environmental information easily accessible to the public and to involve the public in plans and programmes relating to the environment.

Landscape planning as a platform for ...

Environmental information, environmental education and participation

Implementation of the Aarhus Convention



Fig. 5: Functions of landscape plans in the media (using a screenshot of the www.koenigslutter.de/landschaftsplan.php) [9]

3. Landscape planning levels and modules

3.1 Planning levels

Tiering

In the interests of efficient planning with division of the work involved among the appropriate parties, the different contents of landscape planning should each be primarily shown on those planning levels on which they can most effectively be implemented (level-specific tiering). The planning task of landscape planning is therefore first of all comprehensively performed with interaction of all plans at the different scale levels.

Landscape planning levels

Regional nature conservation and landscape management requirements and measures are described state-wide in landscape programmes or are described in more concrete terms for individual regions in landscape structure plans. The local requirements and measures are shown in landscape plans ²⁾. Each respective higher level planning forms the functional orientation framework for the subordinate planning level.

To enable close interlinking with the spatial and urban development planning – especially with respect to landscape planning contributions to environmental assessments of these plans and programmes – it is advisable to draw up landscape planning at all levels of the overall spatial planning represented in the respective federal state (cf. Fig. 6).

Fig. 6:

Plan products of landscape planning at the levels of overall spatial planning and sectoral planning

Planning area	Landscape planning	Overall spatial planning	Sectoral planning ⁴⁾	Planning scale of landscape planning
Land (federal state)	Landscape programme ¹⁾	Federal state ¹⁾ regional planning programme	Sectoral programme or sectoral plan at federal state level	1 : 500,000 to 1 : 200,000
Region/ administrative district, district	Landscape structure plan ¹⁾	Regional plan	Sectoral framework plan	1 : 100,000 to 1 : 25,000
Municipality	Landscape plan ²⁾	Preliminary land use plan	Project plan at approval or planning determination level and/or construction plan	1 : 10,000 to 1 : 5,000
Part of the municipal area	Open space structure plan ³⁾	Binding land use plan		1 : 2,500 to 1 : 1,000

¹⁾ These plans have different names in individual federal states.
²⁾ Except the city states Berlin, Bremen and Hamburg as well as North Rhine-Westphalia and Thuringia.
³⁾ These plans are not provided for in all federal states; in some they have different names.
⁴⁾ Including EIA and landscape envelope planning.

Landscape programme (LaPro)

The **landscape programme** is prepared as a functional nature conservation concept for the whole area of the respective federal state. It is used to draw up state-wide significant requirements and measures as well as to coordinate nature conservation tasks and at the same time to set priorities. In the city states the landscape programme often simultaneously performs the local landscape planning tasks.

The focal areas of the landscape programme include programmatic objectives and guidelines for the nature conservation policy of a federal state as well as specific spatial descriptions. It is the most important working basis for special implementation tasks of the highest nature con-

²⁾ The arrangements regarding responsibility for landscape structure planning differ, but frequently lie in the hands of the regional planning authorities; the towns, cities and local authorities are usually responsible for landscape planning.

ervation authority. These include, e.g. major conservation areas or other conservation areas of national significance, the state-wide biotope network or eligible areas for development programmes. The landscape programme also covers regionally significant nature conservation and landscape management issues for integration in the state planning (federal state regional planning programme).

Landscape structure plans define the regional nature conservation and landscape management objectives, requirements and measures for the respective region (e.g. administrative district, district) in more specific detail. An important task of the landscape structure plan is to prepare the work of the local („lower“) and partly that of the regional („higher“) nature conservation authorities. They show land areas and landscape components which fulfil the requirements for designation as conservation areas, protected landscape components or natural monuments or landmarks. Areas for the regional biotope network, priority areas for the conservation of fertile or rare soils, groundwater or areas with particular significance for flood retention are also shown.

The landscape structure plan is the basis for comments on planning and projects of all kinds of different sectoral planning and project sponsors. However, the descriptions at this scale level are not always sufficient so that in many cases – e.g. in the case of legally protected biotopes – the landscape plan of the local authority must also be consulted.

The decisive regional planning instrument for adoption of the contents of the landscape structure plan is the regional planning. To simplify integration of the described objectives, requirements and measures in the regional plan, the landscape structure plan is matched to the representational possibilities of the regional planning.

The local **landscape plan** is located at the level of the land use plan (preparatory urban development planning). The local communities use the landscape plans to draw up all information to fulfil their task of taking into account nature conservation and landscape management issues in the land use planning (cf. Article 1 (5) and (6), Article 1a and Article 2 BauGB). The expert report part of the landscape plan is to a large extent identical with the environmental report on the land use plan (cf. Chap. 5.1). On the basis of this expert opinion the local authority develops an implementation concept which makes statements on which objectives and measures of the landscape plan the local authority will take up and how it wants to implement them within the scope of the urban development planning or other tasks.

If a masterplan is drawn up, the contents of landscape planning can be extended and made more detailed for this scope to include the function of the more detailed environmental assessment as well as urban green space tasks. This can be done as a module within the scope of preparation of the landscape plan or as a partial update (cf. Chap. 3.2). Several federal states provide for the preparation of an **open space structure plan** with its own content specifications to provide detail in more concrete terms.

Landscape planning is therefore basically created for the whole space, i.e. for the populated and for the unpopulated areas. However, this does not mean that planning statements have to be made for all areas in the same detail; for example, in certain cases nature conservation areas can to a large extent be omitted at local level because here development statements are already available due to the protected area regulations and existing management and development plans. In other cases protected areas are integrated more intensively, e.g. if the local authority can promote their conservation by directing compensation measures into the surroundings of the protected areas and therefore contribute to the development of buffer zones or biotope network structures.

A large part of the information ascertained in landscape planning is valid long-term and can be used for many years as a quickly evaluated basis for comments by the authorities and organisations or for nature and landscape measures. In its more quickly changing parts this information system can be kept up to date through updates.

The landscape planning plans should be updated as needed, especially in view of the requirements resulting from new instruments such as environmental assessment of plans and programmes.

Landscape Structure Plan

Landscape Plan and Open Space Structure Plan

Comprehensive landscape planning

Updating

A differentiation must be made with respect to the updating between the fundamental characteristics part of landscape planning and the objectives and measures planning:

- The information on the existing situation and assessment of the landscape functions will be valid relatively long-term. Information on impacts, pollution, and positive landscape changes should be continuously updated.
- The objectives and measures planning is performed on a demand-oriented basis or at suitable intervals. The need to update the conceptual part can, among other things, be deduced from the changes entered in the environmental information system.

Nowadays the data is provided and processed in digital format. The technical possibilities associated with the use of computers, i.e. electronic data processing, make it considerably easier to supplement existing databases and to update planning statements.

3.2 Landscape planning modules

Landscape planning today should not be viewed as a static plan but as a dynamic, continuously or modularly changeable information and working basis. Landscape planning is expected to be need- and problem-oriented. Against the background of fast changes in use of nature and landscape, these requirements are becoming increasingly important.

Contemporary landscape planning does not merely amount to nothing more than preparing classical plans. To fulfil the diverse tasks (cf. Chap. 2) and required outcomes, it is necessary to consolidate and supplement contents or deal with current issues. A modular landscape planning structure makes it possible to respond to current requirements flexibly; both in the time required for the response and its content. Depending on the problems, individual sub-spatial or thematic components can be dealt with and coupled with existing contents. The result is a plan made up of different modules.

The fundamental nature and landscape information including impact analysis, as well as the objectives and measures concept are the core modules of landscape planning and their contents are closely linked. Apart from these, consolidated content can be added as needed to provide greater depth of information (cf. Fig. 6). These supplementary modules are aimed at the respective demanded functions of landscape planning. The assessment of the Habitats Directive impact of plans, the preparation of an open space concept or concepts with ecological guard rails with landscape aesthetic quality for the development of renewable energy production in the region or the community could be such supplementary modules. Furthermore, especially at local level, it can be helpful to name the action priorities defined after political consideration and participation in an implementation programme (cf. Chap. 4.3).

Extending landscape planning to include additional content and consolidation for the preparation of other instruments or for technical differentiation for individual fields of action is not absolutely necessary, but represents an offer for individual target groups (e.g. other planning authorities or project sponsors). Other planning and environmental assessments can also be directly based on the core modules of landscape planning. However, a greater amount of time and effort will probably be required for this other planning.

The use of geographic information systems (GIS) supports this approach. The integration of landscape planning content during the planning process is made easier:

- The plan produced is no longer a comprehensive data packet which remains unchanged until it is updated. The use of GIS enables the plans to be updated as needed with little effort. Independent of this, the nature conservation concept must be evaluated at suitable intervals and changed if necessary (cf. Chap. 3.1).
- The data on which landscape planning is based can be directly evaluated for pending planning tasks and if necessary linked with other information. This makes it easier to use landscape planning for other planning, because the planning authorities can specifically retrieve the contents of landscape planning according to their requirements.

*More flexibility
with regard
to content and time*

Modular processing

*Core and supplementary
modules*

*Service for other
planning authorities*

Use of new technologies

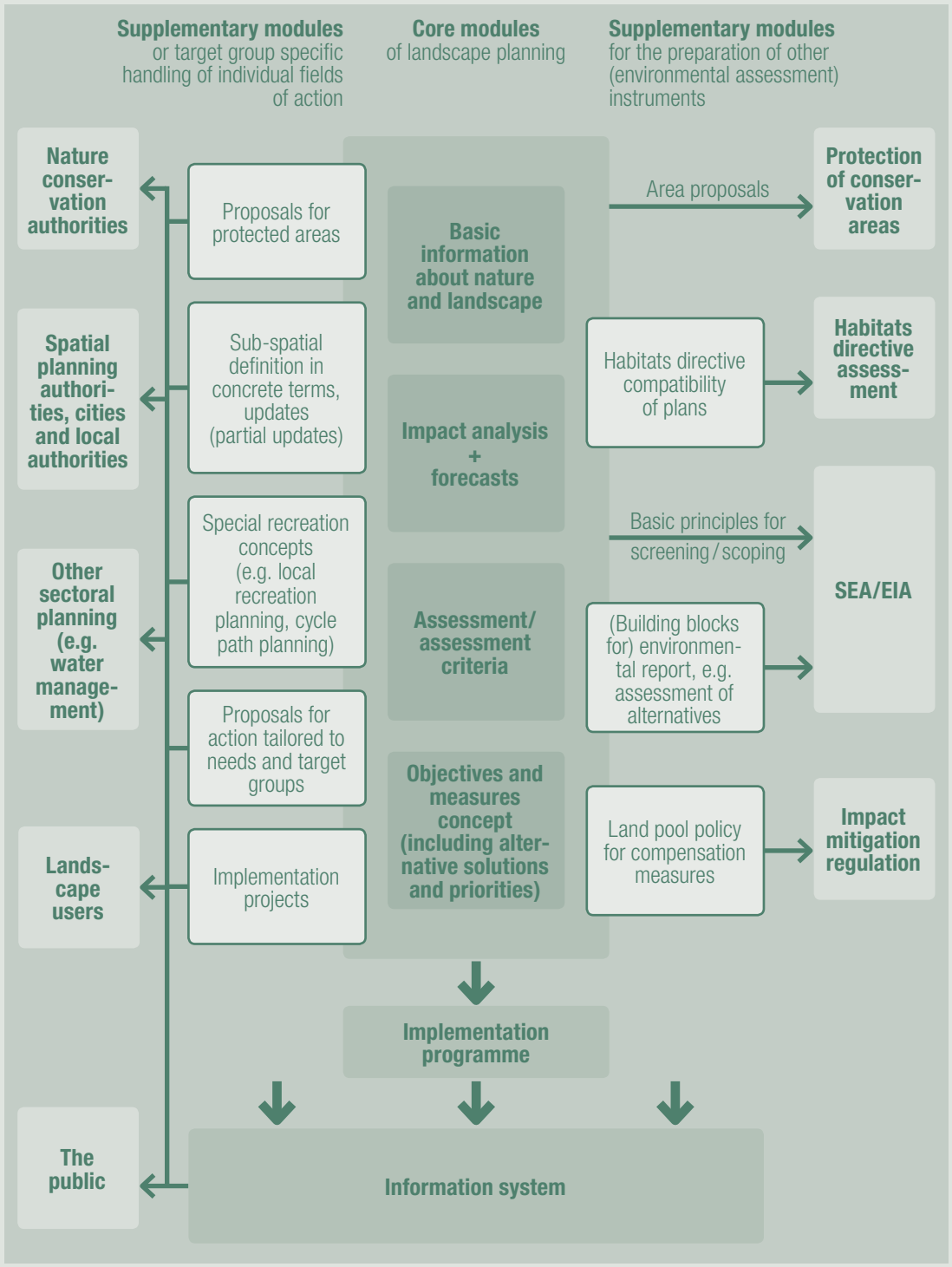


Fig. 7:
Core and supplementary modules of landscape planning

4. Landscape planning contents

4.1 Existing situation and assessment

*Inventory
of environmental data*

In landscape planning the existing condition of nature and the landscape is determined and assessed on the basis of legal and functional objectives and standards, which also include landscape planning objectives at a higher level. To this end the available data and information is collated and, where necessary, it is supplemented and updated by additional surveys. The fundamental information on the soils, geology, bodies of water, air and climate, fauna and flora is used to deduce statements regarding the performance and functions of the individual natural resources and/or the balance of nature and the landscape overall (landscape functions, cf. Fig. 9).

Fig. 8:
*Exemplary structure
of a landscape plan
(core modules)*

- 1. Introduction**
 - 1.1 Tasks and legal basis
 - 1.2 Spatial scope
 - 1.3 Action and implementation framework (binding nature of the statements, position of the landscape plan within the planning system, participation in the planning, implementation of the planning)
- 2. Current Uses and Expected Changes in Use**
 - 2.1 Human settlement (housing, industry, business)
 - 2.2 Traffic
 - 2.3 Agriculture
 - 2.4 Water management
 - 2.5 Leisure and recreation
 - 2.6 Fishing / hunting
 - 2.7 (...)
- 3. Existing and Expected Condition of Nature and the Landscape**
 - 3.1 Brief characterisation (including geographical classification of natural landscapes / landscape units)
 - 3.2 Fauna and flora (including biotope types)
 - 3.3 Soil types
 - 3.4 Surface waters and flood areas
 - 3.5 Groundwater
 - 3.6 Climate/air
 - 3.7 Diversity, characteristic features and beauty (natural scenery, nature and landscape experience)
- 4. Assessment of the Existing and Expected Condition of Nature and the Landscape**
 - 4.1 Biodiversity function (biotope function, biotope development potential, species and biocoenoses)
 - 4.2 Natural yield function
 - 4.3. Water resources function
 - 4.4 Water pollution protection function
 - 4.5 Retention function
 - 4.6 Climate functions (climate-ecological relevant areas, air quality, land use specific greenhouse gas emissions)
 - 4.7 Landscape experience function
 - 4.8 Multifunctional areas (areas with high significance for different landscape functions)
 - 4.9 Summary of the conflicts between landscape functions and existing and expected uses (including human settlement functions, use of renewable energy)
- 5. Objective and Development Concept**
 - 5.1 Overall objectives
 - 5.2 Thematic and spatial focuses (including ecological network system / biotope network, soil conservation, protection of groundwater and surface waters, recreation planning, solution of conflicts with other uses, objectives for sub-areas)
- 6. Protection, Management and Development Measures**
 - 6.1 Protection, management and development of certain parts of nature and the landscape
 - 6.2 Concept of measures for the municipal area of responsibility (including compensation concept)
 - 6.3 Action proposals for the area of responsibility of other authorities and public bodies
- 7. Notes on Implementation**
 - 7.1 Implementation concept (priorities, political strategy, implementation instruments, funding options)
 - 7.2 Information and participation of the public
 - 7.3 Development programmes
- 8. Strategic Environmental Assessment (supplementary details)**
- 9. Summary**
 - Sources
 - Appendix

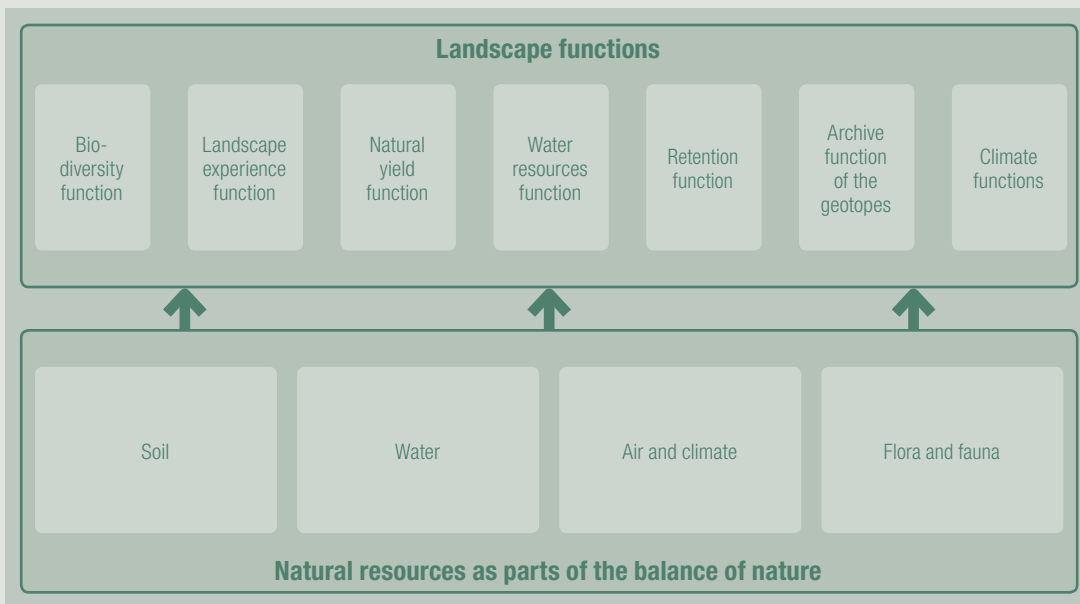


Fig. 9:
Natural resources
and landscape functions

The combination of different landscape factors and the interactions between the natural resources are also significant for performance and ability to function. Apart from the description and assessment of the landscape functions (current condition and development potential), statements for specific areas are made on the sensitivity of distinct (sub)landscapes to impacts as well as on the ability to restore their performance and functional capability.

Landscape planning can be better used as a versatilely usable information basis for overall spatial planning, impact mitigation regulation or environmental assessments if the information is presented according to the requirements of this planning and these instruments. As the legal basis of the various planning and instruments partly name natural resources as sensitive receptors, partly landscape functions, it should be possible to access landscape planning information structured both by natural resources and landscape functions. This can be achieved by appropriate linking of standard text units in digital landscape plans. It is also advisable not only to be able to select specific individual cartographic areas but also to easily find and collate text statements on special landscape units. This service will assist the administrations or project sponsors in consolidating the respective relevant area descriptions for comments or environmental assessments. The effort spent on these preparations pay off because the information is so conveniently accessible and is easier to integrate in other planning and instruments [10].

The registration of the uses and foreseeable changes in uses is aimed at describing the effects of use on nature and the landscape, to describe these for specific areas and to classify them (conflicts, impacts and risks due to structural, material, mechanical as well as acoustic and visual effects). For example, registration of existing and planned traffic routes and densities in connection with current functions and sensitivities (e.g. a biotope network) enables statements to be made on existing and expected fragmentation effects.

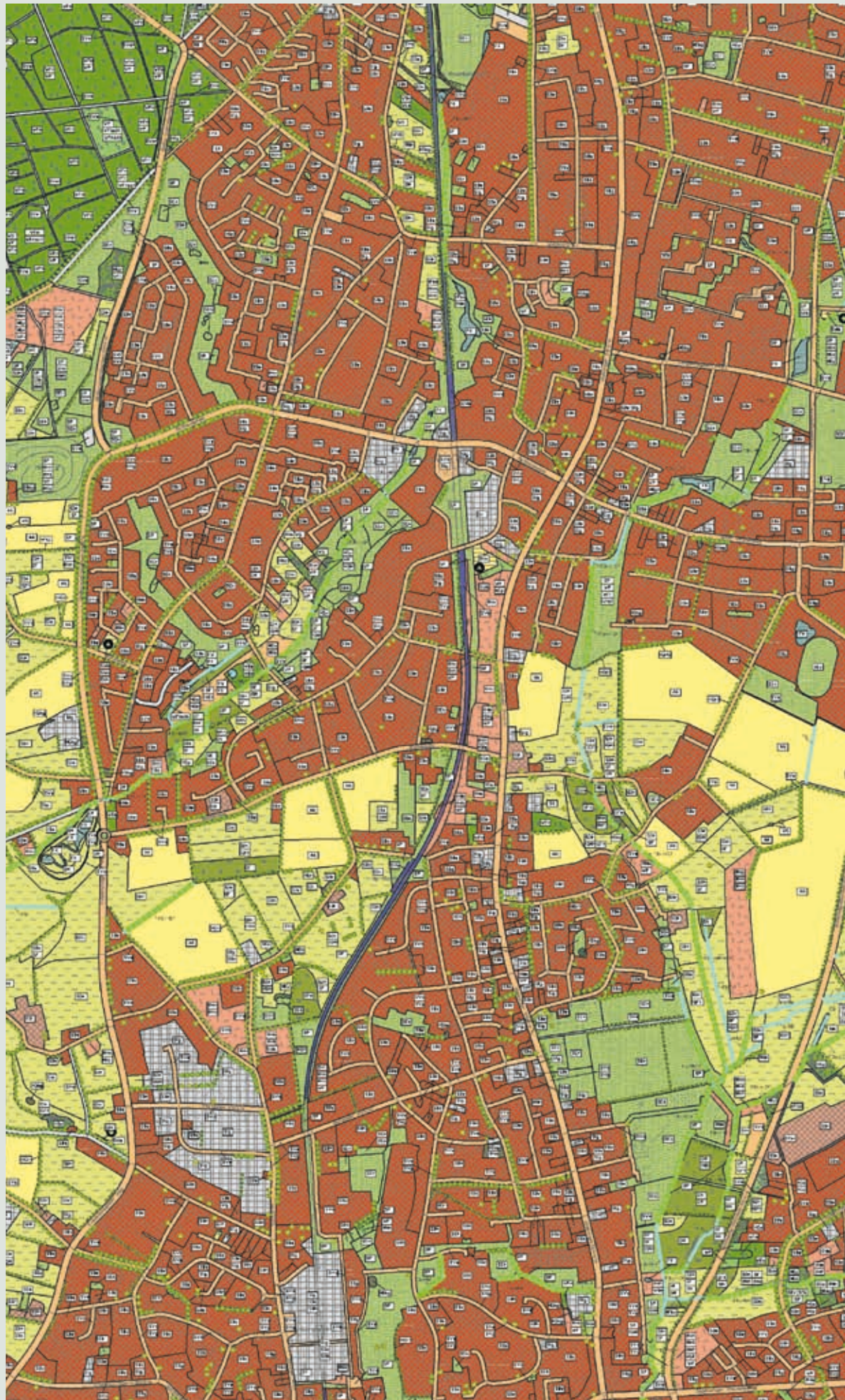
Through the comprehensive, extensive inventory and assessment of all natural resources, it is possible to estimate the interactions and cumulative effects and to forecast the expected environmental changes. The effects of specific changes in use on nature and the environment (e.g. human settlement development, changes in agricultural structure, production of renewable energy) can be shown in scenario form. Decision makers require such discussions of longer term developments in order to make strategic decisions for the communities and regions while taking into consideration risks.

The environmental and nature conservation authorities, other sectoral planning authorities and the environmental organisations as well as (for the landscape plan) the land users or interested public contribute useful, relevant information (cf. Chap. 6.3). In view of the abundance of existing and ascertainable information it is necessary to purposefully select the data to be surveyed as well as special regional or local issues and problems.

**Preparation
of the information**

Uses and their effects

**Target-oriented survey
and inventory**



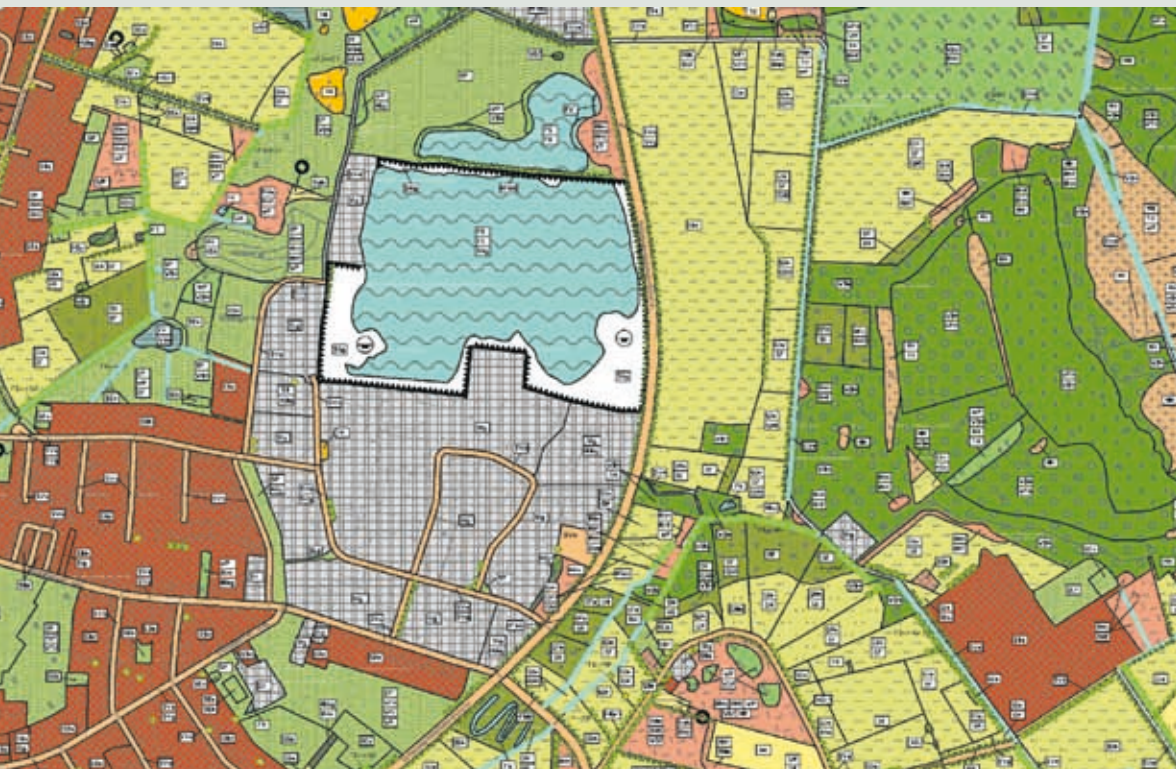


Fig. 10:
 Example of the survey contents
 of a biotope type map from
 a landscape plan
 (Extract from LP Norderstedt
 2020; 2005: Prepared by: TGP,
 Lübeck)

Extensive mapping of the
 biotope types is of fundamental
 importance for the survey and as-
 sessment of the biotope function.
 The evaluations to be made on
 the basis of this (such as rarity,
 endangerment of certain biotope
 types) can be underpinned
 through selective registration and
 assessment of valuable biotopes
 (especially with respect to the
 occurrence of rare or endangered
 species and biocoenoses, struc-
 tural diversity, degree of maturity)
 as well as the analysis of specific
 functional relationships (e.g. de-
 scription of biotope complexes).

Legend

Forests, shrubbery and small woody plants

- W1b Erlenbruch
- W1c Birkenbruchwald
- W1d Birkenmoorwald
- W1e Weidenlauchgebüsch
- W1g Gagelgebüsch
- WE Sumpfwälder (inkl. Eichenwald)
- WM Mesophiler Buchenwald
- WL Biedermaere Wälder
- Wlb Birken Eichenwald
- WG Gebüsch
- WGf Gebüsch feuchter und frischer Standorte
- WGi Gebüsch trockener Standorte
- W1a Sonstiger Nadelwald
- W1k Eichen-Hainbuchen-Wald
- W1p Sonstige Laubwälder feuchter bis nasser Standorte (Forsten)
- W1f Sonstige Laubwälder frischer bis trockener Standorte (Forsten)
- W1em (Alder)/Laub-Mischbestände (Forsten)
- W1n Nadelforsten
- sch Zusatz für Scherung
- W1y Sonstige Forstflächen
- WP Pflanzwald
- W1py sonstige Pflanzwald Ausgleichsmaßnahme
- W1o Waldlichtungsfur (Kahlhügel)
- W1l Waldrand
- W1h Waldecke
- W1w Redde
- W1f Feldhecke, ebenerdig
- h Zusatz für Hecke
- H1g Sonstiges naturnahes Feldgehölz
- H1e Standorttreues Feldgehölz (recht heimische Arten)
- bo Zusatz für Böschungsgebüsch
- H1b () Hecke/ragender Einzelbaum
- H1bg Hecke/ragende Baumgruppe
- H1a Acker
- H1g Baumnähe
- H1go Stoppelwiese
- H1gf Fließgewässer begleitender Gehölzsaum

Standing water

- FT Tümpel
- FK Kleingewässer
- FW Natürlicher oder naturgeprägter Bach/Graben/Fluss
- FS Seen (offene Wasserfläche)
- FK Künstlicher oder künstlich geprägter Stützgewässer
- FV Verlandungsgebiete

Raised and transition bogs

- MH Hoch- und Übergangsmoore (inkl. Degenerations-Gärten)
- NS Niedermoores, Sümpfe
- NSs Seggenried
- NSb Birsen- und Sinsenried
- NSH Staudensumpf
- NR Landröhrichte / Röhrichte
- NUs Uferstaudenflur

Fen, swamp and shore biotopes without woody plants

- TH Zweigstrauchrieden
- TR Mager- und Trockenrasen

Grassland

- GM Mesophiles Grünland
- GN Seggen- und bismarckische Nasswiese
- GI Artenarmes Intensivgrünland
- GI Sonstiges artenreiches feucht- und Nassgrünland
- m Zusatz für Mahd (Mähweide)
- w Zusatz für Beweidung

Arable land and garden biotopes

- AA Acker
- AAk Ackerbrache
- AG Gartenbauflächen
- AlB Baumschulen
- Alw Weidenbaumplantagen
- AO Obstplantage
- AOe Erlbeerhölz

Ruderal vegetation

- RH1 Halbruderaler Gras- und Staudenfluren fruchtler Standorte
- RHm Halbruderaler Gras- und Staudenfluren mittlerer Standorte
- RHl Halbruderaler Gras- und Staudenfluren trockener Standorte
- Rlp Pflanzvegetation/Pflanzsaum

Urban biotopes

- S1 Gemischte Bauflächen - Stadtgebiete
- S1c Moderne Innenstadt
- S1e Blockrand- und Zeilenbebauung
- S1f Großform- und Hochhausbebauung
- S1g Einzel- und Reihenhausbebauung
- S1h Gemischte Bauflächen Wohnbebauung + Gewerbe
- S1ip Bauwagenplatz
- S1d Gemischte Bauflächen - Dorfgemeinde
- S1v Verstärkte Dorfgemeinde
- S1l Landschaftliche Hof- und Gebäudeflächen
- S1r Reiterhof
- S1i Industrieflächen und versiegelte Ver- und Erholungsanlagen
- S1g Gewerbegebiete, Gewerbebetriebe
- S1k Kläranlagen
- S1db Bauschuttalagerungs-deponie
- S1ds Lagerstätte für Sand, Erde und Gartenabfälle
- S1f Öffentliche Grün- und Parkanlagen
- S1f Sport- und Erholungsanlagen
- S1ea Gering versiegelte Sport- und Erholungsanlagen
- S1er Starker versiegelte Sport- und Erholungsanlagen mit beachtlichem Rasenanteil
- S1es Stark versiegelte Sport- und Erholungsanlagen mit hohem und geringem Grünanteil
- S1es Schwimmbad mit Betonbecken, Gebäude, Rasenfläche u.a.
- S1eq Golfplatz
- S1ek Kinderspielfeld
- S1gf Friedhof
- S1gk Kleingartenanlage
- S1ga Gärten
- S1v Verkehrsanlagen/Verkehrsflächen
- S1vb Bahn- und Gleisanlagen
- S1vs Versiegelte Straßenverkehrsflächen
- S1vuv Unversiegelte Wege
- w Zusatz für Wanderweg
- r Zusatz für Reibweg
- W1g Verkehrsbegleitgrün
- S1v1 Flugplatz
- S1v2 Lärmschutzwall/-wand (auch begrünt)
- SA Abgrabungs- und Aufschüttungsflächen
- S1g Abgrabungsflächen, Kies- und Sandgruben
- S1s Aufschüttungsflächen
- Biotoptypen aus unterschiedlichen Biotoptypen
- bedeutet * mit Tendenz zu Stadtgebiete

A mosaic of different small extensively used grassland locations and tall forb communities interspersed with individual trees and pasture-swamp shrubland provides a refuge area for a large number of plant and animal species, is an essential part of the biotope network and enhances the natural scenery.

Apart from groups of trees, rows of trees and individual trees, way-side strips, hedges and field trees and scrubs are central elements of a differentiated cultural landscape.

Mesophile limestone forests have a special value for nature conservation as this biotope type is populated by a large number of endangered species, e.g. the Turk's cap lily (*Lilium martagon*).





Semi-natural low-land streams, warm in summer, are characterised by a reduced flow velocity and therefore by a rather silty to sandy sediment. The vegetation is characterised by reeds and pondweed communities. The banks along the water are usually covered with carr (fen woodland), reeds, tall forb communities or tall sedge swamps.

Human settlement areas with a high proportion of indigenous vegetation and typical regional urban fringe design secure biological diversity within the settled area too and enhance the natural scenery.

Checkdams considerably prevent the biological consistency of flowing waters. Renaturation can improve the biotope network

Fig. 11: Visualised examples from the survey and assessment of existing situation (Section from: LP Stadt Königslutter, 2005, Map: „Species and Biotopes“ Prepared by: enteria, Hanover)

Even the survey of the existing situation including the display of existing impairments and expected risks should increasingly be coordinated with the new landscape planning challenges and foreseeable conflicting uses, provided these are relevant within the planning area:

Renewable energies

- If planning of extensive use of renewable energy exist (e.g. biomass, solar energy), in the interests of modular, needs-oriented planning (cf. Chap. 3.2), landscape planning can identify areas which are particularly sensitive, e.g. to specific forms of biomass cultivation (water shortage areas, visually sensitive areas).

Demands on agriculture

- The conditions which are relevant for good professional practice or „cross compliance“ requirements should be identified (e.g. grassland areas with prohibited reversion, buffer zones around biotopes worthy of protection, compaction-sensitive areas, landscape elements to be preserved). For the land users it should be made clear where 1:1 use of the information is possible and where additional surveys may be necessary at operational level in order to deduce valid measures.

Water Framework Directive

- During the course of implementation of the Water Framework Directive, there are many common ground results between landscape planning and river basin planning which should be used to avoid duplicated work and to save costs. Therefore, close coordination should take place when registering the existing situation. Wherever possible, data should be acquired and processed so that it is compatible and usable for both planning tasks. For example, data from landscape planning can be adopted and used to record groundwater-dependent biotopes, to differentiate land uses or to determine impacts and pollution, in particular the endangerment of groundwater-dependent biotopes or diffuse inputs from agriculture. On the other hand, when recording and assessing the morphological water structure, landscape planning can now fall back on the detailed water management mapping [11].

Climate change

- With respect to the expected effects of climate change on biodiversity, soils (CO₂ release) and recreational possibilities (winter sport), at present only projections are possible in most cases. The scientific fundamentals are not yet sufficient to enable precise spatial predictions of the effects of the various climate change scenarios. However, it is already becoming clear today that many nature conservation measures such as extensification of land uses and the biotope network can either contribute to greenhouse gas reduction in the short term or can support the adaptive responses of the flora and fauna to climate change. This should also increasingly be made clear in landscape planning.

These new challenges are of course also to be taken into account accordingly when drawing up objectives, requirements and measures, although they are not dealt with again separately in the following chapter.

4.2 Objectives, requirements and measures

Specifying general objectives in concrete terms

One of the most important tasks of landscape planning is to specify the generally worded legal objectives and principles of nature conservation and landscape management and such of higher-level landscape planning (landscape programme, landscape structure plan) in concrete terms for specific spatial areas and therefore to give them real practical use. Environmental quality objectives are also taken into account; these are set down in the overriding programmes or strategies such as the sustainability strategy of the Federal Government. The very concrete quality objectives with time horizons of the national biodiversity strategy have special significance in this respect.

Environmental quality objectives and standards

The spatially specific objectives should name nature and landscape qualities to be aimed for as well as need for action and, where possible, should give specific details in terms of time and quantity. In this form they can be used as local, regional or nationwide environmental quality and action objectives and – wherever possible – spatial environmental standards.

Requirements and measures

Requirements and measures are used to realise the objectives formulated for the planning area. On the one hand, measures which are primarily to be implemented within the scope of the nature conservation authorities' tasks are named in the landscape planning plans. On the other hand, demands on other sectoral planning and land uses are formulated, so-called requirements. They describe which planning or practical activities are expected from other planning authorities within the scope of their task of participating in fulfilment of the nature

conservation and landscape management objectives. If applicable, coordinated proposals for action are made regarding the possibilities of implementing the respective planning or land use.³⁾

Comparison of the objectives with various natural resources and landscape functions (e.g. species protection versus recreational use) is essential for landscape planning. Any internal nature conservation conflicts with the objectives that occur can be corrected, objectives and measures which complement or strengthen each other can be optimally matched. The aim is to integrate all suitable objectives of other (sectoral) environmental planning in the overall nature conservation concept. This also serves to utilise synergies with tasks of other sectoral planning and to develop multifunctional measures (cf. Chap. 2.2).

Worthwhile or targeted conditions of nature and landscape can – provided there is a need for illustration – be formulated graphically in „models“ or in texts. New media provide diverse possibilities for communicating to target groups a vivid impression of how the landscape could develop [12] (cf. Chap. 6.3). Models can be developed from a combination of individual objectives in order to illustrate the desired future landscape. If the legal objectives allow alternative developments within a planning area the models can represent different development ideas for the landscape, which can be the basis for discussion within the scope of participation and consultation. The illustration of objective priorities and alternative development options can help the decision-makers to weigh up the nature and landscape objectives against other claims on the planning area.

With respect to integration in other planning and demonstrating consultation and participation options to members of the public, the obvious thing to do would be to divide the operative objectives into minimum objectives and desirable (possibly negotiable) objectives. This occurs according to their significance for realisation of the nature conservation and landscape management objectives and if applicable existing alternative measures. In this way the target groups of landscape planning can recognise at first glance which objectives and measures can be part of the participation with respect to their organisation and their scope and which should be implemented as a matter of priority and which – e.g. such as implementation of the Natura 2000 network – are not decided locally. Illustrating these possibilities and limits of consultation is an important precondition for constructive participation processes (cf. Chap. 6.3).

When making decisions regarding equivalent objectives or when planning measures, consideration must be given to the implementation conditions in order to promote fast and successful realisation. Priority should therefore be given to easily funded objectives and objectives complying with the user's wishes. Conditions of use and utilisation claims also play a role in such strategic decisions regarding objectives. For example, in agriculturally favourable areas small, localised biotope development measures will tend to be possible whereas in extensively used areas the conditions are more favourable for more widespread or more far-reaching measures. Implementation conditions can also be incorporated in the choice of measures: On the one hand, the requirements of farming processes can be taken into account. On the other hand, maintenance measures and use requirements can also be based on the marketing opportunities of the resulting product (e.g. grazing can be provided instead of mowing of meadows, if the meat produced can be easily marketed). In urban and suburban areas on the other hand, a large number of utilisation claims on limited spaces require particularly multifunctional concepts and recreational use frequently has special relevance.

Priorities can be assigned to objectives and measures in order to effectively deploy available funds. These then control the selection of measures and the order in which they are implemented and are the basis for an implementation programme (cf. Chap. 4.3) of the planning authority.

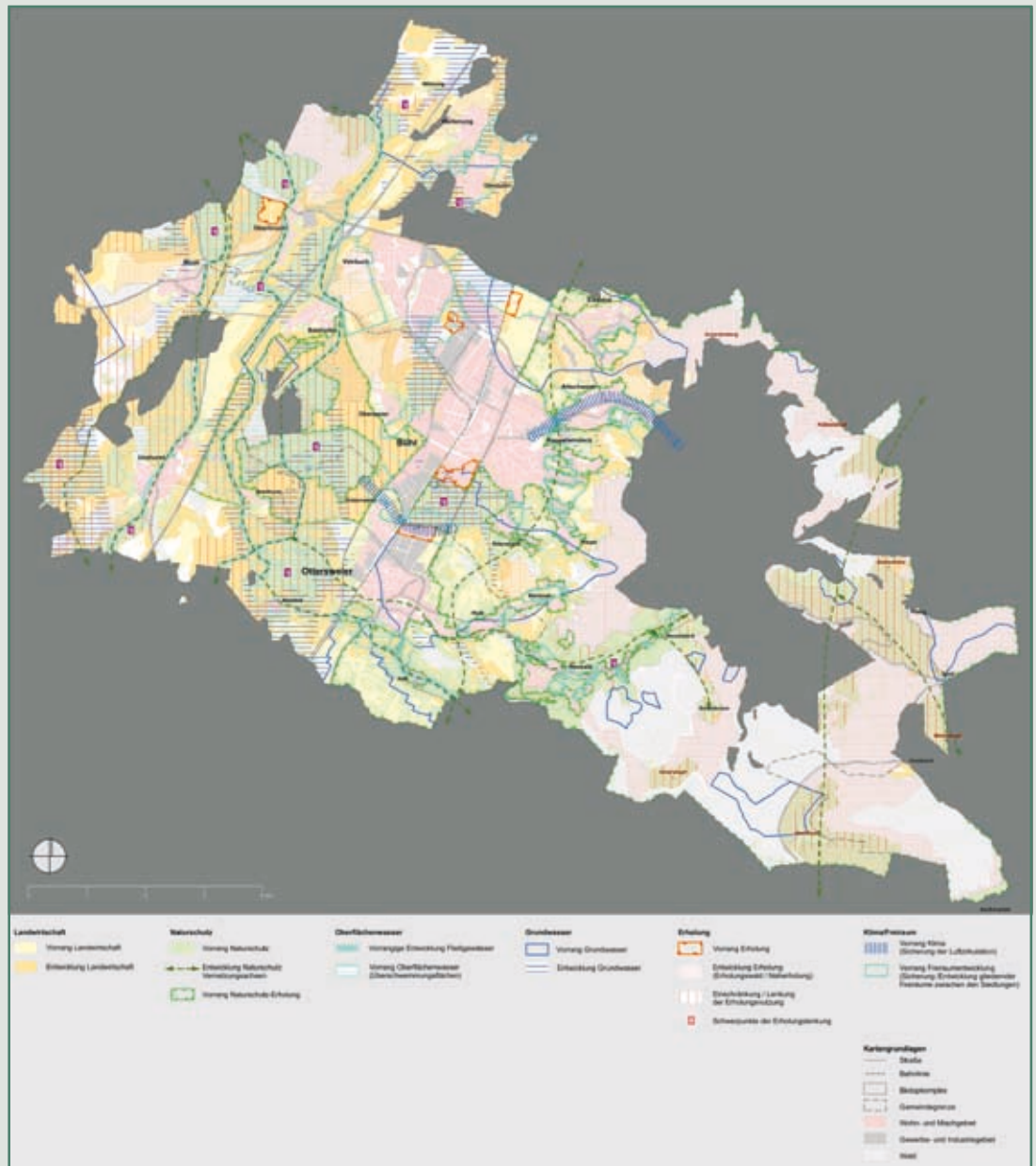
Weighing up internally conflicting objectives

Models

Implementation-orientation of the objectives and measures

³⁾ The requirements, measures (proposals) and action proposals shown in landscape planning are also called „measures“ for short in this brochure.

The measures for the individual natural resources and action areas shown in the detailed plans are summarised here. The multifunctionality of the measures is made clear by the spatial overlay.



Priority and development of nature and the landscape

4.3 Examples from local and supra-local landscape planning

Content framework

The Federal Nature Conservation Act sets the content framework of landscape planning and names areas of actions which are the subject to the planning:

- Prevention, mitigation or removal of impairments,
- Protection, management and development of valuable biotopes and landscape units,
- Development of the biotope network,
- Development and protection of the Natura 2000 network,
- Protection, improvement in quality and regeneration of soils, bodies of water, air and climate,
- Conservation and development of the natural scenery and recreation function of the landscape.

In the following, examples from the supra-local and local landscape planning are introduced for several of these areas of action.

Protection, improvement and regeneration of soils, bodies of water, air and climate

With respect to the natural resources soil, water, climate and air, the task of landscape planning is to develop measures to permanently ensure their regeneration and sustainable usability. The complex relations between the biological water balance, the soil, vegetation and climate as well as land uses and the interplay of natural resources within the scope of various landscape functions (interactions) are taken into account. Practically, this takes place only in the landscape planning as it is not the subject of other environmental planning for specific natural resources.

With respect to the soil, the main aim is to conserve soil with high natural fertility and to protect rare as well as particularly endangered and sensitive soils. Conservation and remediation objectives are directed at preventing and reducing wind and water erosion, soil compaction, soil destruction and sealing as well as contaminant input. Depending on the sensitivity of the (sub)landscape and on the urgency of the problem, individual risk factors – for example the risk of erosion – can be dealt with in depth.

The planning statements concerning the natural resource water relate above all to the conservation and, if applicable, to improvement of the water supply function as well as to the retention function. This includes groundwater recharging, the groundwater quality and the quality of the surface waters. The capacity of the balance of nature in alluvial plains is above all relevant for the retention function and therefore flood protection (cf. Fig. 13).

Traditionally, the bioclimatic and air-quality compensating function is primarily considered with respect to climate and air. The depth and sharpness of statements can vary greatly according to the existing problem reference within the planning area with regard to polluted areas.

Climate change

In the context of global climate change, on the basis of existing regional climate forecasts, landscape planning can illustrate probable or possible regional and local effects on the soil, biodiversity and recreation suitability (e.g. snow certainty) in scenarios. On the basis of changes in their immediate environment, in this way it is made clear to politicians and the population that it is necessary to integrate measures to control the causes as well as to lessen the consequences (e.g. for species and biotopes). In addition, synergies with other nature conservation needs can also be emphasised in landscape planning. Especially for extensively or completely unused ecosystems there is an additional argument for protecting or expanding them due to their contribution to climate protection (favourable greenhouse gas balance). The following measures can be proposed:

- Development of a biotope network can be combined with special measures for species especially endangered by climate change.
- A particular conservation need can be formulated for grassland with very high CO₂ storage. The prevention of ploughing up grassland can be achieved through protected area regulations (nature reserve, landscape protection area) or through urban development planning descriptions.
- Moors have a particularly high significance as CO₂ storage. Intact moors are to be conserved to prevent or reduce the release of gases affecting climate change; measures should be developed for rewatering depleted or dewatered moors.

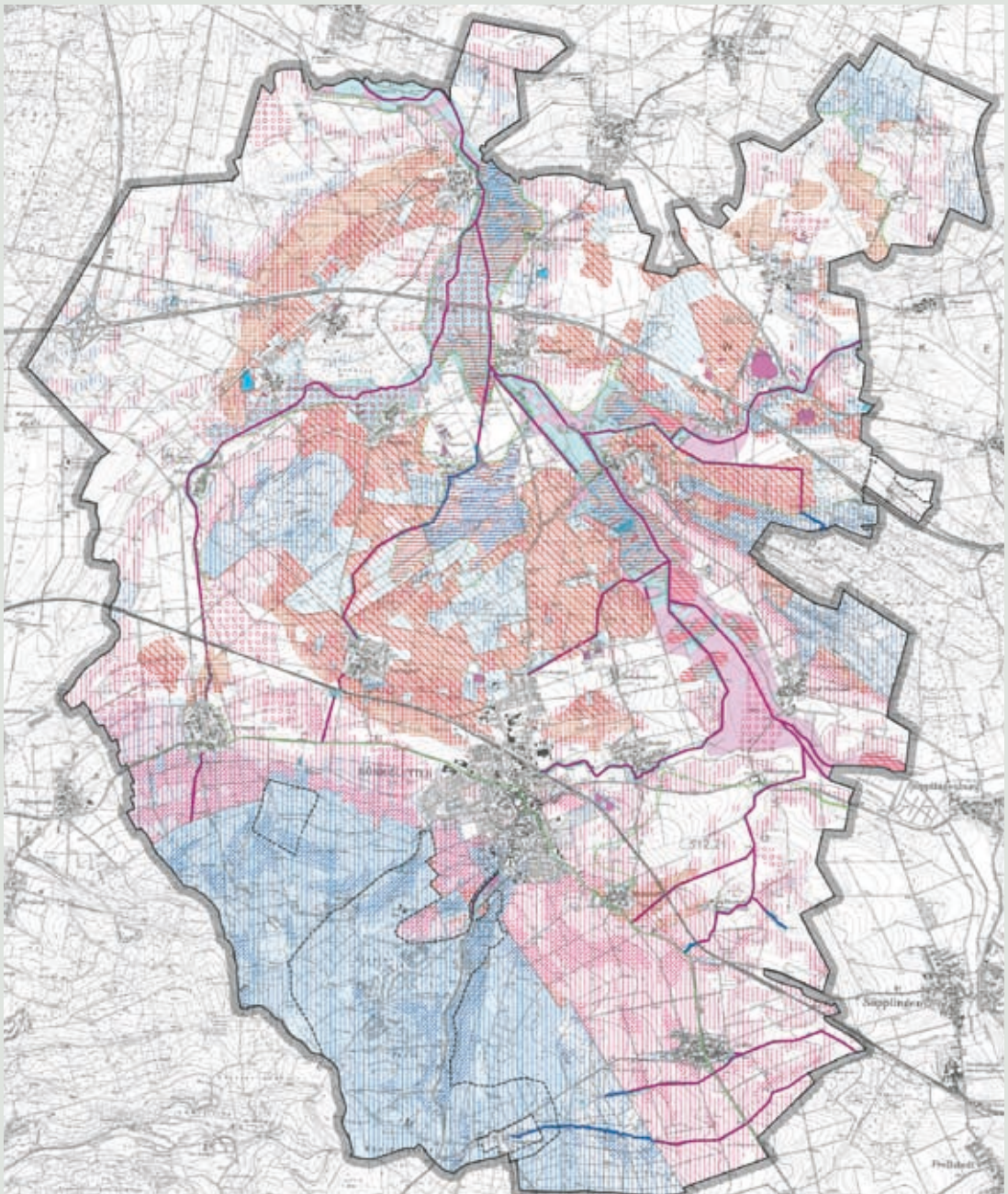


Fig. 13:
 Water and material retention
 (LP Stadt Königslutter am Elm,
 2005; Prepared by: entera,
 Hanover)

Areas with special capability for water and material retention

- nicht bzw. wenig entwässerte Niedermoorböden
- Bereiche hoher Wassererosionsgefährdung mit Dauervegetation
- Bereiche mit hoher Grundwasserneubildung und relativ geringem Risiko von Stoffaustrag
- Bereiche mit potenziell hohem direktabflussbedingtem Wasser- und Stoffaustrag mit Dauervegetation
- Bereiche hoher Winderosionsgefährdung mit Dauervegetation
- Überschwemmungsbereiche mit Dauervegetation
- naturnahe Stillgewässer
- naturnahe Bäche und Flüsse
- Gewässerandstreifen

Areas with impaired / endangered capability for water and material retention

- entwässerte Niedermoorböden und anmoorige Böden
- Bereiche hoher Winderosionsgefährdung ohne Dauervegetation
- Bereiche mit hohem Stoffaustragsrisiko bei Ackernutzung aufgrund sehr hoher Austauschfähigkeit des Bodenwassers
- Bereiche mit potenziell hohem direktabflussbedingtem Wasser- und Stoffaustrag ohne Dauervegetation
- Bereiche hoher Wassererosionsgefährdung ohne Dauervegetation
- Überschwemmungsbereiche ohne Dauervegetation
- Bereiche mit Grabensystemen und Dränungen in Mineralbodenbereichen
- naturnahe Stillgewässer
- naturnahe Bäche und Flüsse

Natural landscape units

- Abgrenzung der Naturräumlichen Regionen
- Abgrenzung der Naturräumlichen Einheiten
- 512.20 Nummern der Naturräumlichen Einheiten

Miscellaneous

- Planungsgebietsgrenze
- Stadtgrenze

Niedersächsisches Bodenkartellationsystem NBS
 Grundlage auf der Grundlage von Daten des Niedersächsischen Bodenkartellations-
 systems NBS, auf Grundlage des Niedersächsischen Landesgesetzes für Bodenkartierung

Proposed measures for agriculture

With the formulation of requirements for agriculture, landscape planning translates several of the location-dependent requirements of good professional practice, which are described generally or with vague legal terms only in laws and regulations, into specific statements for a defined area. This gives farmers advices for legally secure and sustainable farm management.

Coordination with river basin management

Synergies can be utilised in the planning and implementation of measures through consultation and cooperation between landscape and river basin planning authorities [11].

Landscape planning also makes an extensive information base available outside the peripheral areas of the water bodies mapped as part of the river basin planning. This is significantly more detailed than the land use data (CORINE (Coordination of Information on the Environment) land cover - CLC) currently used in river basin planning. Groundwater-dependent biotope types can be determined on the basis of the biotope type map. In addition, landscape planning can take on the task of documenting changes to groundwater-dependent biotopes as part of regular updating and therefore make a contribution to monitoring according to the WFD. The differentiated, areal statements on the significance, sensitivities, impacts and potential (e.g. description of the erosion risk, buffer/filter functions of the soil, classification of agriculturally used areas on the basis of biotope types) can contribute towards localised problem areas – especially with respect to diffuse inputs from agriculture – and to select focal areas for action. In particular, the landscape planning's statements on biotope development should be taken into account in the planning of priority areas for the reduction of phosphate and nitrogen inputs. Above all, landscape planning can be used as an instrument for the agricultural sector to communicate, to coordinate and to consolidate measures. The global environmental consideration and multi-functional objective and measures concepts of landscape planning can be used as orientation for implementing sustainable management and integrative measures within the scope of the river basin planning. Landscape planning also undertakes the role of consolidating all river basin management measures which can be expressed in the urban development planning and spatial planning with other measures important for nature and the landscape and for converting them into spatial planning categories.

- Longer rotations in forest use also have a positive effect on the CO₂ balance.
- Landscape planning can include a check of whether energy recovery of landscape management material is particularly desirable in certain sub-areas or not.
- Adaptation measures such as possible roof planting for cooling buildings in areas at risk of overheating can be proposed in settlement areas or the use of solar energy in locations with particularly favourable radiation.

Biotope network

One objective of the Federal Nature Conservation Act is to create a biotope network to lastingly secure native animal and plant species as well as ecological interrelations. Natura 2000 areas (see below) can be integrated in the national biotope network.

Landscape planning has the task of showing areas which are particularly suitable for developing a biotope network. Landscape planning is especially suitable for the planning concept of the biotope network because an ideal solution is to acquire the necessary information by supplementing and deepening the surveys which are carried out anyway as part of landscape planning. In addition, the suitable areas and measures for developing the biotope network as part of the overall nature conservation concept can be directed at achieving synergies with other objectives (e.g. flood protection) and can be translated into multifunctional measures. If biotope network planning already exists it is compared with other environmental and nature conservation objectives within the scope of landscape planning and is prepared for transfer into the overall spatial planning and the urban development planning. The higher planning levels (landscape programme, landscape structure plan) represent the wide-ranging network and proposals for securing the core areas, while small scale networking can take place at local level via other measures or connecting elements.

At a local level landscape planning contains suggestions as to how the national or European biotope network can be supplemented by the conservation and creation of locally significant structures. Regional minimum densities (for linear and point elements) should be specified as the legal basis for this and measures taken if the density requirements are not achieved in the landscape. Apart from coordinating or creating the basic idea of the biotope network, the central tasks of landscape planning includes preparing the site protection necessary for securing the biotope network by proposing suitable instruments of nature conservation legislation or building code and regional planning legislation.



Fig. 14:
Biotope network concept
(extract from LRP Braunschweig,
Draft 2006;
Prepared by: Aland, Hanover)

Target species (fauna)

(occurrence since 1980)

Mammals

Bm Baummäder	Fo Fischotter
Fh Feldhamster	Ge Gartenschäfer
Fns Fledermaus-Arten	Wn Wasserspitzmaus

Birds

Be Bekassine	Ra Rohrschrei
Bm Beutelmäse	Rm Rotmilan
Bg Brandgans	Ge Schelle
Bk Braunkehlihen	Sch Schilfröhrlänger
Ds Drosselröhrlänger	Sh Schwarzhalbtaucher
Ev Eisvogel	Sm Schwarzmilan
Gap Grauspecht	Ssp Schwarzspecht
Gnp Grünspecht	Te Teichhuhn
Ki Kiebitz	Th Tüpfeljungfuh
Ke Krickente	Wk Wachelkönig
Le Löffelente	Ww Weißstorch
Msp Mittelspecht	Ww Wendehals
N Nachtigall	Wt Wespenbussard
Nt Neuntötter	Zi Zweigfischer
Ra Rohrammer	L Limkolen
Rt Rohdornel	

GV avifaunistisch wertvoller Bereich (Gastvögel)

BV avifaunistisch wertvoller Bereich (Brutvögel)

Amphibians, reptiles

Kk Knoblauchkröte
Km Kammerkriech
Lf Laubfrosch
Mf Moorfrosch
Rn Ringelnatter
Sp Springfrosch
Zz Zaunwidchse

Grasshoppers

Ös Blaufüßige Ödendischrecke
Sa Blaufüßige Sanddackel
Sg Sumpf-Grashüpfer
Ss Sumpfdackel

Fish

Ba Bachweunauge
Bs Bachschmerle
Gv Gründling
Ra Rapfen
Sp Schlammpeitzger

M Endangered macrozoobenthos species

Dragonflies

gK Grüne Kalljungfer
Kf Kafflecklibelle
Kj Gemeine Kalljungfer
Mj Große Moosjungfer
Pf Gebänderte Prachtlibelle
Sl Gemeine Smaragdlibelle
Wl Gemeine Wirtlibelle

Butterflies

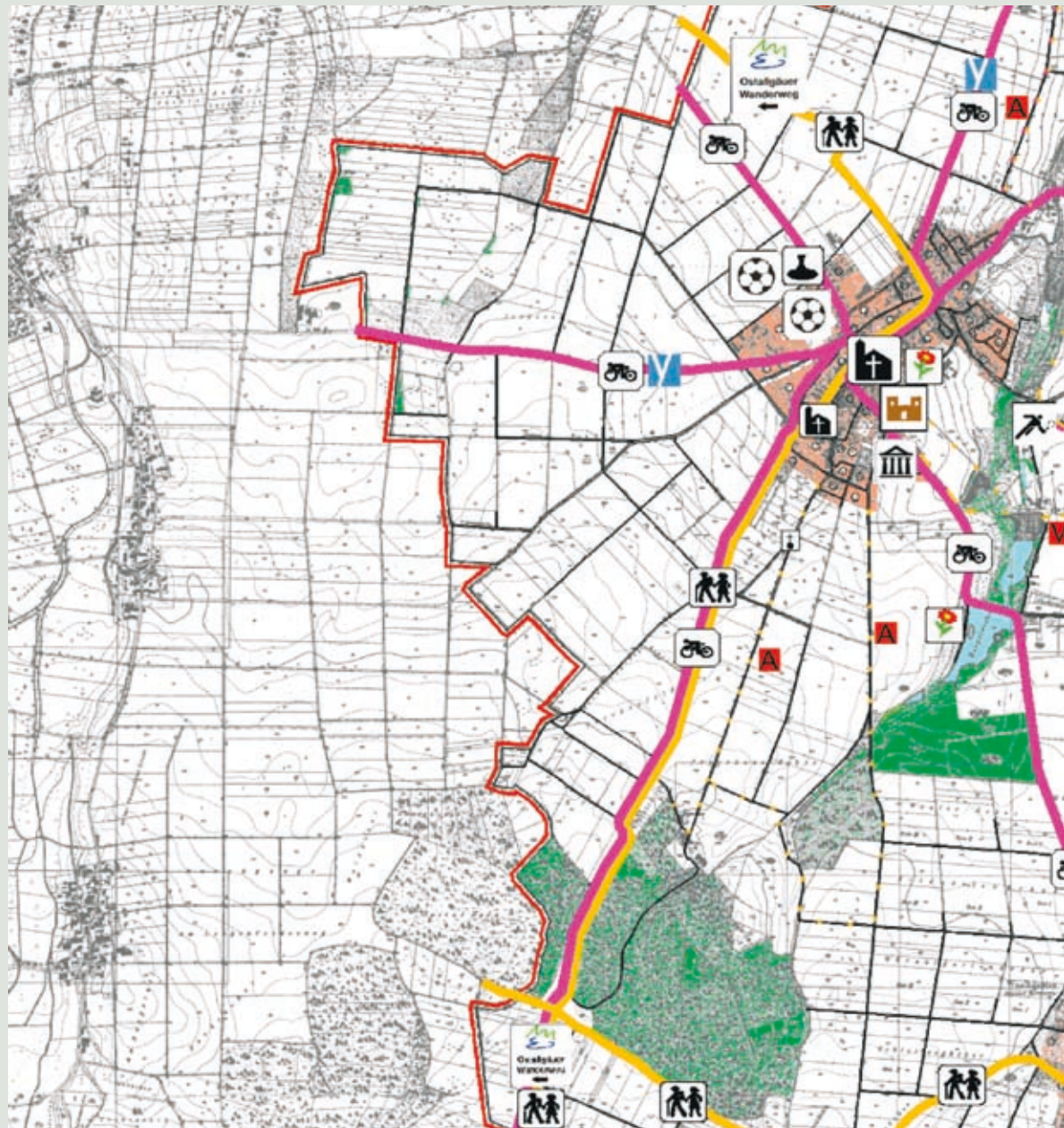
Bw Baumweilfing
Df Spiegelfleck-Cickkopfler
EK Großer Eichenkamm
Evo Großer Eisvogel
Fv Kleiner Eisvogel
FF Brauner Feuerfalter
Fu Großer Fuchs
Gg Gemeines Grünwiderchen
Sc Schwefelbrennstein
Se Sechsfleck-Butterfliegen
Ws Wolfmittschwelemer

S Stenotope carabid beetles

Requirements and measures for developing and protecting the European ecological network „Natura 2000“ are explicitly named as contents of landscape planning. The significance of the Special Areas of Conservation (SACs) and areas worthy for protection under the Habitats Directive as well as Special Protection Areas (SPAs) under the Birds Directive and the large-scale functional relationship can be shown on a state-wide or nationwide scale in the supra-local (regional) landscape planning. With the overall consideration of all areas for the purposes of ensuring coherence, landscape planning defines the action framework for the management plans, which are to be drawn up at lower scale level for individual (sub-)areas. In addition, landscape planning proposals for implementation of the non-deterioration and non-disturbance obligation can be made at the respective suitable planning level of landscape planning. Management plans can also be integrated in landscape planning as supplementary modules for sub-areas (as additional

Contribution to the Habitats Directive Assessment

Plans and Projects likely to have a significant effect on a Natura-2000 site, either individually or in combination with other plans or projects, have to be subject to a Habitats Directive Assessment (HDA) of the implications for the site in view of the site's conservation objectives. Landscape planning is used for this HDA. In particular, landscape planning forms an information basis for the preliminary check, e.g. to estimate possible or even cumulative effects which can result in substantial impairments and to determine the necessary scope of investigations. While the compatibility with the Habitats Directive is measured in view of the site's specific conservation objectives, landscape planning as a general nature conservation concept can be used in particular for examining alternative solutions and for determining possible measures to secure the coherence of the Natura 2000 network.



work and services to be commissioned). Project sponsors and planning authorities as well as farmers should be able to identify from landscape planning at first glance, in which cases planned measures conflict with European protected species or areas.

Nature and landscape are very important for the physical and mental well-being of humans. Diversity, characteristic features and beauty as well as the recreational value of nature and the landscape should be permanently secured. The aim is to conserve and design a cultural landscape corresponding to these criteria. This ranges from „unspoilt“ landscapes which are not characterised by intensive use and technical-industrial elements to designed open spaces in villages and towns.

The Federal Nature Conservation Act emphasises the importance of nature and landscape as an experience and recreation space for humans. Accordingly, suitable areas are to be protected and made accessible for the purposes of recreation. The landscape planning authorities therefore have an active design task to plan the landscape so that nature and landscape compatible recreational activities can be practiced. This task also includes preventing or remediating landscape impairments caused by its use for recreation. Just like for other uses, all forms of leisure and recreation may only use nature and the landscape to the extent allowed by their need for protection and their sensitivity. Therefore, within the scope of landscape planning, requirements are also formulated which are directed at users (tourism industry, sports organisations) and which should be taken into account in corresponding planning.

Nature and landscape as experience and recreation space for humans

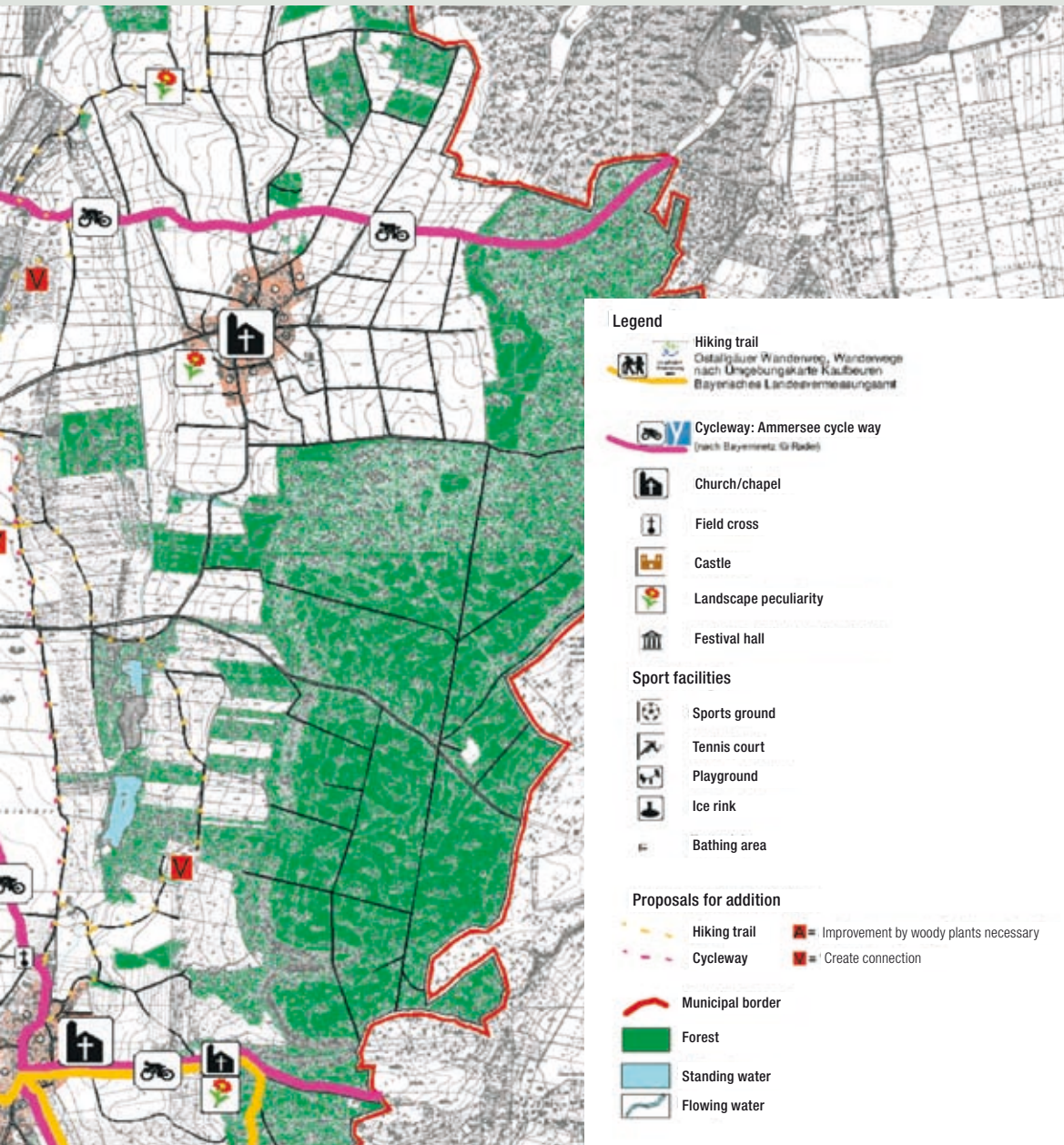


Fig. 15:
Recreation theme map
(Section of LP Waal, 2003
Prepared by: AGL, Etting)

Compatible use of renewable energies

Within the scope of landscape planning, the sensitivity of sub-areas to use for certain forms of renewable energy (wind, solar, energy plants) can be determined.

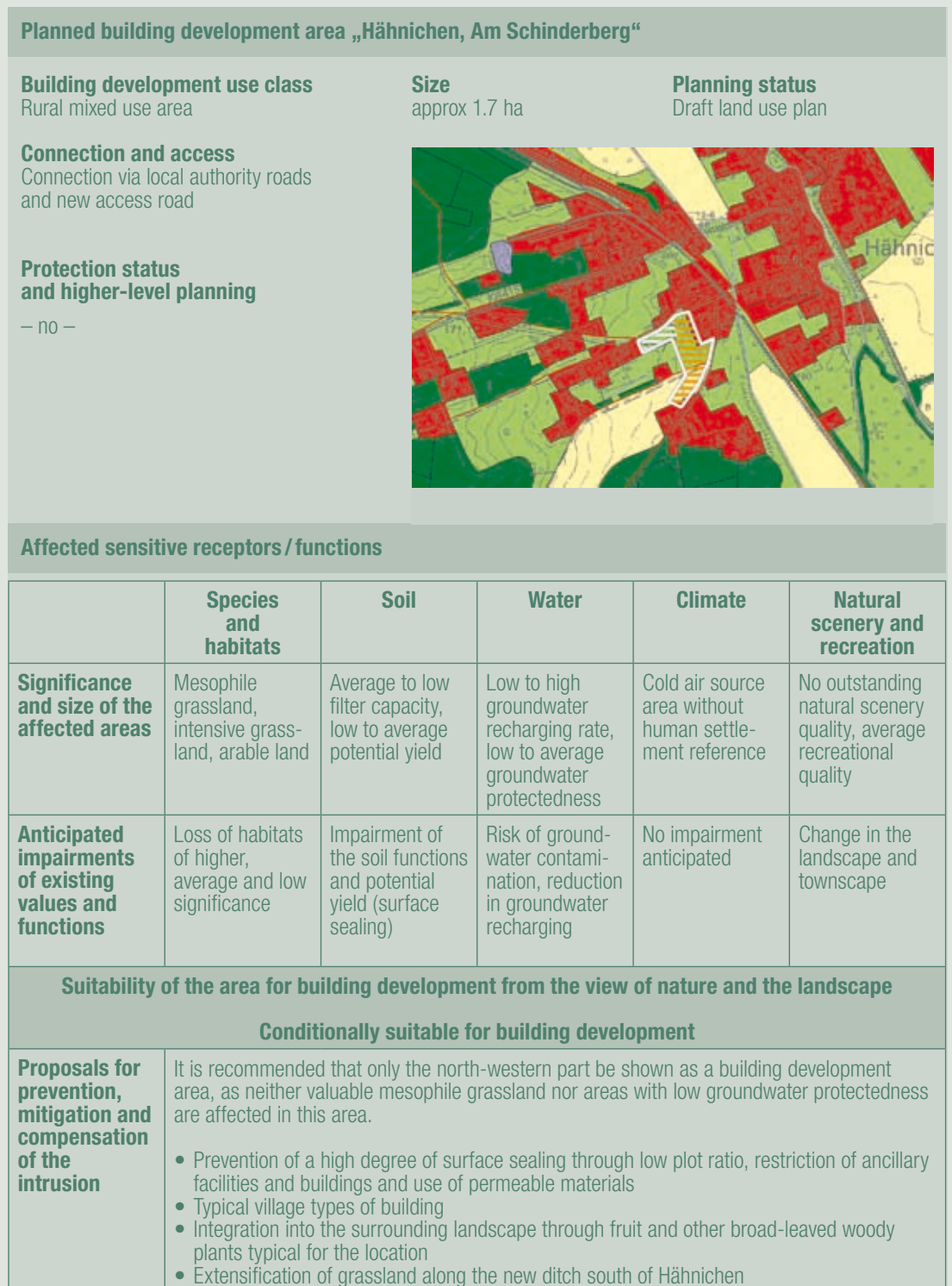
Similar to the priority areas for wind power utilisation, which prove their worth as a control instrument in regional and urban development planning, on this basis suitable or exclusion areas for large-scale solar (photovoltaic) systems or for energy crop cultivation can be shown too.

Preliminary work for the impact mitigation regulation

The landscape planning authorities make proposals for the prevention, reduction or removal of existing and expected impairments. Preliminary work on the impact mitigation regulation is performed with the notes on suitable mitigation and compensation measures and areas. The statements are primarily directed at the land users and their sectoral plans, so that target group and implementation oriented presentation is of central significance. At a local level the local community should coordinate the timing and content of the landscape and urban development planning so that, in particular, statements on foreseeable environmental effects of planned housing extensions can be used for the environmental assessment in the urban development planning (cf. Chap. 2.1).

Fig. 16:

Preliminary assessment of the intrusion by a planned building development area on the basis of landscape planning (LP Rothenburg-Hähnichen 2004; prepared by: planquadrat, Dresden)



Mitigation and compensation of intrusions

Based on the contents of the landscape planning intrusions can be assessed and steered towards relatively more compatible locations. In addition, in an individual case the investigative scope of an environmental audit or environmental envelope planning can be set out and sound decisions can be made regarding the type and scope of more in-depth investigations. The deduction of suitable compensation measures are also to be taken into account in the landscape planning plans. In particular, they contain information about spaces which can be enhanced and are in need of development, and which are therefore suitable for implementation of compensation measures. In addition, the landscape plan can provide a compensation (areas) concept, which optimally classifies mitigation and compensation measures within the overall concept.

How well the measures are tailored to the implementation conditions and the extent to which they were agreed with the parties involved are frequently decisive factors for their chances of being implemented. As, in many federal states, landscape planning is supposed to initially define an unadulterated development standard from a nature conservation point of view, priorities for action to be taken stemming from political issues or from the weighing up of all issues or even measures with strong implementation influence cannot always be incorporated. In such cases the solution presents itself to supplement the landscape plan with a carefully considered and operative implementation programme to be politically passed, which e.g. only contains those (possibly modified) measures which a local community or region had undertaken to implement in a defined period.

4.4 Notes on GIS-assisted landscape planning

Use of geographic information systems (GIS) in landscape planning brings substantial advantages, above all because of its data updating and evaluation possibilities as well as target group specific preparation of data (cf. Chap. 3.2, 6.3). Data processing and transfer requirements must be noted to enable use of the diverse possibilities of GIS-assisted drawing up of landscape planning to their full extent:

- The official digital basic geometries should be used at all landscape planning levels (ALK, ATKIS, ALKIS [13]). Through orientation and geometric adjustment of the environmental data to this geographic base data, local communities and authorities can use the official data as the basis of a spatial information system for the respective planning area.
- Content and technical requirements and standards are necessary which enable reciprocal data exchange so that the data of other sectoral administrations can be used for landscape planning and so that the results of landscape planning can be incorporated in the information systems and planning of other technical disciplines. Consideration of the relevant existing standards (e.g. ISO standard 19115 for documentation using meta-data) in GIS-assisted landscape planning makes it easier, or indeed makes it possible in the first place, to forward and make use of the data and information acquired within the scope of landscape planning in a relatively uncomplicated way.

In addition, it would be important to increase the use of standard methods, classifications and structuring in order to merge information from different landscape planning, e.g. within the scope of an SEA or EIA. The federal states and the Federal Agency for Nature Conservation provide tips and advices for this.

Supplementing the landscape planning, not weighed up, to include a „political“ implementation programme

Data processing and transfer requirements

5. Strategic Environmental Assessment

Strategic environmental assessments of plans and programmes should ensure effective environmental provisions. To this end, the effects on the environment must be comprehensively determined, described and assessed according to uniform basic principles. The results of environmental assessments must be taken into consideration when drawing up or amending plans and programmes (Article 1 Environmental Impact Assessment Act, „Gesetz über die Umweltverträglichkeitsprüfung“ – UVPG). Apart from natural resources – animals, plants and biological diversity, soil, water, air, climate and landscape – the environmental assessment also includes effects on humans including human health as well as cultural assets and other material assets (Article 2 UVPG).

Landscape planning has a special position with respect to the assessment of environmental effects:

- Landscape programmes, landscape structure plans and local landscape plans are among the plans and programmes for which a strategic environmental assessment has to be performed (Article 14b UVPG in conjunction with Annex 3 No. 1). As their specifications and arrangements are solely for conserving or improving the condition of nature and the landscape and supporting the objective of effective environmental provisions, special arrangements apply to performance of the SEA for landscape planning (cf. Chap. 5.2).
- At the same time landscape planning assists the environmental assessment of other plans and programmes in that the contents of landscape planning can be used as information and assessment basis as well as directly as an environmental report if the planning areas and times are congruent (cf. Article 19a Para 1 and 3 UVPG). This reduces the costs and time required for the strategic environmental assessment (cf. Chap. 5.1).

5.1 The significance of landscape planning for the environmental assessment of other plans and programmes

To a large extent landscape planning provides the basics for the environmental assessment of plans and programmes (as well as for projects, especially at local level):

Screening

- Prior to the actual environmental assessment the environmental information of landscape planning helps to assess the need for an environmental assessment (**screening**).

Scoping

- The landscape planning contributions to **scoping** are particularly relevant for economical work in performing the environmental assessment. The extensive information basis of landscape planning on the condition, significance and sensitivity of the environment (information system) allows precisely tailored definition of the scope of investigations. Based on this information, options to be investigated can also be properly defined with objective justification.

Environmental report

- Landscape planning can make an important contribution to virtually all the items and contents of the **environmental report** (e.g. description of the current state of the environment, status quo forecasts, conflict assessment, cf. Fig. 17). With the specific objectives for a defined area it provides the assessment criteria necessary for evaluation of the environmental effects.

Monitoring

- Landscape planning can also play a decisive role in **monitoring** the substantial environmental effects of the plans and programmes. Unforeseen environmental effects and possible interactions are also registered with the updating of landscape planning at suitable planning intervals. Due to its extensive, multi-environment approach landscape planning provides particularly good preconditions for determining such effects and for taking into account total, cumulative effects, which arise due to the interaction of negative effects of implementing various plans and projects.

5.2 Strategic Environmental Assessment of the landscape planning

The Environmental Impact Assessment Act (UVPG) specifies procedures for assessing the environmental compatibility of plans and programmes which are also to be applied to landscape planning (Article 14e-o, supplementary provisions are left to the federal states (Article 19a Para. 1 Sentence 2). They are integrated in the planning process (cf. Chap. 6.2).

An independent environmental report is not required for landscape planning. The contents which have to be presented separately for other planning are included directly in the explanatory or justification text of the landscape planning (see below). As the landscape planning contents provided for by law to a large extent already cover the contents of the environmental report, no significant supplements to landscape planning are necessary (cf. Fig. 8):

- The outline of **the contents, main objectives of the plan and relationship to other relevant plans and programmes** can be included in the introduction.
- Apart from expressing the nature conservation objectives in concrete terms as the core content of landscape planning, other relevant environmental objectives are also to be listed for the **description of the environmental protection objectives applicable to the plan or programme as well as the way in which these objectives and other environmental considerations have been taken into account on drawing up the plan**. A description is given of the extent to which the specifications of landscape planning support these objectives too, where possible synergies result or whether possible deviations exist.
- The **description of the environmental characteristics, the current state of the environment and the likely evolution thereof without implementation of the plan or programme** is the core content of the registration and assessment of the current and forecast of the expected condition of nature and the landscape in the landscape planning.
- The details of existing environmental problems which are relevant to the plan are given with the description of the impacts (registration of uses and their effects on nature and the landscape).
- The **description of likely significant effects on the environment** is given for the objectives and measures defined in the plans. Significant negative environmental effects on the sensitive receptors of the UVPG (Environmental Impact Assessment Act) which are identical to those given in the BNatSchG (Federal Nature Conservation Act (soil, water, air, climate, landscape, animals, plants and biological diversity) are not generally to be expected. The effects on the sensitive receptor man including human health as well as cultural assets and other tangible assets are also to be considered. These issues are mostly incorporated in the landscape planning concept: Nature and the landscape must also be protected, managed and developed as the natural resources and basis of life of humans. Therefore the qualities of the natural resources to be aimed for are also developed with respect to human health (e.g. air and water quality). When considering the landscape experience function, human needs for recreation and landscape experience are even at the heart of the planning. With the survey and assessment of the structures and elements (including cultural, historic structure and buried cultural monuments) of the historically grown cultural landscapes and buildings or urban fringes shaping the landscape (natural scenery), important cultural assets are registered and dealt with at the same time. Negative environmental effects on these protected objects therefore only arise in exceptional cases, e.g. if internal objective conflicts exist which are weighed up in favour of another issue. This (internal) weighing up is to be documented for the purposes of a brief description of the reasons for selecting alternatives (see below).
- If significant negative environmental effects are determined, the **measures** envisaged to prevent, reduce or compensate these effects must also be described.
- **Notes on difficulties encountered in compiling the information, such as technical deficiencies or lack of knowledge**, are to be included in a relevant place in the justification text.

Procedure

Integrated environmental report

- If reasonable, realisable alternatives are possible, these should be checked and their anticipated significant environmental effects described and assessed. In landscape planning the **outline of the reasons for selecting the alternatives dealt with as well as a description of how the assessment was undertaken**, refers to the comparison of different development prospects or alternative measures, provided these were explored during the planning. The effects of these weighing up decisions must now be clearly documented for the purposes of the SEA.
- **Measures envisaged concerning monitoring** are only to be described if negative environmental effects exist. This is usually not the case in landscape planning (see above). The monitoring can take place within the scope of the update (see below).
- A **generally understandable, non-technical summary** is prepared of the aforementioned SEA relevant contents of the environmental report.

Monitoring

The **monitoring** of the environmental effects is used, in particular, to determine unforeseen adverse effects on the environment of the planning. Such effects are hardly to be expected as a result of implementation of the landscape planning measures (see above) [14]. The continuation (updating) obligations of the Federal Nature Conservation Act and the introduction of regular updates (cf. Chap. 3.1) should however be used to analyse development since the last plan was drawn up in order to determine any negative or unexpected concomitant effects. Remedial measures can be directly taken into account as part of the update.

An evaluation and **balancing** of the implementation status takes place at the same time as the monitoring of the environmental effects. This can be carried out with the updating of the plan. The balancing is used to inform politics, administrations and the public of progress, successes and, if applicable, any failures which occur with the realisation of the landscape planning objectives. On this basis, the planning can be checked and the environmental policy directed.

Strengthen capabilities through SEA

The SEA requirements should be used to strengthen the landscape planning capabilities. The preparation of assessment criteria, the preparation of forecasts and the drawing up of scenarios (alternatives) become indispensable components of the landscape planning in the course of the SEA. The documentation and justification of the decision making will be given more importance in the text description and justification and therefore increase transparency and traceability.

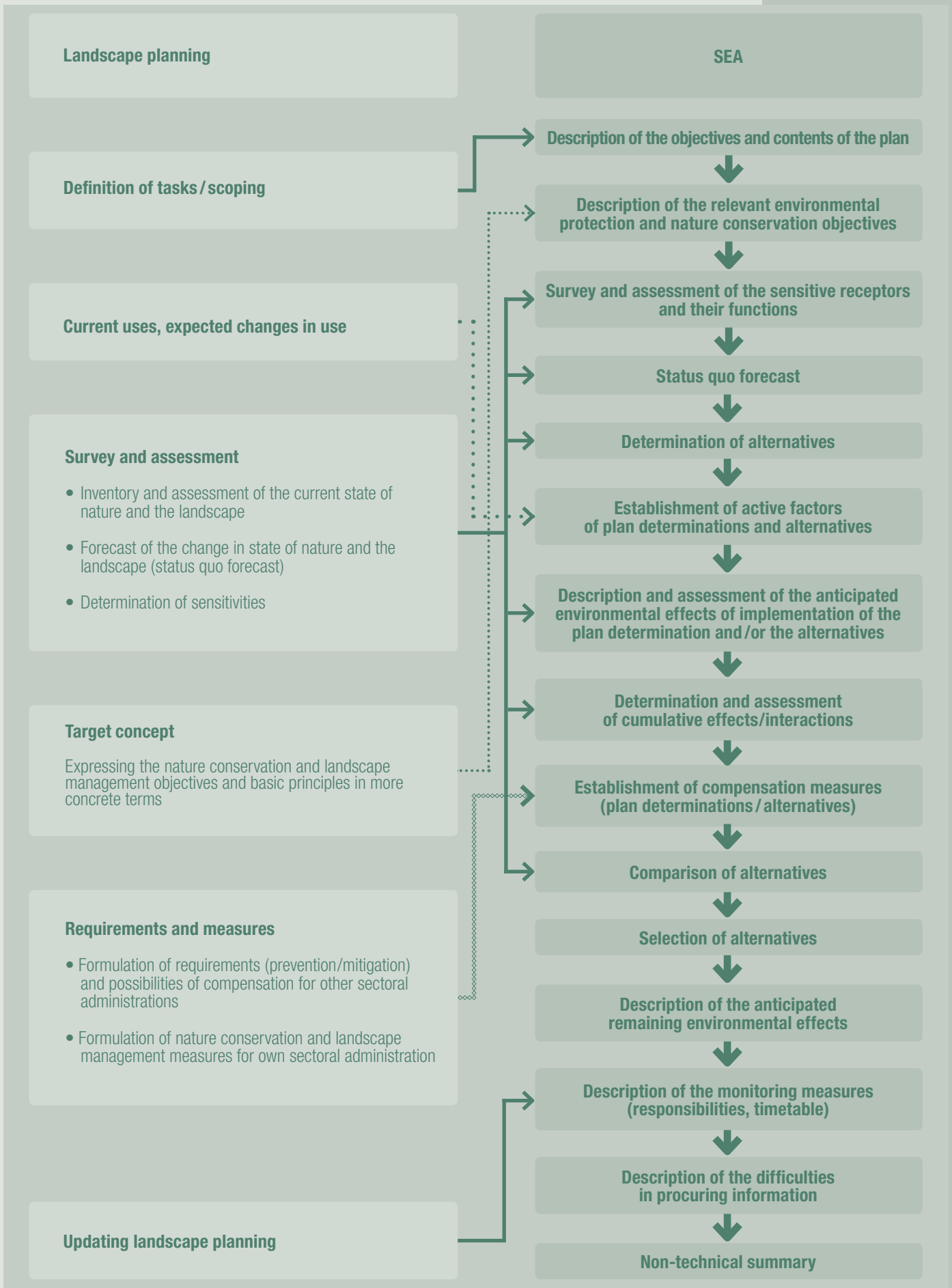


Fig. 17:
Integration of the SEA steps
in landscape planning [15]

6. Organising the planning process and participation

Apart from the thematic working steps of the plan preparation (cf. Chap. 6.1) and formal procedural steps of the SEA (cf. Chap. 6.2), the planning process also includes concomitant participation, initial implementation projects and evaluation. The timing of these components of the procedure is coordinated in the course of the planning. This results in a flow chart (cf. Fig. 18), which can be elaborated in different ways according to the conditions of the planning case. In the interests of modular processing, if necessary contents can be updated, supplemented or described in greater detail and in this way the planning can be continuously updated.

Participation plays a decisive role for the success of landscape planning. In practice it therefore often extends beyond the formal requirements. Chap. 6.3 gives practical tips and information for the public participation.

6.1 Drawing up the plan contents

The data base and the plan are prepared and updated in several steps:

- **Task definition / determination of the scope of investigation (scoping)**

At the start of a landscape planning project the contents, focal areas and priorities are tailored to the current problems of the planning area.

- **Survey and assessment**

The current condition and development potential of the natural resources and landscape functions are registered and assessed and the impacts of existing and planned uses are pointed out (cf. Chap. 4.1).

- **Target concept**

The objectives and possible alternative objectives for the remediation, conservation and development of nature and landscape are drawn up, occasionally illustrated in scenarios and are presented as models (cf. Chap. 4.2).

- **Requirements and measures**

The requirements and measures for realisation of the objectives are deduced, any alternatives for solving conflicts are described and notes on their implementation are given. If necessary, landscape planning can be supplemented with an implementation programme (cf. Chap. 4.3).

When working on the contents it must be remembered that the text explanations must include the information of an environmental report (cf. Chap. 5.2). Therefore the SEA requirements are integrated from the scoping stage and in particular, possible (usually positive) environmental effects are described. When updating a plan the evaluation of the preceding version of the plan is one of the first steps.

The individual steps can be highly intermeshed so that feedback can result. For example, spatial development objectives can be discussed at the same time as the survey of the existing situation, which in turn can result in decisions regarding the direction of the fundamentals part. The planning is therefore understood to be a process in which the different steps are interconnected with each other.

The planning and implementation therefore do not necessarily take place consecutively but are partly also interwoven in time. Initial proposals for measures (pilot measures) can be realised already during the on-going planning phase. This can encourage the public's motivation to participate.

Landscape planning can now – through GIS and digitally available data of environmental changes – be updated as a process and largely during day-to-day business (cf. Chap. 3.1).

*Preparation
and updating
of the plan*

*Interconnection
of the steps*

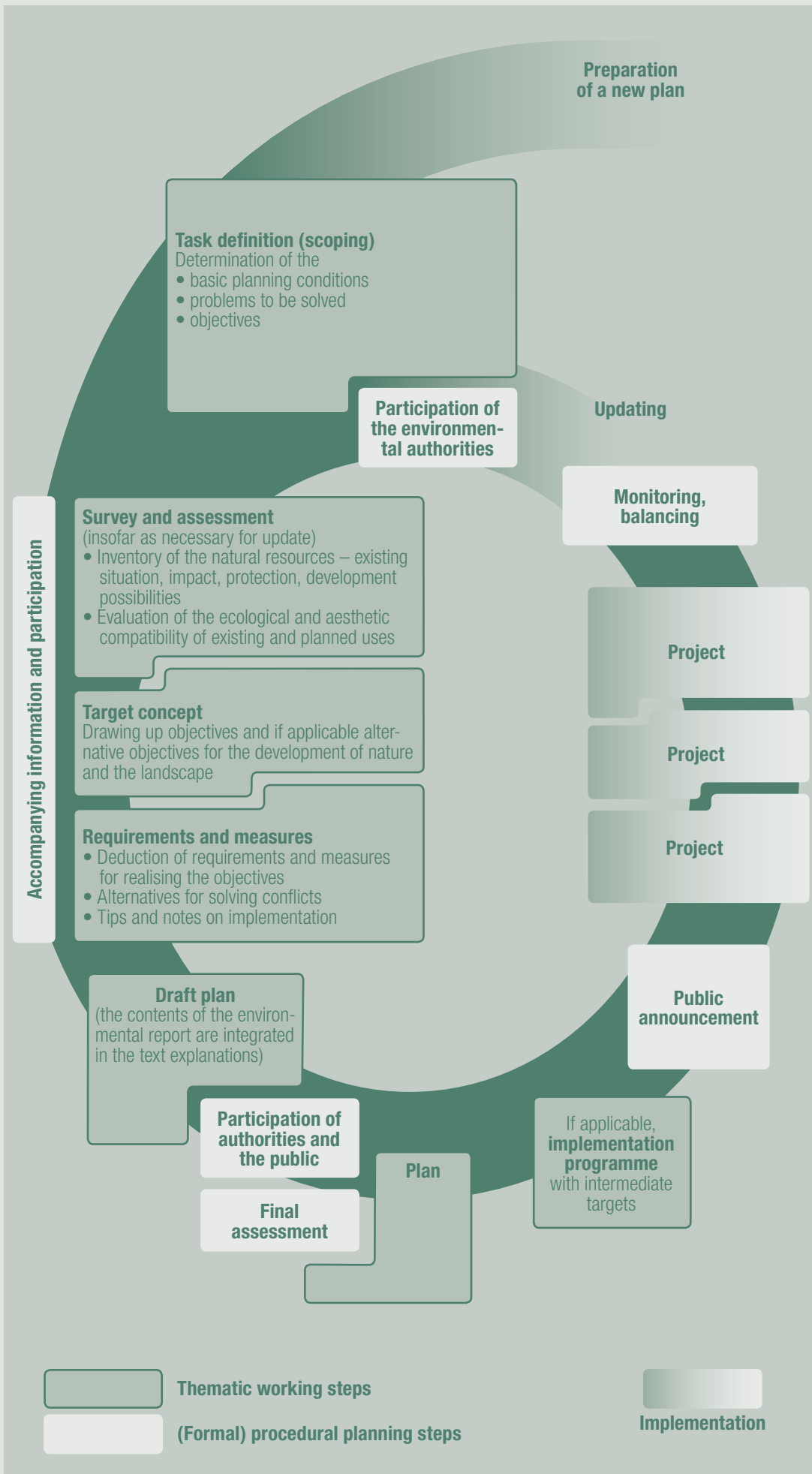


Fig. 18:
Landscape planning sequence

Landscape planning with a modular structure can be prepared for a partial space, topic-based or matched to the respective queried contents (cf. Chap. 3.2). If necessary, individual issues for sub-areas can also be dealt with in greater detail on the basis of the currently available information, e.g. for drawing up the impact mitigation regulation or as an EIS (environmental impact study). In this way the landscape planning authorities as well as the authorities responsible for other planning and administrative procedures can better use landscape planning for their tasks.

6.2 Procedural steps of the Strategic Environmental Assessment of the landscape planning

Apart from the content requirements (cf. Chap. 5.2), the strategic environmental assessments requires formal procedural steps to be integrated in landscape planning. In addition, specific procedural provisions for the SEA specified by the federal states as well as linking with the regional and urban development planning (primary & secondary integration) can also influence the planning process. However, these are not described here.

With the SEA the participation of authorities and the public becomes a fixed component of all landscape planning procedures. The formal procedural steps for participation of and consultation with the authorities and public (in particular Article 14f, h-I UVPG) are to be understood as being minimum requirements. They can therefore be supplemented with further informal steps and special forms of information and participation of other authorities, organisations, societies, clubs and the population, e.g. in order to awaken interest, promote acceptance or to increase the willingness to participate (cf. Chap. 6.3).

At first, after the decision has been made to draw up or update the plan, the basic planning conditions, pending problems and specific tasks are defined in greater detail (cf. Chap. 6.1). This determination of the task corresponds to definition of the scope of investigations (scoping, Article 14f UVPG). The authorities whose environmental or health-related area of responsibility is affected by the plan must be involved during this early planning phase.

The draft plan is produced as a preliminary result of the content steps (survey and assessment, target concept, deduction of requirements and measures). This is the subject of the participation of and consultation with the authorities and public (Article 14h, i UVPG). To this end the draft must be sent to other authorities and posted/displayed for public examination. The comments and opinions received in response are taken into account in the revision of the draft plan (Article 14k UVPG).

The final version of the plan is publicly published and posted together with a summary explanation, as well as the comments and opinions (Article 14l UVPG).

The effort and cost required for the specified formal procedural steps can be reduced if the timing of the landscape planning procedure is coordinated with the respective corresponding regional and urban development planning procedure (preparation, updating or amendment of the regional planning programme (RROP) or the structure plan). For example, the consultation and participation of the authorities, public posting and announcement of acceptance of the plan can take place at the same time, if the LRP and RROP or landscape plan and structure plan are prepared in parallel or leading each other in parallel. Regardless of the integration model applied in the respective federal state, the landscape planning functional concept, not weighed up with other (e.g. economic or social) issues, should be incorporated in the participation of the authorities and public, in order to make the weighing up processes transparent. The non weighed-up expert report is also necessary to determine and justify deviations from the landscape planning.

6.3 Active participation of the public

Especially at local authority level, the population should be motivated to actively participate in the planning and in implementation of the planning results. The involvement and consultation with the public when preparing the landscape planning offers opportunities for all participants:

- Local knowledge, memories, experience or own data collections, especially of members of the public voluntarily involved in clubs or organisations, underpin and supplement the fundamental data with valuable information. This can reduce the survey and data acquisition costs and effort and improve the quality of the landscape planning.
- The environmental information made accessible to the public – e.g. via the internet – communicates to the public background knowledge on the processes in nature and in the landscape and therefore contribute to environmental education (cf. Chap. 2.4). This is a prerequisite in order to enable members of the public to take advantage of their participation options in the interests of positive environmental development.
- Organisations, clubs, institutions as well as individual persons receive participation, consultation and contributory possibilities – within a defined framework (see below). They can contribute issues and ideas to the planning.
- Participation of the public is an important precondition for understanding and acceptance of the plan contents and the willingness to actively participate in the implementation.
- The members of the public can share in the implementation successes. Knowledge of the successes of landscape planning increases the motivation to participate in the planning.
- Who should be involved in the landscape planning depends on the planning level as well as the relevant topics and focal problems in each individual case.

The regional or supra-local landscape planning is mainly aimed at target groups in the government administration. Public participation at this level takes place mostly through the possibility of participation of the organisations, clubs and representative lobby groups (especially those concerned with nature conservation, hunters, fishing, agricultural as well as (nature) sports, recreation, tourism). At the local level, where the long-term shaping of the public's own town and own living environment is involved, the members of the public are also approached directly and individual users or spokespersons of user groups are involved to a greater extent. Therefore, information and participation offers within the scope of preparation of the local landscape plan are frequently much broader.

Information and participation can begin at an early phase of the work process and can accompany the whole planning process. The extents of the consultation and participation possibilities differ in the individual phases of the work. The orientation and focal points of the participation change depending on the task. The choice of form of information and participation (press, internet presentation, information event, working party, hearing, comments via the internet, etc., cf. Tab. 1) are based on the different purposes and target groups. The whole planning process should be accompanied by press work and publication of the work status on the internet.

Target groups and forms of participation in the work phases

For the definition of the tasks and problem (scoping), it is important that on the one hand planners (usually the landscape planning consultants) and planning authorities (e.g. the local community) determine the pending issues. On the other hand, other authorities and relevant organisations are asked about their planning intentions and their required or preferred focal areas for landscape planning.

By making an announcement in the press, the public is informed about the start and further course of the landscape planning. In addition, individual target groups can be specifically informed and involved in the following planning phases:

In the survey and assessment phase the quality of the data can be improved through the local knowledge of the organisations and individual members of the public. The descriptions of the existing situation can be supplemented and if necessary corrected. It is also possible to ask about preferences regarding the recreational quality of the landscape. During the phase of definition of the objectives and measures, ideas of members of the public can be incorporated provided they do not impair the overriding nature conservation objectives but instead supplement measures, make a selection under alternative measures, adapt measures to practical use or enrich them under implementation aspects (see above). The ideas and suggestions of the affected or interested members of the public can be incorporated in the discussion of development prospects, models, objectives and measures as well as implementation options. Topic-specific participation of individual groups of players is frequently useful. As a result, nature and landscape improvements can be achieved which help to realise nature conservation objectives and correspond to the ideas of the people involved.

Who to involve

When and how to involve

Tab. 1:
Participation tasks and target groups in the individual planning phases [9]

Planning phases	Landscape plan participation tasks	Target groups of participation						
		Sectoral authorities	Professional organisations	Local community	Political committees	Environmental organisations	Land users/owners	General public
Lead phase	Information about the planning project	x	x	x	x	x	x	x
	Clarification of the objectives, contents, procedures ...	x	x	x	x	x	x	x
	Definition of problems and focal areas for the landscape plan preparation	x	x	x	x	x		
Existing situation	Acquisition of information on the completeness and correctness of the survey	x	x	x	x	x	(x)	x
	Explanation and discussion of the survey	x	x	x	x	x	x	x
	Clarification of the objectives, contents, procedures, ...	x	x	x	x	x	x	x
Assessment	Explanation of the assessment method	(x)	x	x	x	(x)	x	x
	Discussion of the assessment method	(x)	x	x		(x)		
Target concept	Explanation of the target concept	x	x	x	x	x	x	x
	Discussion of the target concept	x	x	x		x		
Measures	Explanation and discussion of the measures concept	x	x	x	x	x	x	x
	Determination of implementation options	K	x	x	x	K	(x)	x
Draft plan	Explanation and discussion of the draft plan	(x)	x	x	x	x	(x)	x
	Explanation of the opportunities and limits of participation				x	x	x	x
	Distribution of the draft on CD-ROM	x	x	x	x	x	x	
Completion of the plan	Notification of planning and participation results	x	x	x	x	x	x	
	Notification of consideration of comments and opinions to those who submitted them	x	x	x	x	x	x	
	Distribution of the landscape plan on CD-ROM	x	x	x	x	x	x	
Implementation	Drawing up an action concept	x	x	x	x	x	(x)	x
	Coordination of implementation and consultation offers	x	x	x		x	x	
	Formation of cooperations for implementation	(x)	(x)	x		x	x	x

x = target groups, (x) = focal participation of a specific group,
K = Cooperation partners for carrying out participation projects

Participation rules

Trustful and sustainable participation of members of the public in the planning and development of nature and the landscape is based on preconditions which must be taken into account during the course of the planning:

Participation as dialogue

Participation is not only one way communication of information. It requires a range of consultation and participation opportunities during the planning and implementation to be offered by the planning authorities as well as the commitment of the members of the public to contribute.

However, the possibilities of involvement in producing the planning results are not unlimited, as several contents of landscape planning are, e.g., already specified by binding law and express overriding social interests. Such requirements can only be changed in a very limited way at a local level. It is important to clearly explain to the groups involved the possibilities open to them for influencing and actively shaping the results in order to make the scope for action transparent to all parties involved. When assessing the condition or formulating objectives the planner is tied, in particular to protection and development objectives either legally defined or anchored in a higher planning level, and partly by technical methodology requirements (e.g. guidelines, orders issued by the federal states). The information to be made available during the participation process therefore also includes the legal, administrative regulations and planning requirements, which must be observed at the respective planning level. This results in discussable development options and alternative measures (so-called negotiable objectives) and such which are excluded from discussion due to previous specifications at a higher level.

Furthermore, during the planning it should also be taken into account that landscape planning should first show the best solutions for the environment so that the administration, members of the public and politics are aware of the benchmark for the environmental condition of the local community. Through the participation, and ultimately the political decision, the currently required level of conservation and development of nature and the landscape is defined as an „intermediate target“. A good solution has proven to be to decide this target level to be aimed for and which can be implemented medium-term in an implementation programme (cf. Chap. 4.3). When integrating the landscape planning in the regional and urban development planning it is important that the results of the participation are visibly reflected in the political weighing up and decision regarding implementation of the landscape plan, irrespective of the federal states' model of integration. If the implementation deviates from the descriptions in the landscape planning it must at least be justified.

If ideas and objections of members of the public have been taken up in the implementation concept or rather in decisions concerning projects, urban development planning or environmental initiatives of the local community, these should be clearly identifiable. This is the only way to maintain the public's motivation to participate in other procedures too. For fast visibility of the public's influence in the landscape planning it is important, wherever possible, for it to be drawn up at the same time as the urban development planning (cf. also Chap. 6.2). The public can then directly and immediately recognise how their environmental ideas and concerns are incorporated in a binding plan for the important field of expertise of local building development.

The use of new technologies as information and communication media can substantially support the participation process. In particular, the use of geographic information systems, the further processing of data for presentation or analysis purposes and the provision of data on the internet open up diverse opportunities for communicating information and for participation:

- Geographic information systems make it considerably easier to make changes and to keep the database up to date. Users can access the landscape planning data and information via the internet – even from home.
- The plan contents can be presented in a transparent and graphic way. Maps are used for this, but also two or three-dimensional displays from a pedestrian's perspective. Visualisation of natural landscape relations makes it easier to understand processes which cannot usually be experienced. Forecasts and their presentation in the form of development scenarios support discussion of the objectives, requirements and measures. The visual effects of predefined intrusion or development alternatives can already be simulated (e.g. wind turbines, housing development, increased maize cultivation for biomass production). All kinds of different tools are currently available for this purpose [9], which the planning authorities can select for the respective purpose or depending on the available budget. Further options are currently being developed.
- The information processed in the geographic information system can be queried and evaluated for specific target groups or for specific topics. Interactive maps on the internet also offer easy access to the digital data and analysis functions which each internet user can make use of according to their own individual needs.

Possibilities and limits of consultation and participation

Transparency of decisions

Feedback on the public's ideas and suggestions

Use of new technologies:

Data updating

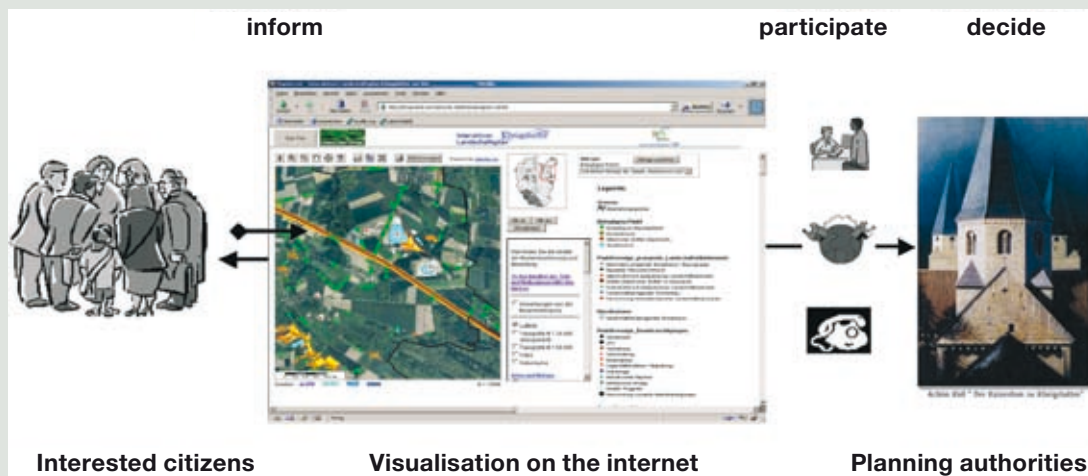
Multimedia presentation

Target group oriented preparation and query

Documentation of the planning and decision-making processes

- The internet is particularly suitable as a medium for documenting the planning and decision-making processes. During the whole planning process, information about the planning status as well as the results of individual phases of work can be made available. Interested parties can therefore spontaneously contribute to the planning and participation process. The decision-making process can also be made understandable and traceable in this way.

Fig. 19:
Use of new technologies for information and participation purposes [9]



Participation module

- With the so-called participation modules the internet can be used to make it easier for public bodies as well as the public itself to formally participate. Ideas, suggestions and concerns can be submitted on the required text passages or map sections “via mouse-click“. The automatic content reference and predefined form make structuring and processing the objections easier on both sides. The players involved can submit their comments relatively quickly and easily. The planning authority receives the objections in prestructured tables which can be directly further processed.
- With the multimedia preparation, environmental information, especially for young people, can be communicated in an attractive way. Such environmental education modules and educational games can at the same time be door openers for involving young people.

Environmental education modules and educational games

Effort and benefit

As with each participation, the landscape participation is not possible without the commitment and involvement of the planners, politicians and members of the administrations. The provision and maintenance of information on the internet, the target group-specific and topic-specific presentation as well as the organisation, implementation and technical accompaniment of the participation process involves additional work and services which take up the time of the landscape planning authorities or the planning consultants engaged to draw it up. While the use of new technologies reduces the amount of work involved in the survey of the existing situation and updating the data acquired (cf. Chap. 3.1), additional time and effort is required for multimedia display of the plan contents (e.g. 3D simulations or learning modules). However, the work required for the participation process can be reduced if the participation module (see above) is used by the players as the dominant path to present spatial ideas and suggestions to the planning authorities.

The potential associated with the participation – especially with respect to increasing the efficiency of landscape planning – justify and relativise the effort. At the same time, in this way the landscaping planning authorities fulfil the legal requirements (e.g. public participation within the scope of the SEA (cf. Chap. 6.2), environmental information and participation according to the Aarhus Convention (cf. Chap. 2.4)).

7. Implementation

Landscape planning is implemented in different ways and this frequently begins during the preparation of the plan.

The plan statements are implemented by being

- integrated in other planning,
- implemented within the scope of the nature conservation authorities' range of action and are used as the working basis in all other environmentally relevant decisions arising as well as other authorities or
- measures are actively carried out by the local community, organisations or population.

It can also be implemented in the long term and indirectly by changes in attitude of the members of the public or by using landscape planning as the basis for marketing nature conservation products or for the management and certification of companies and farms.

Planning and project sponsors take into account the requirements and measures of landscape planning within the scope of their tasks and field of activity. By adopting the landscape planning statements in their planning, approvals and provisions, these become legally binding. In particular, the following are worth naming here

- integration in the plans of the federal state, regional and urban development planning (e.g. federal state regional planning programme, regional plan, land use plan),
- integration in other sectoral planning (e.g. traffic planning, river basin management, planning for river engineering measures or land consolidation) and approval procedures for individual projects (e.g. mineral extraction or initial afforestation),
- implementation of the landscape planning recommendations in the execution of the nature conservation legislation provisions such as putting under protection, impact mitigation regulation, assessing compatibility with the Habitats Directive or special species protection provisions according to the nature conservation laws of the federal states.

Integration in other planning is made easier if the text and graphic presentation of the requirements and proposed measures take into account the implementation preconditions and presentation options of other planning. Therefore, the landscape planning should contain „translation maps“, which transfer suitable objectives and measures into the language and plan symbols of „standard consumers“ such as regional and urban development planning. Consideration of level-specific description of the planning in concrete terms as well as the style of the plans and possible requirements for the graphic presentations is decisive. In addition, easily understood and traceable justifications improve the chances of integration of the landscape planning statements.

The objectives and measures which are not aimed at integration in other plans or instruments become effective by being considered in other administrative actions (e.g. in approvals, the directing of support programmes or own nature conservation measures).

At a local community level, many of the measures for public and private plots of land suggested in the landscape plans can also be carried out without preceding planning or approval procedures. Examples of such measures are the creation of natural private gardens of houses and allotment gardens, facade and roof planting, planting of field trees or shrubs, redesigning schoolyards or playgrounds and the setting up of farmers' markets or marketing initiatives, e.g. for products from valuable nature areas, which not only benefit the population but tourism too. The motivation for such initiatives can be substantially promoted through early involvement of the public and in particular local land users as well as processors, marketers and restaurateurs in the planning process and through appealing public relations [16].

However, far-reaching implementation projects cannot be achieved through conviction, co-operation and idealistically motivated measures alone. This usually requires legal instruments and/or economic incentives. Therefore, landscape planning should contain specific advices and information on instrumentation and funding of the objectives and measures.

Strategic considerations, taking into account the spatial situation, also play a role (cf. Chap. 4.2). Compensation measures of the impact mitigation regulation for example will be very significant as an implementation path, especially in spaces with high development momentum.

Implementation paths

Integration in legally binding planning and approvals





Consideration in environmentally relevant decisions and actions

Implementation of the measures

Notes on their implementation

Tab. 2:
Examples on the implementation
of landscape plan measures

What? (Requirements/ measures)	How? (suitable implementation instruments)	Who? (Authority or sponsor/ implementing body)
Examples of measures in settlement areas		
Remove surface sealing of areas	<ul style="list-style-type: none"> • Binding land use plan, designation as compensation measures • Public relations 	Local authorities, private persons/bodies
Conserve existing trees which are characteristic of the townscape	<ul style="list-style-type: none"> • Tree preservation order • Public relations • Use the possibilities of designations in the binding land use plan 	Local authorities, private persons/bodies
Design urban fringes	<ul style="list-style-type: none"> • Incentives and conviction (e.g. creation of open orchard meadows through local authority support or development programmes, "wedding" groves, tree stewardships, promotion of marketing/processing of fruit) • Designation in the binding land use plan 	Local authorities, private persons/bodies, environmental organisations, tourism organisations
Control and limit human settlement/housing development	<ul style="list-style-type: none"> • Urban development planning 	Local authorities
Secure land for mitigation and compensation measures	<ul style="list-style-type: none"> • Urban development planning 	Local authorities
Auxiliary measures for species	<ul style="list-style-type: none"> • Incentives and conviction 	Private persons/bodies, environmental organisations
Examples of measures on agricultural land		
Reduction of soil erosion (e.g. through protective planting, management and catch crops suitable for the location)	<ul style="list-style-type: none"> • Planting areas, together with hunters • Preliminary agricultural structural planning/land consolidation procedures • Advising farmers 	Farmers, agricultural administrations, agricultural consultants

<p>Conversion of arable land into extensively used grassland</p>	<ul style="list-style-type: none"> • Voluntary participation of farmers in contractual nature conservation • Open space structure plan • Compensation measures • Land purchase, conditions in leasehold agreements • Integration in preliminary agricultural structural planning/land consolidation procedures 	<p>Farmers, district/local authorities, agricultural structure office</p>
<p>Creation of riparian zones</p>	<ul style="list-style-type: none"> • Application of the Water Law, compensation with funds through the „water penny“ • Application of state support programmes • Integration in programmes of measures according to the WFD 	<p>Local authorities in collaboration with the water industry and/or agricultural administration, water and soil organisations</p>
<p>Examples of measures in the forest</p>		
<p>Conversion of coniferous forests into mixed forests with forest tree species typical for the location</p>	<ul style="list-style-type: none"> • Forestry management plan • Convincing forestry administration and forest owners • State support programmes 	<p>District forester, upper and supreme forest authority, forest owners</p>
<p>Biotope and species protection in forest areas</p>	<ul style="list-style-type: none"> • Inclusion in the state forest management planning (conviction) • Designation of protected forest according to state forest law • Designation as nature reserve 	<p>District forester, upper and supreme forest authority, nature conservation authority</p>

In order to be able to carry out the measures (e.g. rewatering or extensification measures) provided for in landscape planning or in the planning based on it (management and development plans, landscape envelope plans), it is often necessary to purchase the land concerned or to conclude leasehold, management or maintenance/conservation contracts for areas owned by the public sector. Areas belonging to public corporations (such as churches, foundations) can also be included if necessary. In most cases the land owners have to be willing to cooperate in order for the measures to be successful. This also depends on to what extent commitment to nature conservation and landscape managed was successfully awakened during the planning phase.

Closing remarks

Landscape planning is a proven and at the same time very sustainable instrument. It is the central conceptual nature conservation instrument with which the ideas of sustainable landscape development can be drawn up, presented and fed into other sectoral planning. Under the conditions of frequently sectoral and complex nature conservation and environmental legislation, landscape planning brings together land-relevant nature conservation and environmental matters. It makes it easier to achieve orientation across multiple public administrative sectors and supports action aimed at prevention. It therefore assists the authorities in accelerating and smoothly dealing with planning and approval procedures. Landscape planning is also highly relevant for modern public participation. With the help of the landscape planning the members of the public are comprehensively informed about their environment and as a result are enabled to participate in environmentally relevant decisions in a qualified way. Last but not least, landscape planning is the only basis currently available to ensure financial support from the agricultural and structure funds is used in an efficient, well-directed way under environmental aspects. It is to be expected that in the future it will gain substantial significance with respect to the latter of these functions.

These beneficial outcomes of landscape programmes, landscape structure plans and landscape plans make them indispensable aids of federal states, regions and local authorities in their efforts to create sustainable spatial development and an environment worth living in.

This brochure relates to nature conservation legislation in force in 2007, in particular the Federal Nature Conservation Act.

With the Federalism Reform, the way is free to create a uniform Environmental Code („Umweltgesetzbuch“ – UGB) for the whole of Germany. Environmental legislation to date will be merged in this new legal code and the environmental regulations will be clearer and more comprehensible for its users.

Project-related environmental legislation and new federal water and nature conservation legislation provisions will be passed by the Federal Government in this legislature period as important parts of the Environmental Code.

Tried and tested provisions are to be retained and there are no plans to shift away from the demanding objectives of current environmental legislation. This naturally also applies to landscape planning. In the future „Environmental Code (UGB), Part Three (III) – Nature Conservation and Landscape Management“, landscape planning will remain the most important planning instrument of nature conservation and landscape management. Even after amendment of the Federal Nature Conservation Act (BNatSchG) as UGB III, this brochure will still be an important tool for all interested parties.

Constantly updated information on the status of the legislative procedure is available under www.umweltgesetzbuch.de.

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- [10] Cf. HAAREN, C. V. 2007: Bedarfsgerechte Darstellungen in der räumlichen Umweltplanung – Benennung der Schutzgüter, Gliederung und Selektion von räumlichen Informationen am Beispiel der Landschaftsplanung. *Naturschutz und Landschaftsplanung* 39, Volume 5, p. 143-148.
- [11] Cf. Jessel, B. and Hasch, B. 2006: Umsetzung der europäischen Wasserrahmenrichtlinie – Unterstützung durch die Landschaftsplanung. *Naturschutz und Landschaftsplanung* 38, Volume 4, p. 108-114
- [12] WARREN-KRETZSCHMAR, B. 2007: Leitfaden 7 – Unterschiedliche Visualisierungstypen in der Landschaftsplanung nutzen. *Naturschutz und Biologische Vielfalt* 40/7 und Leitfaden 8 – Visualisierungen in der interaktiven Landschaftsplanung einsetzen. *Spektrum der technischen Möglichkeiten und Anwendungsbeispiele*. *Naturschutz und Biologische Vielfalt* 40/8
- [13] ALK: Automated Land Registration Map, ATKIS: Official Topographical Cartographic Information System, ALKIS: Official Land Registry Information System (currently being set up; transfer of the ALK including the corresponding property information; ALKIS is compatible with ATKIS)
- [14] As the obligation to monitor (Art 14m UVPG) was not included in the transitional regulation of Art 25 (7) No. 3 UVPG, the federal legislator does not specify mandatory monitoring of landscape planning (cf. LOUIS, H.W. 2007: *Der Beitrag der Landschaftsplanung für die Umweltprüfung in der räumlichen Planung*. In: SPANNOWKSY, W. and HOFMEISTER, A. (Publisher): *Die Landschaftsplanung und ihr Beitrag für die räumliche Planung*. Carl Heymanns Verl. Berlin, p 1-16.
- [15] Changed according to HAAREN, C. V., SCHOLLES, F., OTT, S., MYRZIK, A. and WULFERT, K. 2004: *Strategische Umweltprüfung und Landschaftsplanung – Final report on R&D project 802 82 130 of the Federal Agency for Nature Conservation*, p 104 (http://www.bfn.de/fileadmin/MDB/documents/fe_sup_endbericht.pdf)
- [16] Cf. WIRTHENSON, E. 1987: *Naturschutz mit den Bauern*. In: *Mitteilungen aus der Wildforschung* (80), 4 p. as well as POLLERMANN, K. 2004: *Planungsstrategien zur Umsetzung von integrierten Umweltschutzkonzepten für die Landnutzung durch Tourismus, Landwirtschaft und Naturschutz – eine Evaluation der Umsetzungserfolge in Beispielgebieten und die Ableitung von Handlungsempfehlungen zur Gestaltung von kooperativen Planungsprozessen* (dissertation). In: *Contributions to regional planning* (77). Hanover



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**Bundesamt für Naturschutz, Außenstelle Leipzig
(Federal Agency for Nature Conservation,
Field Office Leipzig)**

Karl-Liebknecht-Straße 143
D - 04277 Leipzig

Phone: +49 (0)341 309 77 - 17

Fax: +49 (0)341 309 77 - 40

E-Mail: jens.schiller@bfm.de

**Bundesamt für Naturschutz,
Referat Presse und Öffentlichkeitsarbeit
(Federal Agency for Nature Conservation,
Department Press and Public Relations)**

Konstantinstr. 110
D - 53179 Bonn

Phone: +49 (0)228 84 91 - 4444

Fax: +49 (0)228 84 91 - 1039

E-Mail: Presse@BfN.de

Internet: www.bfn.de