ECOLUP
Ecological Land Use Planning

ECOLUP-GUIDANCE

Environmental Management for Communal Urban Land Use Planning

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Preface

The region around Lake Constance represents a significant agglomeration area within Central Europe with a very dynamic tempo of development. Here we can observe particularly clearly the environmental concerns brought about by settlement development: the preservation of valuable natural areas and landscapes cultivated by man, the need to provide a high quality of life for living and working, and the responsibility of protecting the drinking water reservoir for 4.5 million people. At the same time, Lake Constance is a magnet for the two million tourists and 27 day-trippers who visit the region each year. This means that the communities of the region must take particular care to preserve the region's natural resources, especially the finite resource land.

Together with the cities of Constance and Überlingen and the two Austrian communities of Dornbirn and Wolfurt, the Lake Constance Foundation has developed the ECOLUP project, an innovative approach to sustainable regional development. The ECOLUP project is intended to facilitate the application of the European environmental management system EMAS to the processes in communal urban land use planning. Its fundamental overall goals are to promote the exchange of information between the communities, to improve the extent to which environmental concerns are taken into consideration in planning processes, and to strengthen the involvement of the public, representatives of interest groups, and the findings provided by Local Agenda groups in this greater process.

I consider this project to be another building block in the development of instruments for sustainable settlement development and for the sparing use of natural resources. At the same time, ECOLUP represents a contribution to the implementation and achievement of the goals set in Baden-Württemberg's environmental plan.

It seems particularly important to me that these approaches and methods were not developed for the Lake Constance region alone, but can be applied in other regions, as well, for the planning processes related to land use are conflict-ridden in every community. I recommend the ECOLUP Guidance for use in and integration into any community's urban land use planning.

Ulrich Müller, MdL
Minister für Umwelt und Verkehr des Landes Baden-Württemberg

1. Environmental Management for Communal Urban Land Use Planning

Land Use as an Environmental Problem

With its 147 inhabitants per square kilometre, the European Union is among the most heavily settled regions in the world. The amount of built-up surface area increases by 2% every ten years (European Commission: Caring for our future, 2000). Among the resulting burdens for nature and the environment are: the release of toxic substances into the ground, air and water, increasing concentration of traffic, increasing impact of human inhabitancy on the landscape and natural areas.

The meagre inroads that environmental protection goals for community planning have been able to make into how communal urban land use plans are actually drawn up has been the topic of critical discussion for quite a long time. Environmental protection goals set down in general form in binding land usage and regional planning directives in general are not concretely implemented in the zoning plans cities establish for land use.

The application of the EMAS II directive to the instruments of communal urban land use planning is a logically consistent step towards promoting environmental education and improvements in the environment. The procedure makes the inarguable relevance of communal urban land use planning to environmental issues understandable and measurable.

The programme's long-term goal is sustainable land use and urban planning through the development and the introduction of an environmental management system for the planning processes which constitute communal urban land use management. In these processes are anchored the goals of environmental protection, preservation of biological diversity and a use of natural resources which promotes their conservation.

The Environmental Situation in the Lake Constance Region

The Lake Constance region represents one of the agglomeration areas in Central Europe within which the environmental problems caused by settlement development can be clearly seen. It offers valuable natural areas and land cultivated by man, high quality of life for living and working, but also the responsibility for the protection of the drinking water reservoir for 4.5 million people. This means that the communities of the region must take particular care to preserve the region's natural resources, especially the finite resource land.

With 289 inhabitants per square kilometre, the Lake Constance district lies above the EU average. Areas near the lake are particularly desirable - there up to 500 inhabitants per kmΞ live. It is attractive to live and work on the lake and this is not going to change in coming years. For the communities near the lake, a population increase of 4 to 12% by the year 2005 has been predicted, despite the high price of construction land.

In addition to the local population, each summer approximately 2 million tourists and about 27 million day-trippers come to the lake. They, too, require a place to spend the night, infrastructure and recreational facilities. An ever-increasing squeeze is being put on the nature resources of in the lake vicinity. Today, only 28% of the shoreline in Baden Württemberg retain their reed stand and these sections lie, aside from a few exceptions, within the existing nature and land conservation areas.

ECOLUP: An Innovative Approach to Sustainable Environmental Planning

ECOLUP (Ecological Land Use Planning) is intended to provide a framework within which the European Environmental Management System EMAS II can be applied to the processes in communal urban land use planning. The EMAS directive determines which criteria must be observed when establishing an environmental management system for production systems, organisation locations or services and in doing so supports continual improvement in environmental performance at a level higher than that required by law.

Together with the cities of Constance, Überlingen and Dornbirn and the municipality (Marktgemeinde) of Wolfurt, the Lake Constance Foundation has put together a model project centred on ecologically oriented land use planning. Working within the framework of ECOLUP (Ecological Land Use Planning), its purpose is to apply the European environmental management system EMAS II to the processes that make up communal urban land use planning. The Institute of Applied Research at Nürtingen University was responsible for the supervision of the scientific aspects of this project.

ECOLUP provides communities with the means to validate their urban land use planning in accordance with the EMAS directive. The municipal administration, because it is responsible for

1 ECOLUP

1. Environmental Management for Communal Urban Land Use Planning

communal urban land use planning, is the institution which undergoes validation. Involved actors within the community are the responsible authorities (building control office or city planning office), the city council and the mayor. The objects of validation are the communal urban land use planning programme along with the zoning plan and the overall development plan. Plans established by other institutional authorities as well as informal instances may also play an additional role. Objects of evaluation are the planning process, its realisation and all aspects of relevance to the environment. The location evaluated is the land within the municipality's boundaries. The programme offers a goal-oriented identification of potential improvements in environmental performance and, after the plan has been realised, the assessment of which improvements were actually made.

ECOLUP Procedure

At the beginning of the project, a SWOT analysis (test of environmental efficiency) was carried out in order to take stock of strengths and weaknesses in the communities. On the basis of the results of the SWOT analysis, the communities set local priorities and established how topics could be consolidated to form a reasonable basis for their environmental programmes. In each community, an environmental team was put together consisting of interest groups and all relevant bodies with power of decision. Within the framework of communal workshops, this working group drew up concrete environmental goals and measures (environmental programme) for all relevant environmental aspects that can be directly or indirectly influenced by urban land use planning:

- excessive urban expansion
- sealing-off of soil / use of green areas
- transportation / mobility
- energy / climate
- landscape development
- flowing waters

Additional workshops were conducted on implementing an EMS within planning processes and on participation and public involvement. Specialists and regional authorities were brought into the workshops who provided background information and demonstrated what initiatives could be undertaken. Each community's environmental policy, environmental goals and environmental program were presented to the responsible political bodies, the town councils, for discussion and approval. The entire process was documented in accordance with the EMAS stipulations and at the end of the project, a test validation (internal organisational environmental assessment) was conducted.

ECOLUP INFO

⇨ This document is also available as Pdf-File download in English and German from the *www.ecolup.info* website.

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Stadt Konstanz

Stadt Überlingen

Stadt Dornbirn

Marktgemeinde Wolfurt

City of Constance (D)

Constance, with its 80,000 inhabitants the largest city and regional centre in the Lake Constance vicinity, is located at the point where the Upper and Lower Lakes meet and borders directly on Switzerland.
Its location, the natural and man-made landscape, as well as the fine state of preservation of the historical city itself in conjunction with the higher and other educational institutions and service facilities it offers, makes it a very attractive place to live and work, as well as for tourism. The number of places of work has grown by ca. 600 from 1961 to 3,300 at present. During the same period of time, the number of jobs has grown continually to today's level of 34,000. The city's job market is focused on the service industry which is represented with 75% of the total market. The approximately 100 industrial firms with ca. 8,000 employees, 820 workshops with 6,600 employees, retail trade *(670 firms)* with over 4,300 employees and the tourism sector with 2,000 employees (not including gastronomy) are among the pillars of the local economy.

The demands on communal governments for the management of the Lake Constance ecosystem are not only determined by communal environmental protection, but also by urban development as a whole. Two thirds of the 31 km of shoreline in Constance are in intact and nearly natural condition. The fact that the lake is freely accessible to the public is one of its qualitative characteristics – for example, there are 5 lakeshore bathing areas and the Lakeshore Path newly constructed in 1996 along the "Konstanzer Trichter" where the Rhine flows into the lake. Over 50% of the municipal surface area are under the protection of law as nature and landscape conservation areas or NATURA 2000 areas. The Wollmatinger Ried (Wollmatingen Marsh), one of the oldest nature conservation areas in Baden-Württemberg, covering 767 ha and bearer of the European Diploma, lies within Constance's borders. The municipal statutes for tree preservation and designation of protected permanent green areas ensure that the free spaces within the city proper are of high quality and create recreational areas in close proximity to settlement areas.

Of the 5408 ha of municipal surface area, 33% are used for agriculture, 32% are forest and 30% are settlement and transportation areas. In Constance, the settlement surface area and population have doubled since 1950, in part due to the establishment of the university and technical institute *(Fachhochschule),* as well as the city's attractiveness for retirees and as a holiday and recreational region. The population influx continues and this tendency is not expected to change in the future, making the available surface area a factor limiting Constance's urban growth potential. Development within the city proper and surface area recycling are goals Constance rigorously pursues. Between 1979 and 1996, settlement area development could be covered to 57% (80.3 ha) in the city's centre. Due to the departure of the French military presence and the decrease in production industries, the 1980's saw the development of the conversion and revitalisation of certain branches of commerce as a central area for active urban planning policy in order to quell the development of the remaining landscape. This trend was supported through filling vacant lots and making economical use of surface area in construction for housing and commerce.

2 ECOLUP Partner Communities

City of Constance (D)

Martin Wichmann and Mechthild Kreis

In light of the city's public transportation service and its centre concept, Constance can be termed a compact city with short distances between destinations, in accordance with the ecology of settlement areas model. The distances its inhabitants must cover between housing, workplace and recreation areas in order to fulfil their most basic needs are short. Centrality and compactness are characteristics which have developed over the course of decades and can today undergo rigorous further development within the framework of a centre concept. They are an important constituent element of Constance's new Urban Development Concept 2000. As a part of the Local Agenda 21, workshops on future development were held in all city neighbourhoods, the results of which will be acted upon through concrete projects and communal urban development planning.

The zoning plan introduced in 2000 was drawn up in conjunction with the landscape plan so that settlement area development could from the outset be conducted on the basis of an ecological assessment of the natural and man-made landscape. A milestone in settlement area policy has been the decision to zone no further sites in proximity to the lake for construction in order to conserve the valuable natural and historical landscape of Lake Constance. This step was taken in view of the international development model for the Lake Constance region.

Through the introduction of environmental management in urban land use planning as a part of the Lake Constance Foundation's ECOLUP model project, the city of Constance has committed itself to achieving sustainable land use management and the reduction of excessive urban expansion. The ECOLUP project is linked to a total concept for sustainable urban development oriented to the UN Conference for Environment and Development's Agenda 21 and the policy fields laid out in the Aalborg Charta.

Martin Wichmann,
DeputyDirector,
Department of City Planning and the Environment and Director,
Environmental Department

City of Überlingen (D)

The large district city of Überlingen is located in the Federal Republic of Germany, in the south of the federal state Baden-Württemberg in the Lake Constance-Upper Swabia region on the north-western shore of Lake Constance. Approximately 21,5000 inhabitants live spread throughout the city proper and in seven incorporated communities. Over the last 10 years, the population has grown by 2%. Within the municipal boundaries lie 5,867 ha; 43% of this land have been designated nature conservancy areas or protected landscape.
The city has ca. 8,800 jobs to offer, 59% of which are in the service sector and 41% in production. An important pillar of the commercial economy is tourism with 550,000 overnight stays per annum. While 59% of the city's employees commute from elsewhere, 26% of its inhabitants work outside its borders; only 15% of the jobs in the city are held by residents. At present, unemployment is at 4.8%. As a preferred location for retail businesses, Überlingen fulfils a supply function for potential 52,000 consumers.

The attractive scope of the surrounding landscape, the city's location on the shore of Lake Constance and its proximity to the Alps are of great importance for its inhabitants and for the tourism industry. In order to maintain this natural and landscape capital, it is necessary to exercise great restraint in zoning new construction areas. In accordance with the city land use plan that went into effect in 1998, 48 ha of housing and mixed-use surface area and 21 ha of commercial construction sites can be made available or are in planning for the needs of the coming 10 to 15 years. Since that time, the city planning office has declared its intention to develop these

City of Überlingen (D)

sites over a much longer period of time than that originally targeted. In order to cover the need for housing land, above all potential available within existing settlement areas can be used. The city has opted for a retrospective concentration of the present settlement area that meets urban development standards by drawing up plans for underdeveloped locations in the city's centre and by revising existing development plans. Before the plans for regulatory changes are drawn up, studies of settlement density are conducted in order to achieve the goal of retrospective concentration as well as that of preserving the particular character of the areas to be effected. In order to establish the potential for retrospective settlement concentration, a register of vacant lots within the city core has been established. The city has determined what potential for revised usage and retrospective concentration is available in the seven incorporated communities by establishing instances responsible for local development in each one. As a matter of principal, regulatory plans for existing green

Thomas Nöken, Director City

areas have been drawn up at the same time as the construction plans in order to ensure urban development of high quality by means of permanent concepts for interconnected green areas that extend beyond boundaries of individual properties.

Thomas Nöken, the director of the City Planning Office, did not hesitate when the Lake Constance Foundation asked if Überlingen would participate in the new programme: "Through our participation in the ECOLUP project, we hope to build a basis for the introduction of an environmental management system that will optimise urban development and land use planning in Überlingen. Along with providing educational opportunities for the city administration's employees, sharing our experience with others at a national and international level is an equally important argument for participating in this pilot project."

City of Dornbirn (A)

Dornbirn, with 44,000 inhabitants and 121 kmΞ surface area, is the largest city in the province of Vorarlberg and lies in the economically dynamic conurbation area of the Rhine valley. Dornbirn seeks to ensure a high quality of life for the future through its urban development planning. The 1992 World Congress in Rio de Janeiro brought the importance of Local Agenda 21 and sustainable city and regional development to the attention of concerned specialists, if not to the general public. Today, we in the European countries, as well as many other regions of the world, are confronted with multifaceted and difficult problems caused by growing unemployment, decreasing competitive strength in many economic branches, and excessive consumption of our natural resources. It is becoming increasingly evident that our strategies for development can only accommodate these complex issues if we take into account the interrelatedness of these social, economic

ECOLUP-Environmental team Dornbirn

2 ECOLUP Partner Communities

City of Dornbirn (A)

and ecological challenges. We will only be able to take the step into a future with a high quality of life if we carefully balance the interests of economy, society and the environment.

For Dornbirn, this means managing the key elements of our habitat "the city of Dornbirn" in such a way that this very habitat remains liveable in the long term. Among these key or existential elements that we make use of every day and that make our daily life what it is are: housing, mobility and transportation, leisure and recreation, society and cultural life, the production of goods, private and public services, education and many more. We have a positive life-feeling or, to put it differently, a quality of life we experience as positive, if our living surroundings are pleasant, if we have access to adequate means of mobility, and find within our region both urban and natural surroundings, recreation and access to social and cultural services and institutions. We also require regional economic structures that offer us secure workplaces and income.
As a result, the main challenge facing us in our attempt to create a positive future for ourselves and coming generations lies in the necessity to form those very local and regional elements that we have at our fingertips in such a way that they can be securely maintained into the distant future if we take reasonable steps towards this goal. This guided, future-oriented development process rests on three fundamental pillars: economy, society, and resources in the natural environment. Promising and sustainable urban development can only be achieved if economic, societal, and ecological criteria are simultaneously taken into consideration. The capacity to remain economically competitive is just as important as social stability and an intact natural environment. The Dornbirn Environmental Programme passed by the city in 1999 is part of an integrative urban development planning that considers economic, social, and ecological goals to be of equal importance. The main goal for development in the city of Dornbirn is: "Dornbirn is an industrial city with a high quality of life". We aim for urban development of high quality without sudden changes in the economic and social structure or in what the infrastructure offers our citizens.

In order to achieve this main goal, aims and measures have been drawn up in the comprehensive urban development plans of the responsible city authorities. In terms of communal urban land use planning, Dornbirn has just revised its zoning plan on the basis of this overreaching concept with the fundamental aim of maintaining the current outer borders of settled surface area. In other words, spatial expansion will in the future occur within these borders in the form of concentration of housing and commercial construction.

Dipl.-Ing. Stefan Burtscher City Planning Office

Photo Project Team Dornbirn

Wolfurt Municipality (A)

Project Team Wolfurt

The municipality of Wolfurt lies on a western slope of the Vorarlberg Rhine valley between the provincial capital Bregenz and the largest city in the Vorarlberg province, Dornbirn. Due to its central location in the "Dreiländereck" ("place where three countries meet"), Wolfurt has in the course of recent decades developed from a rural agricultural village to a prospering site for commercial firms. Despite the increased influx of population in connection with this change and the general demographic development, the area has been able to retain a great number of its families, which in particular has had a positive effect on private care provided for the elderly.

At the beginning of the seventies, when the zoning plan was passed, the area was undergoing a population explosion, which led to a disproportionate designation of construction sites. Studies conducted as a part of the communal land use development concept have calculated that construction sites for approx. 30,000 inhabitants exist. Within this context, the planned development of settlement surface area using the instruments available to land use planning is hardly possible. One of the few management possibilities is the application of specific requirements for construction. For example, in this way retrospective concentration within existing settlement areas can be made more attractive than new construction, thus reducing the amount of new land used. All that can be done within the context of urban development planning to maintain existing settlement borders, develop the "Hohe Brücke" business district, control the number of individual construction projects by regulating the number of projects that can be conducted at time and in particular through non-invasive changes in current projects so as to ensure that urban development planning goals are met. Most recently, the pressure put on those remaining open spaces by recreational use has created a particular need for intelligent solutions.

In the ECOLUP project, the community set criteria with which to measure a successfully conservative use of its land resources and decided to carefully examine its urban development practices. Above all, the opportunity to profit as junior partner from the wealth of experience held by the senior partner has proven a definite benefit, as well as the new perspective on our problems and the new approaches to solving them gained through the expert supervision. These factors have fed into both our new urban development concept as well as the way we approach everyday problems.

Erwin Mohr, Mayor

3 What is an Environmental Management System?

Two "official" paths: EMAS II and ISO 14001

The EC Eco-Audit, also called EMAS, is a voluntary management system for businesses and organisations that wish to improve their operational environmental protection measures on a continual basis beyond the practices called for by law.

EMAS stands for the English name for the European environmental auditing system "Eco-Management and Audit Scheme". The revised EMAS II includes all the aspects of the international ISO 14001, but in some respects has higher requirements, for example employee participation and the publication of an environmental report.

All organisations participating in EMAS regularly draw up an **environmental statement** for the public. In it, the organisational **environmental policy** and its **environmental programme** with concrete **environmental goals** are established in connection with a complete depiction and evaluation of as much quantitative data as possible reflecting the programme's direct and indirect impact on the environment. All the relevant environmental aspects that the company or organisation is able to influence must be taken into consideration. Among these are to be numbered indirect aspects as well, such as investments, administrative and planning decisions, the range of products produced or the environmental balance of contractors and suppliers.
Each environmental statement must be evaluated by an independent, government-certified **environmental verifier (auditing).** If it meets the requirements of the EC eco-audit ordinance, the environmental auditor declares the environmental statement to be valid **(validation).** In Germany, the organisation is then registered with the Chamber of Industry and Trade (Industrie- und Handelskammer – IHK) in its EMAS register. This registration may occur only under the condition that the applicant has not previously violated the relevant **environmental legistlation.** The audit process must be repeated at least every three years.

The ISO 14001 – the international civil law environmental management system

The ISO 14001 defines an environmental management system as "part of the overall management system that includes the organisational structure, planning activities, distribution of responsibility, methods, processes and resources used in the development, implementation, realisation, evaluation and maintenance of an environmental policy".

The ISO 14001 is administered and further developed by the institutions responsible for indutrial standards in each country, in Germany the German Institute for Norms (Deutsches Institut für Normung – DIN) in Berlin. The revised EMAS II includes all requirements set by the ISO 14001 and in certain areas goes beyond it.

"Added Values" in the EMAS II

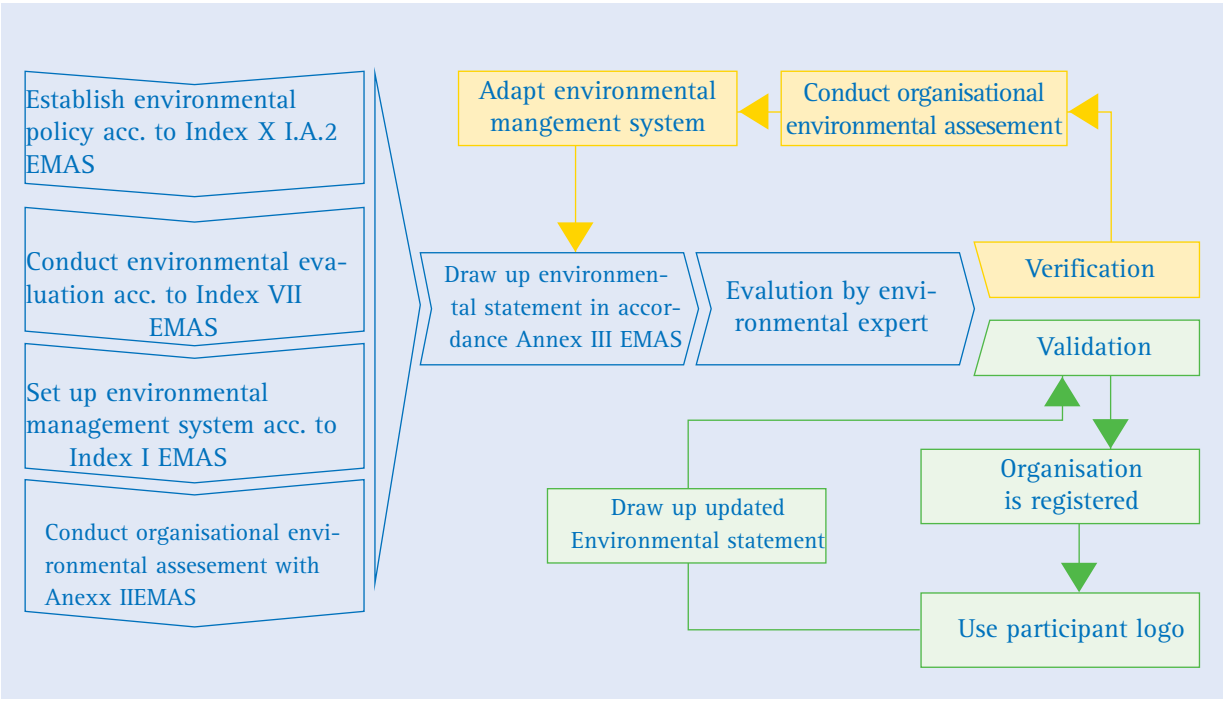
- Inclusion of direct and indirect environmental regulations

ECOLUP Comparison ISO 14001 – EMAS

Goal/Measure of Performance	Range of Recognition	Branches permitted to participate	Evaluatory system	Evaluatory practice
ISO 14001 Continual improvement of environmental management system	World wide	Since October 1996 trade, service industries and commercial enterprises	Private industry evaluatory system	Certification
EMAS II Continual improvement of benefits to environment and environmental management system	EU and associated countries	Since April, 2001 all organisations seeking to increase benefits to the environment	Governmental evaluatory system	Validation/registration

Comparison ISO 14001 – EMAS

ECOLUP EMAS Structure



- In keeping with all legal requirements
- Operational environmental protection must be continually improved
- Communicative outreach through environmental statement
- Intensified employee participation = living system

ECOLUP FURTHER INFORMATION:

→ *www.europa.eu.int/comm/environment/emas/*
→ *www.iso.ch/iso/en/ISOOnline.frontpage*

INFORMATION

This chapter contains excerpts from a presentation held by Dr. Völker Tröbs, Intechnica You will find the presentation text at: *www.ecolup.info* → *Wissenspool* → *ECOLUP-Methodik* → *Kommunale*

System certification	Implementing the system	System boundaries	Inclusion of product evalution	Public Relations
ISO 14001				
Certificate	Establishment of the entire auditable system	Definable organisational unit	Integral part of system	Obligatory publication of environmental policy
EMAS II				
Participant-statement and entry in local register	Via evaluation of the environmental statement	Organisation, smallest unit is local branch	Integral part of system	Obligatory publication of the environmental statement Advertising with logo

4 Communal Urban Land Use Planning and Environmental Management

4.1 Comparison of the Instruments' Characteristics

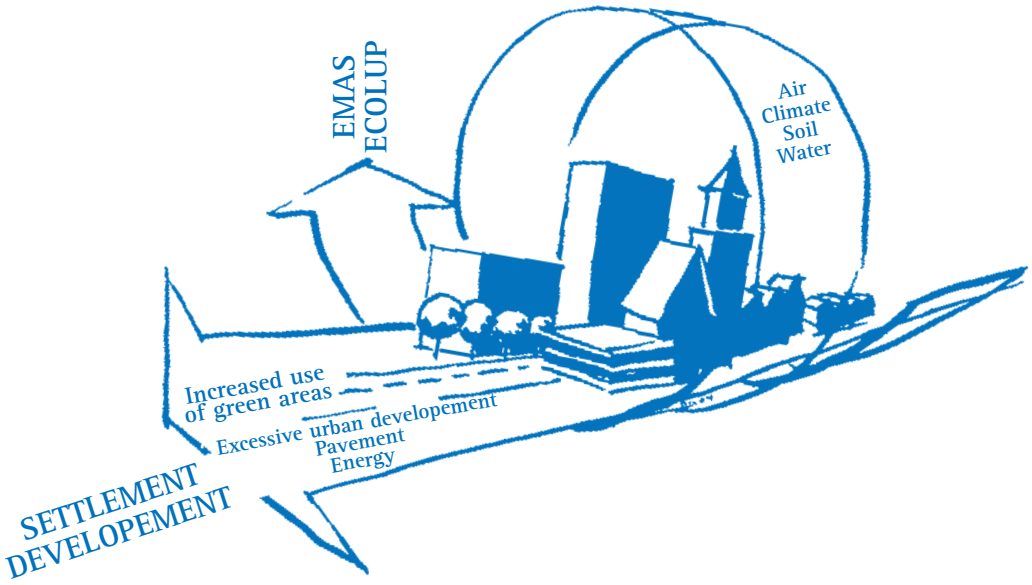
The EMAS EC Eco-Audit Directive form the basis for ECOLUP, an instrument for the implementation of an environmental management system within the context of land use planning. The instrumental character of ECOLUP lies above all in its delegation of tasks and responsibilities for achieving high environmental performance and in its establishment of a progress-checking mechanism. Because its application is not limited to a particular planning level, it can be applied at any of the levels of planning from overall regional planning to the spatial planning of the regional administrative authorities down to communal building regulations.

Communal urban land use planning is an administrative monopoly held by the regional administrative authorities *(the municipalities – "Kommunen" – in Germany)* and is an instrument applied at three levels:

- Communal urban land use planning as an instrument of settlement development:
  As a whole it is considered an instrument towards providing the means for human existence (planning obligation) that undertakes the systematic development of human land use and of construction.
- Communal urban land use planning is an instrument of planning and building laws and regulations and of weighing up the interests of different groups.
  As a part of communal spatial planning for settlement and transportation, it is employed as a legal instrument to ensure the legal security of settlement development and to balance conflicting public and private interests.
- Communal urban land use planning as a codification instrument:
  Within individual planning processes, codification can serve as an instrument for realising planning goals.

Both these instruments can be applied to environmental planning; they function in relation to the same planning unit/location through the same agents. However, they do not share common aims. Whereas it is the responsibility of communal urban land use planning to minimise damage to the environment, ECOLUP seeks to improve the environmental balance. In contrast to urban land use planning, this improvement can be achieved by defining and making binding a temporally and regionally limited goal, the desired environmental performance.

By way of simplification, communal urban land use planning can be conceived of as an attendant management instrument, as a signpost on the community's developmental path, whereas ECOLUP lays down the strategy for continual, step-by-step improvement. The intersection of the two lies in the phase in which tasks are delegated at the outset of individual planning processes, in phases of co-ordination and the weighing of various interests, when the manner of participation of all partners and concerned parties is being organised, and in the assessment phases after the plans have been drawn up and when the results of the measures taken have been collected.



4.2 Who and What Undergoes Validation

Environmental management for company locations, products, services ..... Of course! But what about spatial planning? Is an environmental management system à la EMAS at all applicable in this case?

Finding this out was ECOLUP's most important task. With the help of expert advice from Nürtingen University and the partner communities' practical experience, the project team examined whether and how EMAS' individual components could be applied to the processes within communal urban land use planning.

By virtue of the revision of the EMAS directive, as of April 2001 EMAS II states that all organisations wishing to improve their environmental performance may undergo validation. Along with company locations and production processes, services, too, can undergo this process. However, the organisation concerned must be concretely defined, i.e. who and what is to undergo validation according to EMAS must be clearly described.

The ECOLUP project defined urban land use planning as a service provided by the municipality for its citizens:

Who undergoes validation?

⇨ The municipal administration as the institution directly responsible for the process of urban land use planning. Executive instances within the municipal administration are the specialised departments and offices (building control office or department of city planning), the town council and the mayor.

What undergoes validation?

⇨ The planning process and (to the extent possible) its implementation. Urban land use planning is made up of the zoning regulations and the development plan. Further programmes and plans, such as the urban development plan, the framework for urban development or specialised plans can be included in the programme.

During the model project, all elements of ECOLUP were continually evaluated as to their conformity to EMAS in order to ensure that ECOLUP procedures meet the standards of government-certified environmental management.

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EMAS for communal urban land use planning conforms to all prerequisites for registration in accordance with Chapter 2 of the Organisation Guidance as established by the Commission (2001/861/EG). This text stipulates that an organisation may also register units smaller than an organisational location under exceptional circumstances, given:

- the subfield of the organisational location produces clearly defined products, performs services or undertakes activities of its own and the environmental aspects and effects of the subfield can be clearly identified and differentiated from those of other, non-registered parts of the organisation location
- the subfield possesses its own executive management and administration by means of which to organise and check its EMS and the effects on the environment and to under take corrective measures if necessary
- the subfield has been allocated clearly defined responsibilities so that it can achieve sufficient standards for approval and maintain the approved environmental standards thereafter

Communal urban land use planning is a perfect example of fundamental indirect environmental aspects such as excessive urban expansion, sealing-off of soil, the use of green areas, energy, transportation, landscape development and flowing waters (see Chapter 6.2). ECOLUP focuses on continual improvement within these environmental areas.

Nonetheless, the town planning office or urban development office is also to be regarded as an "organisational location" that must make careful use of the resources that its employees use in going about their daily tasks such as energy, water, paper, etc. Environmental pollution caused by business trips is another environmental aspect related to location that must be taken into consideration.

5 Starting Out

5.1 Some Important Questions for Starters

Environmental management systems in general and EMAS in particular are not as complicated as they appear at first glance.

All that is needed is a good source of advice, a well-structured manual and the imagination to apply the very general and technical formulations in the EC Eco-Audit regulations and the accompanying manuals to everyday practice.

Nonetheless, the introduction of an environmental management system à la EMAS does require additional and financial resources. ECOLUP is no exception to this general rule!

Before you opt for an environmental management system (or EMS) for your local government's offices, services or urban land use planning, you should be able to give positive answers to the following questions:

Why do you want to introduce an EMS?

Are the continually increasing benefits to the environment really your primary motive?
If you wish above all to improve the image of the local government, EMAS is not the best means of doing so!

Are you the only one who is convinced that an EMS is beneficial and necessary, or do your co-workers, superiors, the community council and other concerned parties see the idea in a positive light, as well?

Environmental management as a one-man (or –woman) show is guaranteed fail in the long run!

Is the participating office or department able to provide the necessary personnel?

An EMS cannot be introduced and maintained without putting in additional work-hours. Even the most highly motivated director of a city planning or building control office and his or her workers will refuse to co-operate if an EMS is loaded on their already overburdened shoulders as "yet another project".

Can you provide continuity in the realisation of the EMS?

Within urban land use planning in particular, continually improving environmental conditions can only be achieved in most areas in the long run. If an environmental management system is exclusively dependent upon the good will of those currently in power, then these are not conditions under which continuity can be provided.

Are neighbouring communities also interested in integrating environmental management into their urban land use planning?

That would be an excellent precondition, for you can learn from and help one another when working together or in a group of several communities, e.g. by conducting the internal audit for one another. In addition, by sharing workshops you can reduce the costs for the expert advice and external consultants they require.

Experience gained through numerous model projects in which EMAS was introduced into various areas of responsibility in local government has shown that successful implementation has nothing to do with the size of the community concerned. ECOLUP, too, has been able to confirm these findings. Four partner communities of varying size participated in the project's model phase: Constance with 80,000 inhabitants, Überlingen with approx. 21,500 inhabitants, Dornbirn with 44,000 inhabitants and the municipality of Wolfurt with 8,000 inhabitants. The EMAS directive leaves enough to the discretion of the individual participants that the latter can adapt the environmental management programme to their varying organisational structures and legal preconditions.
A study of the legal preconditions existing in four different EC countries has shown that the following prerequisites must be fulfilled if an EMS is to be implemented in urban land use planning:

- a similar basis in legal regulations concerning planning, as well as an approach to planning similar to that taken in EMAS
- the ability of urban land use planning to take direct or indirect influence on the development of specific areas of the environment (given in Germany and Austria via required government approval of all construction plans)
- the influence of the city government on urban land use planning (secured in Germany and Austria via the local government's planning sovereignty)
- the ability of local government to involve interest groups and citizens in planning processes
- the ability to check environ-

5.1 Some Important Questions for Starters

mental conditions and the effects of measures undertaken by means of core data (do standards for comparison exist?)

It will be easier to introduce an EMS in communities which

- are already makings efforts to achieve environmental protection levels beyond those required by law and to secure greater benefits for the environment and a higher quality of life for their inhabitants
- take the goals of the Local Agenda 21 seriously and seek to secure the participation of their citizens in all important matters
- have come to the realisation that a regular evaluation of the fruits of their efforts on the part of neutral observers represents by no means bothersome interference, but instead furthers the goals of the community

Particularly during the first phase of the ECOLUP project some of the participants argued, "But we are already doing everything we can for the environment". Why advance into the "national league" (= EMAS) if you are doing well in the "local league"? Nonetheless, when it came to drawing up their environmental programmes, the communities were able to arrive at an admirable number of realistic measures that helped them to achieve the environmental goals they had set for themselves. Improvements are always possible, particulary when a special effort is made to approach issues systematically and by means of progress checks.

Not only do environmental conditions improve, a further common positive effect of the introduction of an environmental management system is the optimisation of the local government's organisational structure. Of particular significance is the improved internal communication between and integration of the people working within the participating specialised offices and departments. When an employer implements a responsible environmental policy it always results in a "plus" for the work environment and encourages individual employees' sense of responsibility.

5.2 The First Step

When after careful consideration a community comes to the conclusion that environmental management ought to be a part of its urban land use planning, then as a first measure an employee responsible for co-ordinating the full EMS implementation process must be appointed.

The co-ordinator should have a good overview of the municipal administration's organisational structure and be familiar with the responsibilities and means of influence associated with urban land use planning. As a part of the ECOLUP model project, the directors of the city planning departments of the four partner communities were entrusted with this task. They were supported by the ECOLUP project team, i.e. by external consultants.

The use of external consultants is highly recommended. They should undertake the following tasks:

- support in preparation for the environmental evaluation and the strengths-and-weaknesses-analysis (SWOT)
- moderation of the SWOT workshops
- moderation of the communal government workshops on the most significant environmental issues
- support in preparation for the trial validation (internal audit)
- support during the validation process

It is also highly recommended to put together an environmental team.

The environmental team should support the co-ordinator during the

- environmental evaluation (performance, compliance and system audits)
- establishing of environmental goals and measures (environmental programme)
- integration of the environmental management system in the municipality's administrative structure
- regular evaluation of the environmental programme
- internal audit, if necessary

The environmental team (also called control group) should consist of representatives of all the relevant authorities and interest groups so that both the expert knowledge the project requires as well as all interested parties are involved:

5.2 The First Step

Overview of the Costs of Implementation for an Environmental Management System using the ECOLUP Model Project

Phase / Task	Number of Working Days		Further External Costs
Environmental Analysis: SWOT Analysis, collecting and evaluating core data (performance audit) Ensuring legal security (compliance audit) Analysis of the current organisational structure and integration of EMS elements (system audit)	External consultant Co-ordinator Environmental team (10 people)	20 10 10	SWOT analysis
Establishing environmental goals and measures (environmental programme) Eight local government workshops on significant environmental issues	External consultants Co-ordinator Environmental team (10 people)	32 40 80	Expert speakers for the workshops
Internal audit, EMS documentation and manual	External consultants Co-ordinator Environmental team (10 people)	10 15 10	none
Programme of urban land use plan in accordance with EMAS	External consultants Co-ordinator	5 5	Government-certified environmental expert

- all specialised departments and offices in the municipal administration that participate in evaluating proposals as part of construction management planning
- expert authorities at a regional level and instances responsible for public interests
- representatives from small business, industry, agriculture, tourism
- representatives from private conservation organisations
- representatives from private organisations and community projects (alternative transportation club, mobility centre, etc.)
- representatives of the Agenda 21 process from the communities

During the ECOLUP project, it proved difficult to concretely involve representatives of the town councils in the environmental team (voluntary positions, conflicts of interest, goals of fractions). Nevertheless, the town council was invited to all of the environmental team's workshops and was represented with either one or more members, depending on the given topic. In addition, it makes sense to report regularly to the town council on the project's progress. After all, the council and the mayor as executive powers are responsible for environmental management and adopting the environmental policy and programme, as well as the environmental statement.

On the basis of our experience with ECOLUP, we recommend maintaining the environmental team as a consulting committee even after the EMS has been introduced.

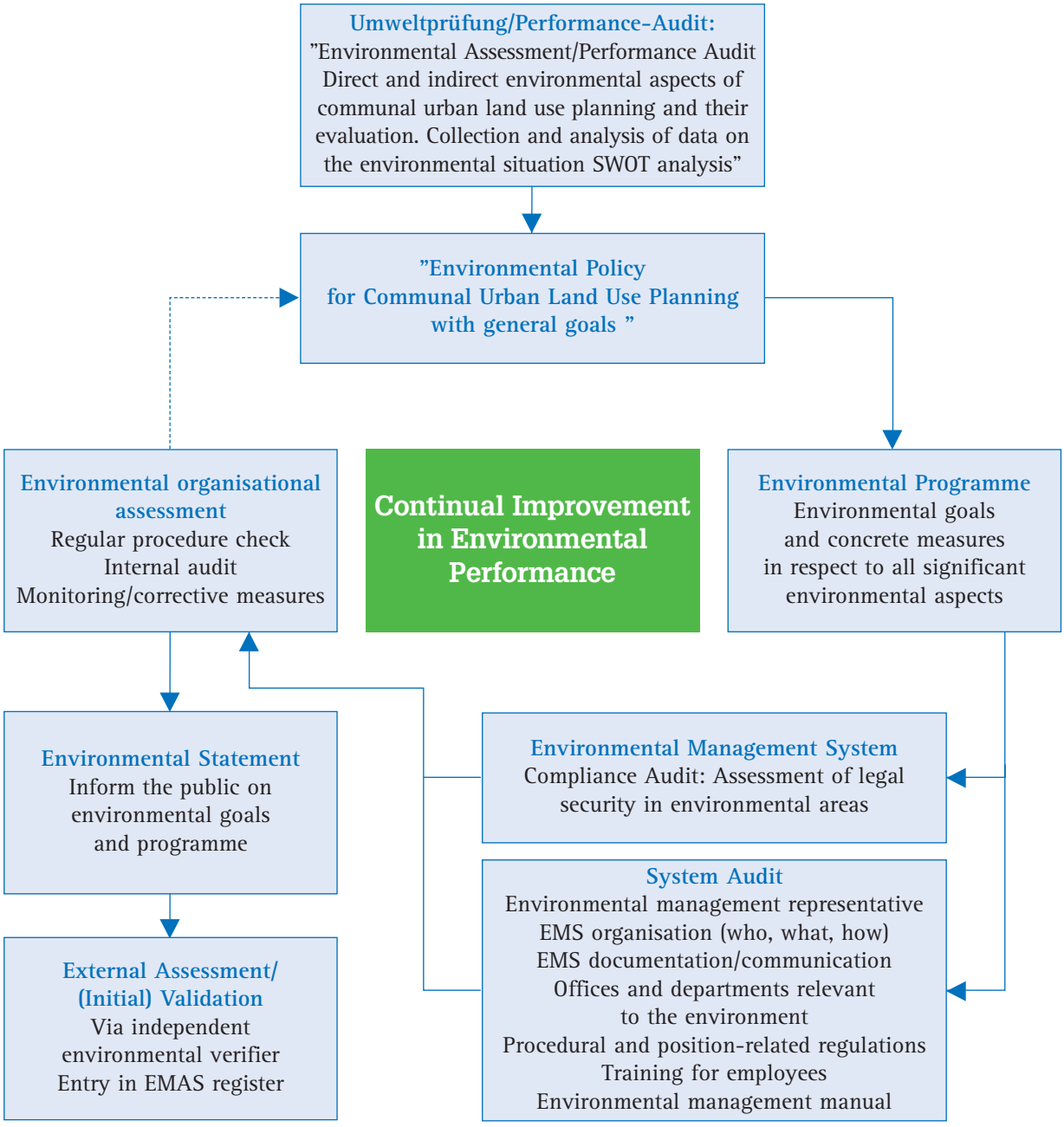
Further Information:

CF. Chapter 8.2 Supervision of Environmental Management and Environmental Management Representative.

5.3 Structure of this ECOLUP Guidance

This guidance explains step by step how to draw up all the elements of an environmental management system according to EMAS II, as well as the procedure to follow when introducing it. Logically, the central theme of this guidance is the EMAS directive.

So as not to reinvent the wheel, elements of other guidances have been used in putting together this publication and altered for applicability to communal urban land use planning. The "Environmental Management in Municipalities" guideline from the Bavarian State Ministry for State Development and Environmental Issues was particularly helpful, as was the "The Path to EMAS" brochure put out by the Baden-Württemberg State Institute for Environmental Protection.
We have used passages from both of these sources within the pages of this ECOLUP Guidance.



6 The Environmental Assessment

6.1 Analysis of the Current Situation

According to Article 2e of EMAS II, the environmental assessment is a "first thorough examination of an organisation's environmental issues, its effects on the environment, and its environmental performance in direct relation to its operations ". The environmental assessment takes 5 key areas into consideration:

- the legal, administrative, and other regulations that the organisation has committed itself to observing
- the registration all environmental aspects that have substantial effects on the environment according to the standards in Annex VI; evaluation and quantification of their qualitative effects, if necessary, in which case a register of all aspects deemed substantial is to be put together
- description of criteria used to evaluate the substantiality of the environmental effects
- assessment of all techniques and procedures applied in environmental management
- evaluation of reactions to earlier incidents

This is what the EU directive tells us. What does this mean for practical purposes and for communal urban land use planning?
EMAS's goal is to continually improve environmental performance. ECOLUP's goal is to continually improve environmental performance within the context of communal urban land use planning. EMAS provides an advantage for an organisation – in this case, municipal administration – that wishes to improve its environmental performance continually. Each municipality can set its own goals in view of its weaknesses and its opportunities for development. In other words, EMAS picks each up organisation (municipal administration) at its own level of achievement in the field of environmental protection.
For this reason, the first important step is to establish what condition the environment in the municipality is in at present and what organisational structure its administration features.
The environmental assessment in accordance with EMAS consists of three elements:

- establishment of effects on the environment (performance audit)
- assessment of legal security (compliance audit)
- assessment of the organisational structure (system audit)

These three elements are permanent aspects of the environmental assessment, the (internal) organisational environmental assessment and the validation conducted by the environmental verifier. The very first environmental assessment, the assessment of the status quo, is the most time-consuming part of the EMAS process, as you will most likely have to search for data and information in various specialised offices, plans and statistics.

ECOLUP INFO

In the ECOLUP model project, we conducted an environmental assessment in instalments:
To begin with, the performance audit was conducted in the form of a SWOT analysis so that the city planning office and the environmental team could concentrate on the work at hand, namely drawing up environmental goals and an environmental programme. The performance audit was the part of the environmental assessment that required the most work from the ECOLUP participants. The communities refrained from conducting the compliance audit and the system audit until the environmental programme had been drawn up in draft form, so that it was clear which instances (specialised offices, regional authorities, interest group representatives, citizens) would participate in the process. We strongly recommend proceeding in this manner.

Environmental Aspects and Impact

It is not only through the production processes they employ at their locations that firms and organisations have an impact on the environment. Their products or the services they provide can be harmful to the environment when used and disposed of. The firms and organisations themselves can have only limited influence on these effects, as they have very little or no control either over the production processes that proceed and follow their own production or over the behaviour of consumers. In addition, although some organisations cause relatively little direct environmental harm, the decisions they make about their products or service have wide-reaching significance. In this case, we might think of the investment choices banks make, or the decisions made by authorities, including communal urban land use planning instances. To date, EMAS has touched on planning processes only under the rubric of "indirect environmental aspects". Among the listed examples for indirect environmental aspects are planning and administrative decisions (Annex VI, 6.3 Indirect Environmental Aspects of the EMAS Directive).

Further Information

Cf. Annex VI,
Indirect Environmental Aspects of the EMAS Directive.

6.2 Performance Audit: The Direct and Indirect Environmental Aspects in Communal Urban Land Use Planning and their Evaluation

The EMAS directive differentiates between direct and indirect environmental aspects. Direct environmental aspects are defined as being under direct supervision, for example by the municipality, and as wholly dependent on the influence of the supervisory instance. Indirect environmental aspects are related to those activities of the municipal administration that it does not control completely, but that it can influence to a certain extent. Indirect environmental aspects can result from a municipal administration's interactions with third parties.

Urban development planning has effects on the environment – this is particularly true for communal urban land use planning, which through its codification measures creates the preconditions for changes made in the environment. For this reason, the municipality must identify all environmental aspects of its urban land use planning, review them, and decide according to significance criteria how substantial each is, in other words evaluate them. These substantial environmental aspects form the basis for drawing up environmental goals and measures, i.e. they must be reflected in the content of the environmental programme and be made accessible to the public (e.g. through the environmental statement) (EMAS II, Annex VI).

Which environmental aspects have substantial effects on the environment and could therefore form the basis for communal environmental goals?

It plays a decisive role whether the community takes an unprejudiced and complete look at the environmental aspects of the services it provides – urban land use planning. It must demonstrate that it has determined which are the significant environmental factors and that it has taken them into consideration when establishing its environmental management system.

The direct and indirect impact on the environment of the aspects defined as significant must be divided into two categories:

- those present in every planning procedure which are to be defined as direct environmental aspects, such as above all excessive urban expansion for the sake of development sites and transportation, the sealing-off of soil and increased use of green areas
- and those present in most planning procedures as indirect environmental aspects, such as above all noise pollution, mobility, energy, climate, and air, quality which nonetheless can be transformed into direct environmental aspects through particular codification in specific planning concepts

In order to distinguish between direct and indirect environmental aspects, as part of the ECOLUP project we put together a list of what the building code define as the legal scope of a community's urban land use plan. We then attributed these contents to environmental aspects and distinguished between direct and indirect environmental aspects.

Information

CD-ROM Chapter 6.2
Environmental aspects and impacts (performance audit). Tab. 1: Possible codification and representation with influence of the significant environmental aspects.

ECOLUP INFO

The ECOLUP model project was able to identify the following environmental aspects by considering the range of activities comprising urban development:

- Excessive urban expansion
- Sealing-over of soil
- Use of green areas
- Transportation / mobility
- Energy / climate
- Landscape development
- Flowing water
- Flora and fauna
- Air Quality
- Noise
- Raw materials / waste
- Participation

Assessment of Significance of Environment Aspects – Significance Criteria

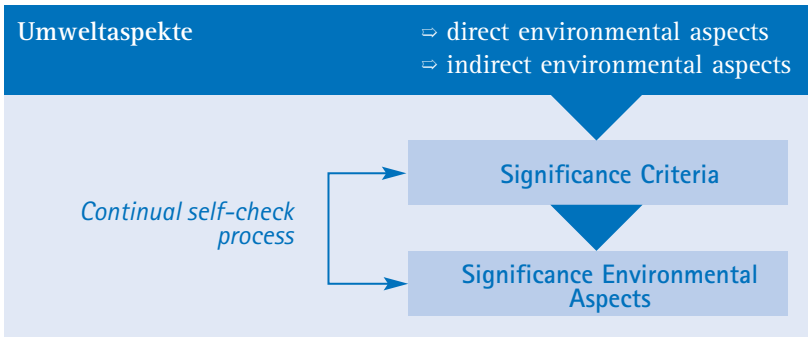


Table1: Process of Self-Assessment in Establishing Significant Environmental Aspects

6.2 Performance Audit: The Direct and Indirect Environmental Aspects in Communal Urban Land Use Planning and their Evaluation

In the ECOLUP model project, a credit system was established in order to evaluate the significance of the environmental aspects.
Significance Assessment by Means of Significance Criteria

Significance Criteria	Environmental Aspects										
	Excessive Urban Expansion	Sealing-off of Soil	Use of Green Areas	Transportation	Energy/ Climate	Landscape Development/ Flowing Water	Flora and Flora	Air Quality	Noise	Raw Materials / Waste	Participation
General											
Is the aspect a permanent part of communal urban land use planning?	3	2	2	3	1	1	0	0	1	0	3
To what degree can the aspect be influenced by communal urban land use planning?	3	3	2	3	1	2	1	1	2	2	–
Does the aspect fall under the municipality's planning obligation?	3	2	1	3	1	0	0	0	0	0	–
Is it a neccessary to weigh interests related to the environment	3	1	3	3	1	3	0	1	1	–	
Community Specifics											
Is reliable information on the harm this aspect causes to the community's environment available?											
What kind of action should be taken?											
Is the aspect a part if the current community discussion on the environment?											
Total											

1 Point: rarely/in exceptional cases valid 2 Points: partially valid/from case to case 3 Points: completely valid
See EMAS Annex III: Guidance for Establishing Environmental Aspects and the Evaluation of their Significance

You must be able to explain to the environmental verifier how the number of points each aspect is credited with is to be interpreted. In other words, above which number of points is an aspect to be considered significant?

All aspects which have been judged significant must be included in the environmental management system In addition, their development must be checked regularly in order to establish whether continual improvements are being made.

Further Information

⇨ *Cf. EMAS Annex III: Guidance for Identifying Environmental Aspects and the Evaluation of their Significance.*

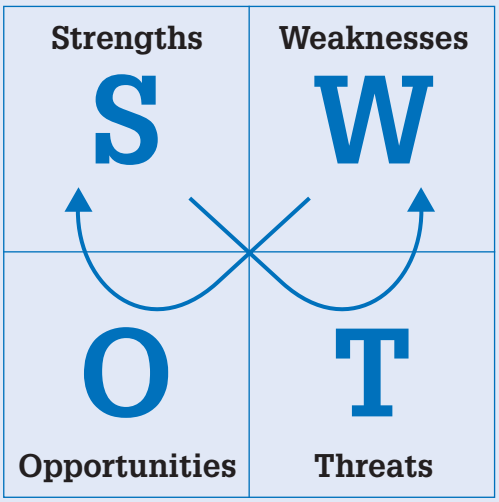
ECOLUP INFO

According to the evaluation chart in Table 2, the ECOLUP model project concluded that following environmental aspects were significant within the participating communities:

- Excessive urban expansion
- Sealing-over of soil / use of green areas
- Mobility/transportation
- Landscape development
- Flowing water
- Energy / climate

The aspect citizen involvement/ participation was also included in the list. Although this cannot be termed an environmental aspect, it plays an important role in communal urban land use planning.

6.3 Performance Audit: Establishing and Evaluating Data and Information on the Environmental Situation



SWOT means:

Four Squares
S = Strengths
W = Weaknesses
O = Opportunities
T = Threats

Upper and Lower Rows
- Current situation (upper row) is separated from expected conditions (lower row)

Two Arrows
- Evaluate strengths with reference to dangers
- Approach weaknesses on the basis of opportunities

In order to establish what impact communal urban land use planning has on the environment and what the environmental situation in the ECOLUP partner communities was, a SWOT analysis was conducted for each community.

External Conditions and Input for SWOT Analysis:

- The region to be studied was set as a rule as the districts administered by the four municipalities; for specific topics, this was permitted to vary so that smaller or larger areas were determined as required.
- The basic information used to draw up the plans and the planning concepts were collected (according to a checklist, see Annex 1)
- Statistical data on the community were collected
- Three to five planning processes were examined per community, including a zoning plan, a development plan and a specialised plan or project from each. The plans were no more than ten years old.
- Existing reference figures and indicators were listed and checked for their applicability.
- For each community, a planning profile (overview of planning structure incl. information on competencies, flow of information, involvement of citizens/ representatives of interest groups, supervisory mechanisms) was drawn up

Procedure and Experience within ECOLUP

At ca. 20 workdays for expert consultants and 10 workdays for community representatives, the data research for the SWOT analysis took significantly longer than planned because extensive data stocks had to be reviewed and checked for their applicability. The following information was collected:

- description of the area
- main goal
- environmental goals
- measures
- participants
- reference data
- projected time needed for implementation of urban land use plan

When collecting the data, it proved to be problematic that none of the city or municipal administrations had central statistical offices that collected and evaluated all data relevant to communal administration. Although the most important base data such as on population density and sealing-over of soil are available, they exist in varying forms: differing years of collection, in reference to differing areas, varying categories of measurement.

Each community was given an ECOLUP community profile in which the evaluation results from the SWOT analysis were recorded. This profile contains a summary of the conclusions the project team drew on the basis of this analysis, which was used as the basis for discussion in the SWOT workshops.

6.3 Performance Audit: Establishing and Evaluating Data and Information on the Environmental Situation

ECOLUP Ecological Land Use Planning INFO

Results of the SWOT Analysis: Community Profile Überlingen

Strengths	Weaknesses
Main goals for land use and local development stand in reasonable relation to one another Measures cover environmental areas of substantial importance for the region concerned Local development concept (Goals and strategies for development)	No environmental model (goals not explicitly formulated) Existing goals not concrete (strategies and measures not included) No submodels (e.g. no forestry development plan)
Application of wide variety of instruments for realisation of environmental goals (codification, recommendations, information, explanation of arguments for public). Good co-operation between administrative instances and between administration and external specialised offices	Great effort required to maintain co-ordination of efforts due to split environmental competencies
Good basis for subareas (e.g. Level B Plan)	No systematic observation and progress-check for measures. Review of goals achieved unclear (who reviews what), also due to lack of means of sanctioning
All important groups included (administration, council, citizens, associations, public interest groups, supervisory legal instances). Wide variety of opportunities to participate for interested and concerned citizens beyond extent of legally required citizen participation High public participation and support	Quality of participation needs improvement (representatives of public interest groups need better information, especially if directly affected by planning measures) Effect of participation not always evident
High potential of landscape allows tourism to be strong economic factor. Sustainable forestry practices	Only a small part of the potential for concentration of settlement and construction used
Opportunities	**Threats**
Undertake initial measures on city property	Building contractors/investors do not feel themselves to be bound to goals Economic pressures make environmental goals into political issues
Reorganisation of Department of Public Parks and Spaces Environmental representative (co-ordination function EMAS)	Specialised competencies still divided among offices (according to current plan) Concentration within city means making decision involving large sums of money (investments)
	Without creation of reference data, controlling not possible. General Traffic Plan 1995 soon outdated
All in all, well-developed culture of participation simplifies public and interest group participation	City council fails to provide political support for public participation
Limited opportunities for expansion force community to turn to concentration High potential for concentration of housing and workplaces	Limited opportunities for expansion vs. role as focus of settlement (impact on incorporated villages) Conflict btw. tourism development and landscape potential (e.g. shoreline)

6.4 Performance Audit: SWOT-Results

ECOLUP INFO
Ecological Land Use Planning

Goals and Results of SWOT Workshops

- Establish and discuss strengths and weaknesses, opportunities and threats for communal urban land use planning / communal spatial planning
- Identify weaknesses for discussion in community workshops: Which are the significant environmental aspects, which can be dealt with in clusters?

In the workshops, the individual strengths, weaknesses, opportunities and threats were discussed and when necessary expanded or corrected. Special consideration was devoted to the following aspects:

Environmental Goals - most significantly:

- In view of high density of housing and workplaces - issue of retrospective concentration
- Land conservation, e.g. through decreasing urban expansion
- Establish energy balances
- Measures to decrease environmental impact of mobility, transportation and noise
- Conservative use of surface area in construction, in combination with energy-saving measures

Planning Structure:

- Competency for environmental planning and for communal urban land use planning (organisational structure of as well as horizontal co-ordination between specialised instances)
- Practical implementation of public participation (comparison to legal standards and in respect to type of participatory procedure)
- Instruments ensuring the realisation of environmental measures agreed upon

Reference Data:

- To date, the participating communities have hardly ever applied environmental reference data or indicators at the level of the city as a whole. However, balances have been employed (surface area use, energy, transportation, water)
- It was discovered that the planning processes to be audited did have partial access to the necessary data at the level of development planning, or that this data could easily be calculated. By means of this base data, the necessary reference data could be collected

The results of the SWOT workshops were made available for each community in a revised SWOT matrix.

In order to establish the potential for a solid and comprehensible data review, the municipality should draw up a chart of the current reference data on the environment as input for the SWOT analysis.

For this summary data chart, we recommend that you use the base data for all significant environmental aspects drawn up by the ECOLUP model project. There are naturally no limits to what other data the municipality can select beyond these suggestions.

Once you have conducted an understandable evaluation of the environmental aspects, created a chart of current reference data and evaluated the results of your analysis from the SWOT workshop, you have fulfilled all the requirements of the performance audit in accordance with EMAS II.

Collecting Base Data, Indicators and Reference Figures

Base data are usually statistics that measure land, population and use and that can be found in nearly every community's planning records. They establish the status quo for the municipality. These data can be obtained from federal, state and municipal statistical offices.
Indicators are the categories of measurement or more generally show what information to provide on a specific phenomenon. Indicators can for example disclose how the environment is being harmed, or highlight a possible development - a trend and its effects on the environment. A typical indicator is population density (inhabitants per hectare or square kilometre of surface area), which shows the extent to which the available landscape is used for settlement.

Base data and indicators can be drawn up and calculated in a general form independent of a single municipality or a set of planning records in order to show clearly which general standards can be applied. However, they can also be established for a single community or for a single planning context, in which case they serve to characterise this particular case. They nevertheless require data for comparison so

6.4 Performance Audit: SWOT Results

that conclusions can be drawn from them or so the findings can be applied to other planning contexts or communities.
Reference figures, in contrast, are findings that are assembled by comparing the relationship between different sets of data. Normally, they are not directly accessible in planning records, rather are constructed according to specific needs.
ECOLUP uses them to size up a concrete environmental goal for appropriate measures and to come to a conclusion as to whether this goal will be achieved or not.
As a prerequisite, ECOLUP requires the selection of above all those measurement categories which on the basis of the available base data and applicable indicators lead to measurable and comparable results. This limits the scope of possible choices to the extent that a range of ecobalances and environmental indicators that cannot be brought into any clear causal relationship to an area of origin or that are not dependent on planning processes can only in a limited sense or not at all be used in ECOLUP.
The indicators and reference data take on concrete shape at the point when ECOLUP participants formulate concrete environmental goals.

There is a range of publications and experience reports on the topic of reference figures and indicators (e.g. Umweltbundesamt (Ed.) 2003: Indikatoren zur Zielkonkretisierung und Erfolgskontrolle im Rahmen der Lokalen Agenda 21). However, participants discovered very quickly that, within the ECOLUP project, the available indicators and reference figures were neither valid nor specific enough. Thus, within the project, a selection of specific measurement categories was established.

Our experience suggests it is best to chose fewer but more reliable reference figures that can be used under all circumstances.

If the need arises, a very few new reference figures can be drawn up and added to the data stock.
Selected reference data on significant environmental aspects are available in Chapters 7.3 to 7.8.

ECOLUP EXPERIENCE
Ecological Land Use Planning

Advantages and Disadvantages of Data Collection According to the SWOT Analysis

The SWOT analysis is a good method for conducting a qualitative evaluation of the data on relevant environmental aspects.
In addition, it provides in a categorisation of these environmental aspects according to whether they have direct or indirect impact on the environment (direct environmental aspects can be completely controlled by the organisation, indirect environmental aspects only to a limited extent). Priorities are set according to which aspects are determined to be significant. Thus the SWOT analysis constitutes a significant part of the environmental assessment required by EMAS II - it establishes what impact the organisation has on the environment (performance audit).

Disadvantages of Data Collection According to SWOT Analysis
The data and information are evaluated in the course of a workshop, making the results to a certain extent subjective, as the starting points are not available for all the direct and indirect environmental aspects and since very few standards of comparison can be brought into the discussion of how to evaluate the local data.
In addition, the final results also clearly depend on the characteristics of the people who participated in the workshop.

6.4 Performance Audit: SWOT Results

ECOLUP Stocktaking as Part of the Performance Audit. Example Überlingen

Aspect	Indicator	Situation in Municipality	Comparative Value	Commentary to Evaluation
Population and settlement structure	Population density in inhab. / kmΞ	Überlingen: 326 (2000)	Ba-Wü: 294 (2000) Lake Constance District: 300 for improvement	In comparison to ..... the figure for ..... municipality = little need for action and potential for improvement
	Inhabitants-job-density in inhab. + employed/ kmΞ	Überlingen: 506 (2000)	Ba-Wü: 401 (2000) Lake Constance District: 401	
Transportation and energy	Private autos per 1,000 inhab.	Überlingen: 543 (2000)	Ba-Wü: 557 (2000) Lake Constance District: 571 (2000)	
	Development 1991-2001 in traffic density in %	Überlingen: 7 %	Ba-Wü: 19,3 Lake Constance District: 18,5	
Zoning	Settlement and transportation surface area in %	Überlingen: 16.1 (2000)	Ba-Wü: 13,2 (2000)Lake Constance District: 13,4 (2000)	
	Built-up and open site surface area in %	Überlingen: 61.1 (2001)	Ba-Wü: 53,2 (2001)Lake Constance District: 58,0 (2001)	
	Transportation surface area in proportion to settlement area in %	Überlingen: 30.6 (2001)	Ba-Wü: 40,2 (2001)Lake Constance District: 34,6 (2001)	
	Development of settlement and transportation surface area from 1988 - 2000 in %	Überlingen: 6	Ba-Wü: 11,5 Lake Constance District: 13,6	
	Settlement density in inhab./ kmΞ	Überlingen: 354 (2000)	Ba-Wü: 294 (2000)Lake Constance District: 300 (2000)	
	Surface area used for agriculture in %	Überlingen: 53 (2000)	Ba-Wü: 46,8 (2000)Lake Constance District: 56,9 (2000)	
	Forest surface area per inhab. in mΞ	Überlingen: 826 (2000)	Ba-Wü: 1291 (2000)Lake Constance District: 934 (2000)	

ECOLUP, Nürtingen University, 2003

Source: Statistisches Landesamt Baden-Württemberg, Landesinformationssystem (LIS)

6.5 Compliance Audit: Assessing Legal Security in Relation to the Environment

EMAS requires an index that includes all legislation relevant to the environment that the community is obliged to observe and that is updated at regular intervals. In the so-called compliance audit, the community's conformity to legal standards, i.e. the observation of this legislation, is assessed.

Within the context of urban land use planning, municipalities hold planning sovereignty and can therefore create legislation in the form of zoning and development plans passed as statutes.
Which fields communal urban land use planning can encompass is legally determined by the contents of the building code (BauGB). The building code also contains passages that regulate how environmental issues are to be accommodated.

The town planning department and town council are responsible for ensuring that all the regulations relevant to the environment are incorporated into current planning processes.

As a part of public interest group participation, the specialised departments and offices and panels of experts review the plan draft's conformity to legal standards.

A licensing office (e.g. the governmental presidium / office of the county administrator in Germany) regulates the observation of the procedural steps required by law.

ECOLUP Ecological Land Use Planning EXAMPLE

Example Wolfurt:

"From his or her own desk, each employee in the Wolfurt municipal administration occupied with urban land use planning can refer to all basic legal documents relevant to this field (laws, regulations, resolutions passed by the organs of municipal government) by the access we provide to the federal and the province of Vorarlberg's legal data banks (RIS and VORIS, respectively).

In addition, employees have access to all protocols relevant to their work through the "Consolidate" workflow system. Furthermore, we have a loose-leaf collection of current provincial law, various legal commentaries, and a collection of municipal protocols. One aspect of communal land use planning is the co-operation with various public interest groups. The most significant among these are the regional planning office and the district agricultural authorities at the seat of the Vorarlberg provincial government, as well as the chambers of industry, of labour, and of agriculture."

(Dr. Sylvester Schneider, Municipality of Wolfurt, October 2003)

Due to the fact that it is the central task accorded to communal urban land use planning to achieve legal security, we assume that the current version of all relevant legislation is available, is accommodated in the planning concept, and that each and every issue touched on by the environmental legislation is included in this concept. When introducing an environmental management system, the question arises to what extent environmental legislation and, when necessary, other kinds of legislation of relevance to the environment should receive particular attention. The answer will differ depending on which levels and processes of the communal urban land use planning concept are affected. In legislatively regulated planning contexts in which interest are weighed, environmental issues must be taken into consideration in the planning concept. As a part of EMAS for communal urban land use planning, the compliance audit serves to determine how the requirements set in current legislation are implemented.

For every procedure involved in drawing up a communal urban land use planning concept, a separate file should be created in which all records are stored in chronological order. The town planning department must grant all who wish to see these records access to them at all times.

Through the announcements published by the legislative instances, the federal and state city and municipal associations' publications, and subscriptions to specialised literature circulating among government authorities and digitally automated data

6.5 Compliance Audit: Assessing Legal Security in Relation to the Environment

banks, the municipality gathers information on current legislation affecting its urban land use planning and ensures that its employees have access to this information.

In concrete terms, by undertaking the following measures, municipalities ensure that the public has access to current legislation:

- publicly accessible archival storage of currently valid legislation
- collection of loose-leaf publications and legal codes, legal commentaries and protocols made accessible for members of municipal administration e.g. Wolfurt: in the office of the Amtsleiter
- access to official legal data banks from every workplace e.g. Wolfurt: RIS, VORIS
- access to records and protocols generated by current planning processes e.g. Wolfurt: workflow system "Consolidate"
- training and further education for administration employees on how to introduce and apply new legislation and amendments to existing legislation

7 Environmental Policy - Environmental Goals - Environmental Programme

7.1 Continual Improvement in Environmental Performance

The environmental policy is the centrepiece of the EMAS directive. It defines the organisation's overall goals in respect to the environment to which all programs and activities must in turn be attuned. The environmental policy must stand in sufficient relation to the organisation's impact on the environment - in this case to the environmental impact of a municipality's urban land use planning.

All the EMAS Guidances require that the environmental policy be formulated when the environmental management system is first introduced within the organisation. For ECOLUP, the procedural order has been changed slightly, so that, in the initial phase, the environmental goals and measures pertaining to each significant environmental aspect are discussed and decided upon. As a part of this process, the environmental team analyses already existing models for urban development and for environmental goals as a part of zoning plans (see also results of SWOT analysis).

The visions and goals for the environment already defined by the community are then collected and prepared as input for the environmental policy. The environmental team draws up a recommendation for areas of the environmental programme for which no overall goals have been formulated.

The environmental policy completed in this manner includes the overall environmental goals taken from models and planning concepts that have already been approved, as well as the additions necessary to include further relevant environmental aspects. It is advisable that elements that have already been approved by the town council be integrated - no need to reinvent the wheel! Doing so raises political acceptance needed for the council to pass the environmental policy.

An environmental policy in accordance with EMAS must include the following two elements:

- a self-obligation to continually improve the environmental situation and to avoid doing harm to the environment
- a self-obligation to observe all relevant environmental legislation

The environmental policy must be approved by the municipality's "chief executives", the town council and the mayor, and is to be brought to public attention as part of the environmental statement.

Drawing Up Environmental Goals and an Environmental Programme

Although drawing up environmental goals and an environmental programme is one of the most time-consuming aspects of an EMS, it is also the most exciting part, for this is where you can put your ideas into practice.
In the ECOLUP model project, "community workshops" on all significant environmental aspects were organised. This method has proven to be effective!
Along with drawing up the environmental programme, the **community workshops** serve as training courses for employees and interest group representatives and offer an appropriate forum for benefiting from each other's experience.

The ECOLUP environmental team, as the co-ordinator of the workshops, invites the town council and, depending on the topic, other interest group representatives or specialised departments and offices to participate. Should two of more communities decide to introduce an EMS into urban land use planning at the same time, these workshops ought to be organised and held together in order to increase the benefits of the exchange of knowledge. In addition, the communities can split the costs for speakers and moderator.

As a result of the evaluation of all direct and indirect environmental aspects relevant to communal urban land use planning (see Chapter 6.2), the following environmental aspects have proven to be the most significant:

- Excessive urban expansion
- Sealing-off of soil / use of green areas
- Transportation / mobility
- Landscape development
- Flowing water
- Energy / climate

A community workshop at which a draft is drawn up for both the environmental goals and the

ECOLUP TIP
Ecological Land Use Planning

Make your goals ambitious but realistic and do not bite off more than you can chew! Along with impressive improvements, smaller partial successes are also necessary, above all in order to maintain the participants' motivation.

Environmental Policy - Environmental Goals - Environmental Programme

7.1 Continual Improvement in Environmental Performance

environmental programme should be organised for every one of these significant environmental aspects. Naturally, depending on the environmental situation in the community and how it evaluates its own specific environmental aspects, further environmental aspects can be examined. Furthermore, we recommend two additional workshops on these general topics:

- Participation / public involvement
- Introducing an environmental management system (EMAS: system audit).

It has proven effective to structure all these workshops in the same way:

- A moderated panel discussion to report on and exchange experience with the content and policy goals drawn up in previous workshops
- An introduction to the main topic of the workshop given by the moderator: Results of the SWOT analysis of the environmental aspect on the table with additional information gathered through research
- Expert presentation on the topic at hand from an external speaker
- Moderated discussion on the topic: previous experience, possible goals and measures, etc.
- Drawing up of concrete environmental goals and measures, agreement upon reference figures for monitoring process (= environmental programme)

If more than one community is participating in a workshop, the environmental programme should be drawn up in working groups, each of which is comprised of the environmental team of one community.

Those sceptical about EMAS have often told us that the system is exclusively concerned with the environment and neglects the other two pillars of sustainability society and economy.

When you become involved with the practical realisation of this system, you will quickly find that the opposite is the case, for it is the purpose of the environmental programme to set realistic goals and measures. For every goal set, the social advantages and disadvantages must be discussed, as

ECOLUP EXPERIENCE

Getting the town council involved requires tact and sensitivity! The best case would be if the town council had its own representative in the ECOLUP environmental team.

However, the moderator cannot allow the workshop discussions to be abused for the exclusive exchange of blows between political factions.

If no one from the town council can spare the time to ensure a regular presence at the workshops, this body should in any case receive the protocols and be updated at regular intervals by the representative for environmental management on current progress.

ECOLUP EXPERIENCE

To date, most local governments work very little or not at all with reference figures. Although the most important base data, e.g. on population/settlement density and sealed-over surface area, are available, they have been set down according to varying criteria and are therefore often unfit for comparison. It is seldom that a city or municipal administration has its own office of statistics that collects and analyses all data relevant to communal urban land use planning.

For this reason, your first environmental programme for communal urban land use planning will contain a number of measures that do not directly serve to improve the environmental situation, but rather are necessary prerequisites to the introduction of a monitoring system.

ECOLUP TIP

The core set of ECOLUP reference data has been assembled from a wide variety of possible reference figures. The numbers it contains are pertinent to the environmental situation and demonstrate a reasonable cost-benefit balance when collected over the long term. On the other hand, communities can naturally also collect further categories of data. We recommend the core set of ECOLUP reference data as a minimum standard!

See Chapter 13.

7 Environmental Policy - Environmental Goals - Environmental Programme

7.1 Continual Improvement in Environmental Performance

EXAMPLE: Script for a Community Workshop on Energy and Climate

Community Workshop 6 on Policy Field: Energy and Climate all four project comminities together

Time	Lenght	Activity	Who does What	Auxiliary Media
10:00		1. Greetings and Introduction		
	5	Participants are greeted by a representative of the city of Dornbirn		Microphone, beamer, overhead projector, transparencies
	20	Retrospective on community workshop 4 "Transportation and Mobility"	4 community represetatives	Environmental programme
		Each community presents its results from the previous workshop and its current progress on the measures and environmental programme agreed upon	Moderator	Transparency: EMAS II /Communal urban land use planning workshop
	5	*(5 minutes incl. related questions per community)*		
		How does this workshop fit into the EMAS programme Incumbent mayor		
		Moderator		
10:30		2. Workshop Goal		
	5	*"Draw up an environmental programme for the policy field energy and climate"*	Moderator	Transparency: "Workshop goal"
10:35		3. Introduction to Field Energy and Climate		
	30	*Ralf Bermich, Amt für Umweltschutz (Office of Environ. Protection) Heidelberg*	Speaker	Beamer, computer
	20	Discussion		
11:25	20	Break		
11:45		4. Discussion of Policy		
	20	Four short statements from the communities on environmental policy and goals in policy field energy and climate	4 community representatives	
	30	Group discussion	Moderator	
		■ Energy-conserving methods of construction ■ Structure placement ■ Centralised and decentralised energy supply ■ Reference data for policy field energy and climate Questions		
12:30		Lunch Break		
2:00	60	5. Four Working Groups (Environmental Teams)	Consultant	Moderation cards
		recommended environmental goals and measures for the policy field energy and climate .Discussion and Drawing-Up of Environmental Programme	Speaker	thumbtacks felt pens flip chart
		Speaker helps environmental teams reach their decisions		
3:00		6. Conclusion		
	40	Working groups present their results *(environmental programmes for four communities).* 10 minutes per community	Speaker from each working group	Whiteboards or PowerPoint time plan
	10	Discussion	Moderator	
	10	Conclusion, upcoming steps	Moderator	
4:00		End of the Workshop		

Environmental Policy - Environmental Goals - Environmental Programme

7.1 Continual Improvement in Environmental Performance

must the question of financing and the environmental cost-benefit balance for each measure. After all, the process is intended to generate goals and measures for the environmental programme which can be realised after all three perspectives have been taken into realistic consideration.

However, sensible goals and measures should not be struck from the programme without replacement only because your municipality lacks funds at the moment. EMAS also provides for a longer-term realisation of an environmental concept, i.e. longer than the validation period of three years.
One cannot realistically expect that at the close of a community workshop, the complete draft for an environmental programme will be complete. However, the environmental team should have come to an agreement on the concrete goals and measures to be undertaken, as well as on the reference figures for the monitoring procedure. It is then up to the co-ordinator, in co-operation with the environmental team, to complete the environmental programme according to EMAS' specifications:

- employees responsible for realising particular measures
- time-frame / quarter for realisation for measures
- necessary financial and personnel resources

After all the community workshops have been conducted, the environmental programmes for the individual aspects are collected to form a total environmental programme and are once again reviewed:

- Are the environmental goals in tune with the degree of relevance of the environmental issues, i.e. are they a fitting tool for the measurable reduction or prevention of harm being done to the environment?
- Are the goals measurable to the greatest extent possible?
- Can the reference data necessary for the monitoring procedure be collected over the long term?
- Can the qualitative goals be assessed using qualitative indicators (questionnaires, etc.)?
- Have competencies and responsibilities been established and approved?
- Have the resources necessary for realisation been set aside?

The environmental programme is not binding until it has been passed by the decision-making instances in the community, i.e. the town council. For this reason, we recommend that the town council be involved as closely as possible in the process of drawing up the environmental programme and that it is regularly informed on current progress at its meetings.

7.2 Environmental Policy for Communal Urban Land Use Planning

Lately, many communities have developed their own environmental models, statements of environmental policy or environmental reports. In most cases, these documents depict visions and goals for the long term instead of describing a concrete communal environmental policy directly related to political practice.

Art. 1 of EMAS II states that the function of an environmental policy is to set down "an organisation's overall goals and policy principles in respect to the environment". It must be appropriate to the organisation's nature, extent and the impact it has on the environment, should make evident the purpose and goal of the environmental management programme, and must include a self-obligation to observe all environmental legislation and to continually improve environmental performance. Just like the environmental goals and programme, the environmental policy should undergo regular review as a part of the organisational environmental assessment (internal audit) and be altered if necessary.

In accordance with EMAS, the environmental policy relates directly to the field to be validated, in this case communal urban land use planning. In order to meet the EMAS standards, the environmental policy must contain the following elements:

- a description of the purpose and goals of the environmental management system
- a self-obligation to continual improvement and avoidance of harm to the environment
- a self-obligation to observe all relevant environmental legislation

7 Environmental Policy - Environmental Goals - Environmental Programme

7.2 Environmental Policy for Communal Urban Land Use Planning

ECOLUP EXAMPLE

Script for a Community Workshop on Energy and Climate

The environmental policy must be passed by the municipal executive instances, i.e. the town council and the mayor and the organisation's employees must be made aware of its existence. It is a part of the environmental statement and as such must be accessible for the public.
The City of Überlingen's Environmental Policy for Communal Urban Land Use Planning.
The city of Überlingen has set as its uppermost political goal sustainable urban development.
The contents, processes, and methods of urban development planning have undergone decisive changes in the last ten years. The city of Überlingen meets these new challenges with an organic planning culture that takes as a central concern the city as a whole into consideration and engages in dialogue with all active parties, especially citizens interested in and effected by its planning measures.
In order to achieve this goal, new forms of administrative practice, moderation, and management, as well as new form of co-operation in planning and realisation have become necessary. Within the context of our participation in the ECOLUP LIFE project, we have implemented an environmental management system for our communal urban land use planning with the goal of continually improving all relevant environmental aspects of this planning process.
In agreement with the goal set down in the federal state of Baden-Württemberg's development plan and the Lake Constance model, Überlingen has set the following focus points for sustainable and environmentally acceptable urban development:

- More transparency in urban expansion, reduction of excessive expansion by means of retrospective concentration and concentration within the city centre, economical use of surface area in development plans and construction, and careful use of those sites already zoned for development
- Removing pavement on private property, decrease in degree of sealed ground on property parcels, encouragement for increased use of green areas in land use planning, maintenance of existing public green areas within the city
- Decreasing harmful effects of transportation (city of short distances), further decrease of traffic in the city' centre, redistribution of individual travel to public means of transportation (particularly in the old city), proportional usage of means of transportation less harmful to the environment (modal split), optimisation of bicycle and pedestrian path networks
- Optimisation of energy use in new planning areas, reduce CO_2 emissions, implement a model project
- Protect existing forest areas and their functional variety, expand these to create more compact wooded areas if necessary, forests should develop in as nearly natural a way as possible with the goal of improving their function as local recreational areas and their ecological performance, maintain existing settlement borders, maintain and develop man-made landscape, re-designation of settlement areas on the lakeshore into green areas
- Introduce renaturalisation of flowing water, shoreline strips into urban land use planning concept

It is a matter of course that we observe all legislation of relevance to the environment. We have designated an environmental management representative who co-ordinates the environmental management system and is supported by an environmental team in which all specialised offices and departments and relevant interest groups are represented. Together with the

ECOLUP INFO

Within the ECOLUP model project, the draft version of the environmental policy was drawn up by the environmental team at the same time that the environmental programme was being developed. The overall goals identified for each environmental aspect (see Chapter 7.3 to 7.8) were collected to support the completion of the environmental policy.
In a second step, the town council's environmental committee and/or its building committee discussed the drafts for the environmental policy and programme and included modifications or additions if necessary. The revised drafts were then presented to the city council for discussion and approval.

Environmental Policy - Environmental Goals - Environmental Programme

environmental team, the city planning department has drawn up concrete goals and measures to improve the environmental performance of our communal urban land use planning. The environmental programme we have developed for this process undergoes regular review and adjustment.

Überlingen, 01.12.2003
Mayor Town Council

7.3 Environmental Aspect Excessive Urban Expansion

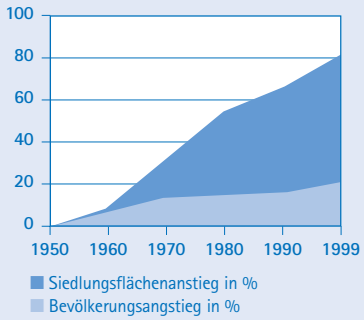
The environmental aspect excessive urban expansion within communities is a topic of central importance for sustainable settlement area development.
Designating which land is to be used for settlement and construction is one of the most important tasks in communal urban land use planning.
Although the term "excessive expansion" indicates more clearly than does "usage" the actual effects of these processes, it does not yet capture the their full impact. One should really speak of "land circulation", for parcels of land are in fact redirected from one type of usage to another. The changing conditions of land use, the form and degree of each usage and the temporal rate at which these change are thus the defining characteristics of excessive urban expansion. Within an environmental management system used in planning strategies for regional development, it is the most important aspect. For one thing, it is directly related to how natural resources in the form of the actual land being used are allocated. For another, it is represented within other issues of environmental concern such as traffic and transportation policy or how much land is sealed over. Furthermore, it is through a community's urban land use planning that this environmental issue can be directly influenced.

Environmental Relevance of Excessive Urban Expansion

It is an undeniable fact that urban land use planning directly effects the natural environmental balance, alters the way in which land is used, and thus has a great impact on many aspects of the environment.
The German federal government enquiry commission on "The Protection of the Population and the Environment" is similarly aware if the significance of this topic and for that reason has designated the reduction of new land used in construction to 30 ha daily by 2020 as an environmental goal of its 1998 final report.
According to the German Federal Office of Statistics' current projected figures, the population of Austria, Germany and all neighbouring European countries will sink significantly in the short term as of ca. 2015. However, this does not mean that the demand for land will decrease.

ECOLUP INFO
Ecological Land Use Planning

Increase in Inhabitants as well as Surface Area Dedicated to Settlement and Transportation in Germany since 1950.



The fact that more than half of the construction has occurred in the last 50 years is critical, as is the percentile growth of the surface area dedicated to settlement and transportation, which was four times higher that the percentile population growth in 1999.

Baden-Württemberg's environmental plan for the year 2000 states that the reduction of construction for settlement and transportation purposes contributing to excessive urban expansion is presently one of the most important goals for active environmental protection.

The goal of reducing the demands settlement and transportation make on a community's surface area needs to be cut down to a size appropriate for realisation by local government. In the following, it is translated into the planning processes and decisions that bring about new land use, or require and cause it in everyday practice.

7.3 Environmental Aspect Excessive Urban Expansion

The planning goals municipal administrations establish for land use are above all to be found among the various targets set in existing urban land use plans, the zoning plans and those for land allocation, as well as in city development plans also already in existence.
Municipal administrations can play a key role in supporting conservative land use in settlement development due to the planning sovereignty they hold. It lies within their power to reduce excessive urban expansion due to settlement and transportation construction within the limits of their jurisdiction. Through urban land use planning and the way environmentally relevant issues are represented or set down within them, municipal administrations in Germany and Austria directly influence settlement development and land use policy. Land use politics within communities must put greater emphasis on avoiding the excessive designation of additional construction sites, on maintaining current rates of land usage and taking advantage of developmental opportunities present within the given city structure.

These are the issues addressed by environmental management for communal urban land use planning.

Local Preconditions

Focusing on local administrative authorities does not enable us to consider the environmental impact of all demands made on the land within a community's boundaries. For example, in Germany, planning decisions related to the issues of transportation between regions, the axes of desired settlement development, supply and disposal and other such measures which designate land usage are not made at the communal level.

In each of the various regions of Europe, settlement patterns have developed very differently, making the issues at hand different for each settlement area. The goal of decreasing the amount of land continuously in use is above all important for regions which are under constant pressure to expand the amount of land available for settlement.
As established by the final report issued by the ECI (Development, Refinement, Management and Evaluation of European Common Indicators Project, 2003) EC project, settlement areas can be divided into three types:

- Compact urban area: highly concentrated population (70-100 inhab./ ha), large municipality (5-10% settlement and transportation) little need to take action in terms of environmental issue excessive urban expansion
- Rural town: low population density (15-30 inhab./ ha), mid-size to large municipality (10-20% settlement and transportation) great need to take action in terms of environmental issue excessive urban expansion due to danger of uncontrolled construction development and settlement of surface area
- Central/compact town: average to high population density (50-80 inhab./ ha), very small municipality (30-80% settlement and transportation) great need to take action in terms of environmental issue excessive urban expansion because limits of growth potential have already been reached.

The type of settlement that allows

ECOLUP INFO
Ecological Land Use Planning

In Vorarlberg (Austria), the situation is similar to that in Baden-Württemberg. The federal state of Vorarlberg suffers from land scarcity. When we subtract nonarable land, forest and alpine areas, hazardous zones and conservation land from the total amount of land available, then a mere tenth remains for human settlement and intensive agriculture. Eighty percent of the population lives on this land. In Vorarlberg, the loss of untouched land appears to be progressing inexorably. The rate at which construction for settlement makes new demands on land is ca. 15 ha per year.

In Baden-Württemberg, land use for settlement and for transportation has doubled in the last 50 years. Half the surface area of the land used in these areas is completely sealed.

However, the process by which land that was formerly in nearly natural condition or used for agriculture has been transformed and found new use as settlement land is not irreversible.

7.3 Environmental Aspect Excessive Urban Expansion

ECOLUP Ecological Land Use Planning

Measures Related to Environmental Issue "Excessive Urban Expansion"

Direct	Indirect	Related
■ Establishing how much land is available for construction ■ Settlement development that conserves surface area ■ Maintaining settlement borders ■ Optimisation of the relationship between land dedicated to transportation and to settlement - Optimisation of construction site use ■ Retrospective consolidation: Use of empty lots, Additional storeys, additions Combined types of usage Covering need for new housing space within given dimensions Consolidation of housing and working spaces Raising occupation density Minimisation of transportation network	■ Decreasing further dispersion of settlement- ■ Avoiding fallow areas within the city ■ Conservative use of surface area in development and choice of construction type ■ Intensified usage of attractive locations ■ Quantitative and qualitative compensation for loss of surface area for construction ■ Mobilisation of potential in existing construction sites	■ Managed city development policy ■ Restructuring city neighbourhoods ■ Integrated settlement and transportation development ■ Concentration of supply, administrative and service facilities ■ Choice of location, designation of type of use according to criteria of environmentally fitting usage ■ Co-ordination of temporary building usage (intermittent usage)

for sustainable town planning through land development is characterised by:

- the intensive use of available landscape for settlement
- the high density of settlement land use
- population development with high or low demand for residential building sites or commercial sites.

The Lake Constance region is presently experiencing high settlement pressure. Some of the towns in the area are rural with average population concentrated in mid-size municipalities similar to those of type 2 above, some are urban towns with highly concentrated populations in small municipalities as in type 3. The pressure to use available land for settlement, the extent of over-settlement and the given boundaries to growth potential determine the extent to which action must be taken.

Environmental Evaluation

In order to conduct an environmental evaluation of excessive urban expansion, certain current base and reference data must be available or exist for the very recent past. The data should be serial and should not require extra effort to ascertain.

By collecting the appropriate data, a community can determine its specific situation, measure the impact of current planning processes, and evaluate the overall environmental situation. This knowledge not only constitutes the basis for the ECOLUP management system, but can also be applied to other procedures such as the environmental acceptability assessment or the strategic environmental assessment.

The environmental evaluation should include a balance of the surface area used within the municipality that describes the relationship between land used

7.3 Environmental Aspect Excessive Urban Expansion

for construction and natural landscape.
Furthermore, it should depict the trend in land development, which is represented by the reference figures population and settlement density.
It should also document the current growth rate of land use over a set period of time.

Specifically, it summarises:

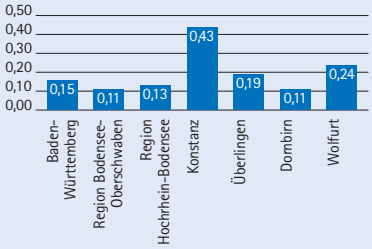
- The **relationship between different types of land use** in order to demonstrate how the municipal surface area is settled, how much construction land exists in reserve and what options are open to the local government.
- **The density of land use** as a product of the number of inhabitants in the community, shown in relation to the total area of the municipality over the population density and in relation to the percentage of settled land over the settlement density/population density/density of housing areas
- **The growth in zoned construction land**, represented in terms of the growth in settled surface area in relation to the most important types of land use - housing areas, commercial areas and transportation areas.

How surface area parameter is calculated is explained in greater detail below. (Kasten 3-5)

The information necessary for evaluating to what extent a community exhibits excessive urban expansion is available in the form of statistical records which are always accessible and from which base data can be constructed.

ECOLUP Realationship between Differnet Types of Land Use

"Land Use Figure"



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Quelle: Landesstatistik Baden-Württemberg 2001

By way of simplification, we compare the (existing and planned) settled surface area to the landscape surface area in order to establish to which extent the procentual proportion of settled surface area of the total surface area changes (figure: proportion settled area). These core figures indicate what options remain open to the community and how much landscape is available for settlement.

The existing base data available in the usual official records permit us to determine the relationship between the total settled area (surface area of private property or construction sites, used for transportation and public open spaces) to the entire surface area in the municipality.

In this way, we arrive at a land use relationship of settled land in Baden-Württemberg's municipalities to natural landscape in each of on average 0.15. In comparison, the level of land use in the city of Constance is ca. 0.43. This indicates that the city has significantly fewer land resources available for settlement development than the federal state average (see table).

The land use figure is arrived at by determining the relationship between both settlement and transportation use to natural landscape. The latter is the surface area of natural landscape outside the town proper which is ascertained by subtracting the surface area dedicated to settlement and transportation from the municipality's total surface area.

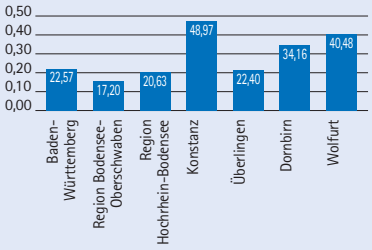
By calculating the base data, the status quo in the community can be established and used as a basis for the evaluation of future land use development.

The base data for these figures can be taken from the settled areas within the town proper and those dedicated to transportation. The level of land designated for transportation in general lies between 18% and 35%. A target level could be set at 20% of the total settled area within the town proper.

7.3 Environmental Aspect Excessive Urban Expansion

ECOLUP Density of Land Use

Population Density with Inhab. per ha of Settlement and Transportation Land



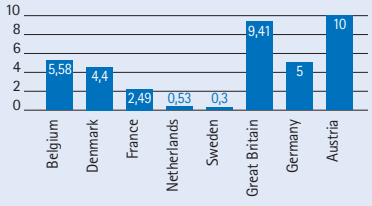
© Hochschule Nürtingen, IAF
Quelle: Landesstatistik Baden-Württemberg 2001

Along with the core data on land use constituted by the relationships of the different kinds of use to one another, core data on density can provide us with information about how carefully a municipality allocates its available land for use. Above all, density figures related to population can be drawn from data on the residential population, for example population density in relation to given spatial units (land within municipal boundaries, region, federal state) or settlement density/habitation density in relation to zoning units (settlement zones within the municipalities). In these cases, because the data available in existing records includes the surface area used for transportation in the figure for settlement land no specific conclusions can be drawn from them. In order to measure and compare densities, it is advisable to use the data on built-up land and open sites as a basis for calculation. A separate figure is to be ascertained for land used for transportation puposes.

The bar graph shows that the population density of the city of Constance at 48.97 inhab./ha is more than double the state average at 22.57 inhab./ha. Furthermore, a comparison of the Vorarlberg towns reveals the remarkable fact that Wolfurt has a notably higher population density than does Dornbirn. This is due to the very limited proportion of traffic surface area outside of the municipality's centre.

ECOLUP Increase in Land Use

Average Yearly Land Use per Person in m² per Person



© Hochschule Nürtingen, IAF
Quelle: Ronconi (1999), Umweltbundesamt Österreich

In comparison to Europe as a whole, Germany's land use growth with 5 m² per year and person is average. In comparison, Austria features the highest figure with 10 m² of new construction land per year and person.

The development of land use within a community can also be measured from the perspective of the yearly rate of change, i.e. from the perspective of the environmental goal of reducing the growth of land use. Using federal and state statistics we can determine to what extent land development in the community at hand differed from average figures over a given period of time. If the planned rate of development is projected onto a yearly land use balance, then the change in rate of land use growth can be ascertained. For example, the Enquiry Commission (1998) noted a growth in land used for settlement in the Federal Republic of Germany of 129 ha daily or ca. 47,100 per inhabitant and year. If by using this figure we calculate the land use per inhabitant and year, we arrive at a yearly growth of 5.9 m² per inhabitant. Specifically, a town of 80,000 inhabitants would thus have a respective growth of over 47 ha of new land usage per year.

7.3 Environmental Aspect Excessive Urban Expansion

ECOLUP EXAMPLE The following base data should be available

Base Data on Surface Area (with year of reference and planning programme/source acknowledge)

Surface area of municipality *(mit Angabe des Bezugsjahrs und des Planwerks/der Quelle)*	**Unit**
Surface area of municipality	ha
Total settlement and transportation surface area	ha
Built-up and open surface area in ha (calculated separately for commercial areas and settlement/mixed use areas)	ha
Transportation surface area	ha
Landscape surface area	ha
Agricultural areas	ha
Forest areas	ha
Bodies of water	ha
Protected areas	ha
Planned development of new construction sites	ha

Base Data on Population (with year of reference and planning programme/ source acknowledged)	**Unit**
Inhabitants	
Working Population / Jobs in community	
Balance of commuters (to and away)	

Base Data Temporal Dimension (with chosen time span given)
Settlement and transportation surface area in ha
Growth rates of settlement and transportation surface area in ha per year
Inhabitants development

* *Built-up and open areas = Areas with structures (built-up areas) and area without structures (open areas) the use of which are determined by the structures. Open areas include front gardens, property surrounding houses, playgrounds, parking areas and other areas (see Statistisches Landesamt Baden-Württemberg, 2002).*

The basis of all calculations should as far as possible be official statistics. For the temporal data, the planning programmes from which the figures are taken should be acknowledged.

ECOLUP INFO

Summary of all Necessary Data Research

⇨ Our community XY encompasses a surface area of... ha with an average level of settlement and transportation land use of....% and a population density of ..... inhab./ ha.

⇨ Spatial situation of community along with integration in neighbouring communities and the region in respect to environmental issues

⇨ type of community according to land use figures and density of settlement and population

⇨ data on development of land use

ECOLUP INFO

This text is based in part on excepts from papers by Prof. Everts, University for Applied Research, Nürtingen University.

You will find the texts to these talks under:
www.ecolup.info
⇨ *Wissenspool*
⇨ *ECOLUP-Methodik*
⇨ *kommunale Workshops*

7.3 Environmental Aspect Excessive Urban Expansion

ECOLUP Choice of Quantities to be Measured: Environmental Issue "Excessive Urban Expansion"

Core Statistic	Calculation	Unit	Necessary Base Data
Conditions for Land Use			
Proportion of available settlement land	Settlement and transportation surface area to municipality surface area	%	Settlement and transportation surface area, municipality surface area
Land use figure	Settlement and transportation surface area to total landscape surface area	%	Settlement and transportation surface area, total landscape surface area
Excessive settlement core figure	Extent of settlement and transportation surface area in km to settlement and transportation surface area in m2	-	Settlement and transportation surface area within municipality's centre, municipal map
Land use figure for property parcels	Floor area of structure to area of property parcel (PPF),Floor area of total storeys to area of property parcel (SAF)	%	Floor area of structure,area of property parcel, Floor area of total storeys
Proportion of reserve surface area	Property parcel surface area of all reserve areas to surface area of all property parcels	%	Property parcel surface area of all reserve areas,surface area of all property parcels, Register of land zoned for development
Density of Land Use			
Population density	Number of inhabitants to municipality's surface area / selected areas within municipality	inhab./ha	Number of inhabitants,municipality's surface area / selected surface area
Settlement and population density	Number of inhabitants + jobs to settlement and population density in yearly figures (over a given span of time)	inhab./ha	Number of inhabitants (yearly),Number of jobs (yearly),settlement and population density (yearly)
Housing density	Number of inhabitants to surface area of structures and open sites in ha.	inhab./ha	Population figure, Structure and open site surface area for housing areas, centre areas, and mixed usage areas
Job density	Number of employed persons to total surface areas	empl. pers./ha	Number of persons employed in place of residence,Municipality's surface area
Occupation density	Inhabitants to housing surface area	inhab./m2m2/ inhab.	Number of inhabitants,Housing surface area
Potential			

7.4 Environmental Aspect Sealing / Use of Green Areas

ECOLUP INFO
Ecological Land Use Planning

How Communal Urban Land Use Planning Can Influence the Environmental Aspect Sealing / Use of Green Areas

In §1a BauGB, the German building code indicates that, in addition to the economical use of ground and soil, as only as much soil as absolutely necessary is to be sealed over. This stipulation evidences how important this aspect is to protecting the environment. Communal urban land use planning can take recourse to a number of codification and representation possibilities presented in the building code when attempting to influence the impact this particular environmental aspect has on the environment:

- Size and numbers of building windows on the property (§9 (1) No. 2 BauGB)
- Conservative designation of transportation surface area (§9 (1) No. 11 BauGB)
- Surface area for parking and garages (§9 (1) No. 4 BauGB)
- Designation of surface area for recreational and play areas (§9 (1) No. 5 BauGB)
- Sites which are to be left open and their use (e.g. view maintenance, vernacular local style) (§9 (1) No. 10 BauGB)
- Surface area devoted to retaining and drainage of precipitation water (e.g. sewage field) (§9 (1) No. 14 BauGB)
- Green areas, such as parking areas, permanent small gardens, sport-, play-, camping-, and bathing-grounds, cemeteries (e.g. kerbside planting areas, compensatory plantings) (§9 (1) No. 15 BauGB)
- Permitted types of planting (§9 (1) No. 25 BauGB)
- Obligation to plant (§9 (1) No. 25 BauGB)

Sealing-Over of Soil

When construction seals over soil, problems are created for the environment through the disturbance to the local natural and water balance, the increase in frequency of peak levels of flooding runoff, and the resulting additional burdens for the sewer system and water treatment plants. In this way, processes of exchange between soil and atmosphere are limited or prevented altogether, the microclimate is influenced in a negative fashion, and the natural habitat of flora and faun is destroyed.

According to the State Office of Environmental Protection, re-exposure of the soil *("Entsiegelung")* entails bringing about a general decrease in the proportion of sealed surface area. This can be accomplished through completely removing sealants and changing the type of covering to thereby create permeable ground surfaces on which plants can grow (partial re-exposure). Or it can also mean the transformation of non-necessary sealed surface area into green areas. The following surfaces come into consideration for partial re-exposure:

- All types of parking and storage surface area, as well as access roads and paths.
- Sections of intersections that are not driven over, centre areas of traffic roundabouts
- Surfaces that do not have to be accessible for traffic
- Schoolyards, market squares, paved courtyards

According to estimates made by the former Federal Research Institute for Regional and Cultural Studies and Spatial Planning, 10% of sealed surfaces could theoreti-

7.4 Environmental Aspect Sealing / Use of Green Areas

cally be re-exposed. However, due to legal, use-related, and financial grounds, the study concluded that the real potential for re-exposure lies at a lower level. Thus, measures for the re-exposure of soil can make a small, but in particular cases indeed important contribution to improving the situation of the environment. Re-exposure can also be undertaken as a measure employed as compensation for other changes to the environment or towards an eco-account. In this way, such measures can be made attractive for local governments from the financial perspective. Further positive aspects are the relief the sewage system and water treatment plants of excess runoff, the improvement to the microclimate, as well as to the surroundings in which people live and work.
Just as important as re-exposure is to ensure that only very little new ground is sealed over.

Use of Green Areas

Everyone is aware that green areas play a substantial role in improving the quality of life within settled regions. They are immeasurably valuable not only as green belts, but also in the centre of settled areas. Park areas in the heart of a town improve the attractiveness of housing and service tracts located nearby, so that the heightened value of neighbourhoods with expanded green areas can contribute to the concentration of development in municipal centres.
A settlement area can be divided into a wide variety of different green systems, such as parking facilities, stretches of plantings, green plots connecting elements of construction and natural house gardens. These improve the microclimate and develop into valuable habitats for a wide variety of animals and plants.

Green areas offer opportunities for leisure and recreation, they are meeting-places for a neighbourhood and make a major contribution to people's identification with their place of residence. Green connecting plots take on a very important function within a community. Adorned with trees, hedgerows, and other elements of greenery, they encourage "soft mobility" in the form of use by pedestrians and bicyclists. A green connecting plot can be a sidewalk or path already lined by trees.
Similarly, roads connecting a settlement with the surrounding natural landscape can be conceived of in this manner. Along with their function for human recreation, they represent an important con-

ECOLUP Ecological Land Use Planning **Reference Data Sealing**

Reference Figure	Calculation	Unit	Necessary Base Data
Sealing reference figure[1] in reference to property parcels	Structure floor area + paved courtyard areas (drives, parking spaces....) to plantable surface area on property	Figure	Structure floor area, Paved courtyard areas, Property surface area
Proportion of exposed soil	Structure floor area + paved courtyard areas before to structure floor area + paved courtyard areas afterwards -100	%	Structure floor area before, Structure floor area afterwards, Paved courtyard areas before, Paved courtyard surface areas afterwards
Proportion of paved transportation area in development area	Transportation surface area/ total surface area of development area	%	Transportation surface area in dev. area, total surface area of development area
Proportion of sealing per area unit 2	Structure floor area + transportation surface area to development area	%	Structure floor area, transportation surface area in development area, size of development area

[1] ARLT/HEBER/HENNERSDORF/LEHMANN/THINK (2001): Auswirkungen städtischer Nutzungsstrukturen auf Bodenversiegelung und Bodenpreis; IÖR-Schriften, Vol. 34
[2] EVERTS, (2003)

7.4 Environmental Aspect Sealing / Use of Green Areas

tribution to the maintenance of biotope networks.

Thus, it is important to provide open spaces with differentiated and varied form:

- to greatest extent possible maintenance of existing natural habitats
- encouragement of greening of areas zoned for development
- networks of green areas
- use of indigenous plant species, if possible local varieties
- creation of dry-walls, watery areas, roof and siding plantings, green areas used extensively and planted wooded areas as habitats for plants and animals
- include alleys, copses, single standing trees, hedgerows and natural orchards
- integrate watery areas, brooks and marshy areas
- integrate children's' playgrounds and similar outdoor gathering places in a manner fitting to the landscape
- apply greening measures to new annex structures, as well, e.g. through plantings on garage roofs
- extensive use of surrounding landscape areas
- link settlement area to surrounding landscape by means of connecting plantings and paths. When doing so, great care must be taken with paths that enter ecologically sensitive areas.

The municipal green area plan makes a decisive contribution to the development of landscape in accordance with communal urban land use planning.
The green area plan aims above all to structure overall green expanses that define the appearance of the city and its surrounding landscape while taking particular account of ecological concerns, as well as of measures intended to protect, maintain and develop a community's natural surroundings.
This plan undertakes fundamental codifications of the permitted use of public and private properties, as well as how green areas lining roadways, leisure and recreation areas, children's playgrounds, etc. may be developed so as to preserve existing vegetation and wooded areas, as well as to create new planted areas.

Measuring a Community's Potential for Re-Exposure of Soil:

- Draw up basic cartographic documentation by combining the Automated Real Estate Map *("Automatisierte* Liegenschaftskarte", ALK) with the Automatic Real Estate Book ("Automatisches *Liegenschaftbuch", ALB)* accessible through the German Geographic Information System

ECOLUP Reference Data Use of Green Areas

Reference Figure	Calculation	Unit	Necessary Base Data
Available open spaces[1]	Total public park areas to number of inhabitants	mΞ/ inhab.	Total surface area of public park areas, recreation area number of inhabitants
Use of green areas[2] in development area	Gross surface area + paved courtyard areas + transportation surface area to green areas (the smaller the better)	Figure	Structure floor area, transportation surface area in development area, paved courtyard areas, remaining plantable ground surface area in development area
Use of green areas for property parcels	Gross surface area + paved courtyard areas to green areas on property parcel	%	Property surface area, structure floor area, paved courtyard areas, gross surface area

[1] ARLT/KOWARIK/MATHEY/REBELE (2003): Urbane Innenentwicklung in Ökologie und Planung; IÖR-Schriften / Vol. 39
[2] EVERTS (1992): Durchgrünungsgrad in den Gemeinden Baden Württemberg

7.4 Environmental Aspect Sealing / Use of Green Areas

(“Geographisches Informationssystem“, GIS)

- Detailed registration of nature of surface area (existing green areas, etc.)
- Measurement and calculation of proportion of sealed areas on the basis of both analogue and digital aerial images
- Bundle properties with the same structure of use or construction development and similar degree of sealing into mapping units
- Estimation of degree of sealing
- Measurement and calculation of potential for re-exposure taking into consideration the minimal amount of sealing possible for each type of usage and the users‘ right to comfortable access
- Calculation of potential for re-exposure as a relative proportion [%] of the total area of the mapping unit
- Consideration of information relevant to achieving re-exposure, e.g. ownership and demands made on property through use
- Spatial priorities:e.g. in combination with the renovation of cables, lines and pipes, of streets or other “piggyback measures“ (term is taken from a presentation by Wolfram Hanefeld, workshop on sealing / use of green areas on November 5th, 2002 in Überlingen)

ECOLUP Ecological Land Use Planning INFO

This chapter includes excerpts from these presentations:
Dipl.-Ing. Claudia Kaiser, City of Salzburg: ”Salzburg’s Network of Green Areas” (”Vortrag Grünes Netz Salzburg”),
Dipl.-Ing. Wolfram Hanefeld, Vorarlberg Provincial Government:
”Sealing and Use of Green Areas in Vorarlberg” (”Vortrag Versiegelung / Durchgrünung in Vorarlberg”)
www.ecolup.info
- Wissenspool
- ECOLUP-Methodik
- kommunale Workshops

7.4 Environmental Aspect Sealing / Use of Green Areas

Further Information:

Websites:

http://www.learn-line.nrw.de/angebote/agenda21/daten/boden.htm

http://www.umweltbundesamt.at/flaechenverbrauch.html

http://www-public.tu-bs.de:8080/~schroete/Bodenverbrauch/Aktueller_Stand.htm

http://www.bbr.bund.de/raumordnung/siedlung/boden.htm

http://www.uvm.baden-wuerttemberg.de/nafaweb/berichte/inf02_2/in02_212.htm

Literature:

Landesanstalt für Umweltschutz Baden-Württemberg [Ed.] (2000): Erhebung von Entsiegelungspotenzial in Kommunen. Studie und Verfahrensanleitung am Beispiel der Stadt Ettlingen. Karlsruhe.

Landesanstalt für Umweltschutz Baden-Württemberg [Ed.] (2003) : Umweltdaten 2003, Karlsruhe, 272 pp.

Fuchs, Oliver; Schleifnecker, Thomas (2001): Handbuch ökologische Siedlungsentwicklung, Berlin, Initiativen zum Umweltschutz, Vol. 32, 300 pp.

Akademie für Natur- und Umweltschutz Baden-Württemberg [Ed.] (2003): Flächensparende Siedlungsentwicklung, Stutgart, Beiträge der Akademie für Natur- und Umweltschutz, Vol. 31, 192 pp.

Bayerisches Staatsministerium für Landesentwicklung und Umweltfragen [Ed.] (2002): Kommunales Flächenressourcenmanagement, Munich, 36 pp.

ECOLUP EXAMPLE

City of Überlingen: Goals and Measures in Area Sealing Use of Green Areas (November 2004)

Goal: Reduce Sealed Surfaces to a Minimum

Measures:

- ⇨ Use of water-permeable coverage for public parking lots
- ⇨ Stipulation of clearly defined building windows for private properties. Number and location of garages, carports and parking spaces are specifically defined, as well as “taboo“ zones
- ⇨ Stipulation that solid surfaces, e.g. terraces and parking spaces, must be constructed with water-permeable coverage

Goal: Increased Use of Green Areas through Extensive Maintenance of Existing Vegetation and Location-Appropriate Additional Plantings

Measures:

- ⇨ As a part of all construction projects, existing vegetation recorded using surveying techniques
- ⇨ Existing vegetation evaluated by landscape architects and measures towards its preservation are set down in the municipal development plan
- ⇨ Landscape architect makes suggestions for additional plantings as a part of the parks and green areas planning concept; these are reviewed and defined in terms of planning legislation
- ⇨ As a part of the development plan, private green areas are designated within which construction is not permitted
- ⇨ Private properties are included in the city-wide concept for green area network

ECOLUP Example: Environmental Programme Constance

Environmental Goal	Measure	Reference Data	Responsible	Groundwork	Schedule	Budget	Priority
Disconnect rain water pipe system from waste water/sewage pipe system; re-exposure of soil on commercial and private properties	Introduce and implement two separate water utility fees (tendency according to separate measure of charges (for property parcels >1000 mΞ) for existing and newly-built structures)	Surface area with new separate rain water pipe system and re-exposed soil in mΞ	Department for City Planning and the Environment (*Amt für Stadtplanung und Umwelt*, ASU)	Public Waste Disposal, City of Constance (Entsorgungs-betriebe Konstanz, EBK), civil engineering offices	Continuous	Continuous budget	A
	Continue entries into sealed ground register based on Geographical Information System (Geo-Informations-Sytem, GIS)	-	-	-	-		-
	Introduce and apply new regulations in water-supply code Baden-Württemberg (codification in development plan)						
Improved proportion of green areas within Petershausen neighbourhood	Green area figure for relevant area	Dev. plan Herosé; dev. plan Great Lakes, dev. plan Petershausen Station	ASU	Civil engineering offices,Agenda groups	Herosé 2004, Great Lakes 2006, Petershausen Station 2006	Continuous budget	A Herosé, B Great Lakes B. Petershausen St.
Improved public access to lake	Extend path along lakeshore ("Seeuferweg")	Surface area of public green areas along lake, compare how land used in mΞ	ASU	Department of Public Works, Constance (*Tech-nische Betriebe Konstanz*, TBK), civil engineering offices	2005	Continuous budget	A

ASU – Departement of City Planning and the Environment (*Amt für Stadtplanung und Umwelt*)

EBK: Public Waste Disposal, City of Constance (Entsorgungsbetriebe Konstanz)
TBK: Department of Public Works, Constance (Technische Betriebe Konstanz)
Priority: A = Environmental goals requiring immediate realisation
B = Environmental goals to be realised in the mid-term
C = Environmental goals to be realised in the long term

7 Environmental Programme

7.5 Environmental Aspect Transportation and Mobility

Today, mobility is both a fundamental human need as well as a prerequisite for our ability to cope with the demands of everyday life. However, at the same time, motor traffic causes particular harm to human health and to the environment. In the year 2000, surface area used for transportation purposes amounted to 17,280 km² or 4.8% of Germany's surface area, increasing by 0.5% (81 km²) by 2002.
Land use that seals over soil, thus dividing plants' and animals' natural habitats, is only one example of how transportation harms the environment. Further impact is caused by energy consumption, noise pollution, toxic emissions and gases harmful to the ozone layer, e.g. CO_2. The economic losses caused by costs incurred through traffic accidents, subsequent costs, and time-loss due to traffic jams are often not in any way calculated in communal transportation cost figures. Establishing the true costs of transportation would help to alleviate this deficit.

Nonetheless, it is interesting to note that the increase in problems caused by our need for mobility and the environmental problems associated with them cannot be attributed alone to an increase in the number of trips individuals undertake in their daily lives. What causes the increase in harm to the environment related to transportation are the ever-increasing distances people must travel to work, to shop for their needs, and to reach recreational areas, as well as the shift in which means of transportation are used in doing so. Due to the increasing expansion of urban land use practices and the growing accessibility of private automobiles, cities are expanding outwards into the surrounding countryside. This leads to an increase in traffic. This is the very area on which communal urban land use planning can have fundamental influence – communal transportation development planning and the environmental problems related to it.
Transportation policy in the European Community and its individual countries must set a precedent for satisfying the needs of the population while at the same time protecting the environment.

Europe has set down its goals for a European transportation policy that recognises public needs as well as undertaking measures towards this end in its whitebook "European Transportation Policy until 2010: Setting the Course for the Future". By 2010, a better balance of modes of transportation is to be achieved in Europe through revitalisation of the railroads, support for oceanic and inland shipping, and expansion of intermodal transportation.

In its Federal Long Distance Transport Route Plan *("Bundesverkehrswegeplan")* 2003, Germany has set down a.o. the following transportation policy goals with direct implications for the environment for the period of time 2001-2015:

- make possible lasting environmentally beneficial mobility
- encourage sustainable land use and settlement structures
- create fair and comparable conditions of competition for all branches of the transportation industry
- decrease excessive use of nature, landscape, and non-renewable resources
- reduce of emissions from noise, toxic substances, gases harmful to the ozone layer (above all CO_2)

The fundamental principles of transportation policy in the Australian General Transportation Plan (Generalverkehrsplans) (GVP-Ö-2002) link a commitment to mobility with the principle of substainability as an exchange bet-

7.5 Environmental Aspect Transportation and Mobility

ween ecological, econominical, and social values. Austria as linked the term "substainable mobility" with the following goals:

- efficient expansion of transportation networks according to need
- increase safety

Sustainable transportation concepts, such as auto-free residential areas or auto-free holiday resorts, can only be successful if they do not require people to impose limits on themselves, but rather create advantages for local residents and the population as a whole. The reduction of motorised individual traffic can bring about the following advantages:

- savings in cost and land use to construction, more surface area available
- savings in external costs of auto traffic
- diversification of the housing market
- savings in government credits for housing construction (1st credit category, *"Förderweg"*)
- no noisy traffic and fewer toxic fumes, i.e. reduction of damage to environment
- no danger of accidents, children can safely play in the streets they live in
- more green structures instead of parking places and streets
- higher quality of time spent outdoors
- less expensive apartments to the extent that costs saved through the reduction of funds spent on streets and parking spaces are passed along to the residents

Ways Communal Urban Land Use Planning Can Influence Transportation Development

We cannot seek solutions for the enormous growth in the amount and proportion of transportation realised via motorised vehicles in infrastructural measures or in the increased use of public transportation alone. Communal urban land use planning can be implemented to take direct, instrumental effect on the primary causes of increased traffic, such as the dispersion of settlement structures and the increasing specialisation of its substructures' functions. In the following table, examples of the different levels of transportation planning in Germany are depicted:

7.5 Environmental Aspect Transportation and Mobility

Examples for Transportation Planning Concepts

	Executive Planning Instance	Goals and Responsibilities	Comments
Federal Long-Distance Transport Route Plan *(„Bundesverkehrsplan“)*	Federal Ministry of Transportation	Mid-term planning as need arises for national and international long distance transport routes(highways, railways, waterways, air)	Regularly revised. Stipulations are integrated into legal codes
State Transport Route Plan *(”Landesverkehrswegeplan”)*	State Ministries of Transportation Instances responsible for providing local public	Mid-term planning as need arises for regional transport routes	Often an integral part of state development plans and regional planning
Local Traffic Plan *(”Nahverkehrsplan”)*	Transportation, usually district, non-district cities, or regional transportation associations	General plan for local public transportation	Formalised procedure in accordance with state law, undergoes revision every 5 years
Transportation Development Plan	City/municipality	Mid- to long-term exhaustive transportation planning for city and municipal region	Voluntary responsibility of cities and municipalities
Specialised Planning Concepts	Federal interstate and state highways: specialised authorities commissioned by federal government State highways:state specialised authorities Municipal roads:cities and municipalities Train stations: German Railway (”Deutsche Bahn AG”) and municipalities	Develop concrete, realisable measures of organisational and construction nature	Integrated into planning legislation, often by means of required procedures for establishing planning or development concepts

(Cf. Friedrich, Markus (2003): *Script G9.1 Verkehrsplanung I der Universität Stuttgart, Institut für Straßen- und Verkehrswesen, Lehrstuhl für Verkehrsplanung und Verkehrsleittechnik, p. 29)*

There is a wide variety of ways that communal urban land use planning can influence transportation development. For one thing, it has a direct impact on the manner and the degree of designation of transportation surface area. For another, it is influential in respect to the level of traffic, distances between destinations and thus in respect to the type of transportation people opt for, for example in reaction to the designation of surface area for specific types of land use. Through efforts to concentrate settlement structure, a higher level of mobility can be attained with a minimal use of resources. Communal urban land use planning can set the following goals for transportation development:

General

- combination of different types of land use instead of separation into distinctive use type districts
- reduction of surface area used through compact settlement structures with short distances between destinations instead of excessively extensive settlement and suburbanisation
- optimal integration of areas newly zoned for construction into existing development network
- optimal integration of neighbourhood centres into local development network
- conservative and differentiated development of transportation surface area by means of terminal streets, courtyard housing developments, short link

7.5 Environmental Aspect Transportation and Mobility

The following reference data were compiled for the environmental aspect transportation and mobility as a part of the ECOLUP model project:

ECOLUP Ecological Land Use Planning Reference Data Transportation and Mobility

Reference Figures	Calculation	Unit n	Necessary Base Data
General extent of developed transportation surface area	Transportation surface area to total surface area measured or surface area of municipality	%	Transportation surface area, Surface area measured,municipal surface area
Specialised developed transportation surface area	Transportation surface area to structure floor area and open sites	%	Transportation surface area, structure floor area, open sites
Extent of developed transportation surface area for planned project	Transportation surface area to gross zoned construction land	%	Transportation surface area,gross zoned construction land
Choice of means of transportation "modal split"	Proportion of different types of transportation (non-motorised vehicles (bicycle), motorised vehicles (auto, motorcycle, public transportation) to total traffic volume (measure of comparison: routes/ stages)	%	Number of bicyclists, number of motorists and motorcycle riders,numbers of public transportation passengers
Public's use of public transportation	Number of persons using bus, train in comparison to previous year		
Extent to which public transportation is accessible from neighbourhoods	Average access distance to public transportation with x rounds/ day, radii	m	
Number of rides provided by public transportation	Rides/ resident/ year (according to means of transportation)		
Kilometres per person	Kilometres per person/ resident/ day (according to means of transportation)	Pkm daily	Local statistical records
Adequacy of transportation networks for pedestrians and bicyclists	Serial metres of sidewalks and bicycle paths per resident	Serial metres	
	Length in km to settlement and transportation surface area in kmΞ		

roads and residential streets in residential areas instead of all-encompassing transportation development in residential areas
- reduction and relocation of parking spaces

Specific:
- designation of Park+Ride parking spaces
- parking control systems and vehicle storage concepts
- traffic calming, designation of 30-kmh zones
- expansion of existing bicycle paths and sidewalks
- reduction of overall parking space available
- construction to improve public transportation access
- increase in frequency of public transportation departures on timetable
- roofed-over bicycle parking lots
- improve proportion of streets to bicycle paths and sidewalks (poss. reduction in number of streets)
- reduce noise resulting from traffic, designation of surface area for required protective measures
- increase in level of development measures within neighbourhoods, reduction of average distance to nearest public transportation access

Along with the designation of transportation routes for motorised and rail traffic, for pedestrians and bicyclists, a municipality can influence how its citizens are

Environmental Goal	Measures	Reference Data	Responsible	Groundwork	Schedule	Budget	Priority
Support for non-motorised forms of transportation	Expansion of Dornbirn's pedestrian and bicycle path network	Serial metres of pedestrian and bicycle paths, planned and existing	City planning, civil engineering		continuous	continuous budget	A
Improve acceptance of public transportation	Optimisation of public transportation offerings (city and overland buses) Monitoring for public transportation's potential for improvement	Rides/resident/year, yearly user figure absolute and per km ridden km public transp.route Euro/km ridden Euro/resident	City planning	City and overland bus Unterland	continuous	continuous budget	A
Slowing growth of individual motorised traffic	Further development of parking facilities	Available parking balance	City planning, civil engineering		continuous	continuous budget	B
	Support for non-motorised forms of transportation, particularly for mobility near area of residence and to the centre	Modal split (yearly survey on market square, market day and weekday)	City planning, civil engineering		dependent upon given need	continuous budget	A
Development of an environmentally-sound transportation system; environmentally-sound flow of traffic	Take all matters concerning development of street environment into consideration - specifically in the areas of traffic, use and design	Transportation surface area to zoned construction area and TSA, transportation surface area/ residents, transportation surface area to number of zoned construction sites, residents/ street length	City planning, Office of Data Analysis		continuous	continuous budget	A/B

Priority:

A: Envirinmental goals towards which ..... must be taken immediately

B: Environmental goals towards which mid-term actism must be taken

C: Environmental goals towards which action must be taken in the long term

7.5 Environmental Aspect Transportation and Mobility

informed about the public transportation offerings in the community. Mobility centres represent only one possibility. Short intervals between the departure of buses and trains presented in clear and easily readable timetables heighten the attractiveness of public transportation. The following 3-point strategy presents of the ground rules for sustainable mobility:

- Avoid motorised traffic
- Encourage drivers to opt for alternate forms of transportation
- Develop less environmentally harmful ways of conducting existing motor traffic flow

Initiatives such as the Network for European Tourism via Soft Mobility ("Netzwerk Europäischer Tourismus mit Sanfter Mobilität", NETS) (www.soft-mobility.com) develop and support concepts for sustainable mobility as qualitative elements in European tourism destinations. Examples of auto-free cities are Saas Fee (CH) and Werfenweng (A).

"We want to develop the present spatial, mobility and transportation structures so as further to reduce the damage done to the environment through private motorised traffic (city of short distances)."

Since 1991, Dornbirn has had its city bus that with its current 120 rides per inhabitant / year is a well-received success. Improvements in the quality of its service are in planning. In 1997, the overland bus system that now provides service across Vorarlberg was introduced. The city aims to have a bus departing every five minutes, through which goal the number of riders is expected to increase. The introduction of a pedestrian zone in Dornbirn has also led to an enormous growth in the city's attractivity.

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This chapter contains excerpts from: Prof. Klaus Zweibrücken, Rapperswil Technical University, Switzerland, "Mobilität, Raumentwicklung und Nachhaltigkeit"; "Bausteine einer nachhaltigen Mobillität"

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7.5 Environmental Aspect Transportation and Mobility

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Constance:
In the Constance transportation development plan of 1996, the following measures were listed as goals to be accomplished from 1990 to 2001:

Extension of the roadway network:
B33 new - Grenzbach Street - Shared customs facilities with Switzerland - A7 : Seetal Street CH, L 221 north by-pass Wolmatingen , B 33 reconstruction of Sternen Square, measures to calm traffic by means of 30kmh zones, installation of traffic recording machines, resident parking and maintenance of parking areas.

Public transportation:
Railway = Hegau-Bodensee-Railway "Seehas" and express train connection Constance-Zurich.

City bus transport system:
two new bus lanes, buses now have right of way, 15-minute schedule into business district, revision of ticket fee system.

Bicycle Paths:
Completion of two new bicycle facilities (new bicycle paths, pedestrian and bicycle paths, Bike+Ride parking spaces).

The tasks and goals presenting themselves to the city of Constance consist of continuing to increase the proportion of public transportation, reduction in mass of commuters through creating attractive housing in the city, realisation of concepts for city centres to minimalise distances within the city, optimal use or reduction of existing transportaion surface are.

Überlingen:
After considering the strengths and weakenesses of the its traffic situation, Überlingen set the following goals for development:
·further reduction of the burden of private motorised traffic in the centre of the city

- extension of traffic-calmed areas within the historic Old City
- more attractive public transportation offerings and pedestrian and bicycle path networks

Wolfurt:
With its two highway exits (a third is in planning), Wolfurt has a high percentage of commuters. As a energy-saving municipality in the "Climate Alliance", Wolfurt has set a goal of reducing C02 emissions by 15%. However, to date only modest reductions have been achieved.

The community aims to support "soft mobility" through optimising public transportation and the pedestrian and bicycle path infrastructure. The community already offers a good network of pedestrian and bicycle paths that is however not yet optimally used by the residents (communication problem).

The overland bus system is well established. Traffic at its goals and sources has still to be reduced. Kindergartens and schools should be within walking distance.

Dornbirn:
In its environmental programme, the city of Dornbirn has defined the following goal for the field of transportation:

7.5 Environmental Aspect Transportation and Mobility

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Austria

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Model Projects:

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http://www.autofrei-wohnen.de/

http://www.wohnen-plus-mobilitaet.nrw.de/home/index.html

http://www.mila.ch/autofrei/index.html

http://www.soft-mobility.com/

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7.6 Environmental Aspect Landscape Development and Flowing Water

Significance of this Environmental Aspect

The changes in the landscape are obvious to all observers, and all the while the dynamic, intensity and variety of how land is used is steadily growing. Due to the limited amount of land available for permanent settlement and the increased significance for society of an intact environment, what used to be seen as "superfluous and negative areas" have taken on increased importance. Open spaces no longer represent above all "reserve areas" for use other than agriculture. What is more, conflicts of interest or concerning usage over exterior areas are on the rise. The appearance of the landscape that surrounds us is unfortunately all too seldom "planned", leading in many cases to an unsatisfactory integration of human structures into the landscape.
In view of this multiplicity of interests, regional planning in particular, with its orientation to many areas of society at once, is a field with special significance, an opportunity to regulate development in many areas at once. The integration of settlement into the landscape, the controlled development of border areas, and the preservation of a landscape's characteristics within areas where development is permitted. For example, valley location, existing wooded areas, and shorelines are directly influenced by communal urban land use planning.

Development has a direct influence on the effects of precipitation and thus on the material runoff carries into flowing water (see Chapter 7.4 Sealing). The planning basis for public wastewater infrastructure is the expedient drawing off of precipitation on sealed-off surface area.

Amendments to Building Code 2004

The new building code (BauGB) draft on environmental assessment has an impact on practically all communal urban land use plans and calls for the integration of all procedures that have an effect on the environment into the environmental assessment. The new federal nature protection law (*"Bundesnaturschutzgesetz"*, BNatschG neu) of April, 2002 requires in §14, Art.1 that landscape planning take on a more easily adaptable form, among other areas for regional planning concepts.

Opportunities to Influence Communal Urban Land Use Planning

Instruments of Regional Planning above the Communal Level

Planning measures that aim to take effect across municipal borders operate with the goal of maintaining a functioning natural balance and the appearance of the landscape by e.g. setting binding functions in cross-border planning concepts. For example, the provincial development plans drawn up by the Vorarlberg provincial government have set limits to settlement borders beyond which communal zoning plans cannot designate any areas for development.

The Zoning Plan as an Instrument

The zoning plan (ZP) codifies not only the fundamental principles of settlement development such as planning goals and the need for housing and commercial areas, transportation planning, material infrastructure, supply and waste disposal, but also how open spaces are maintained through agriculture, forestry and in conservation areas.

7.6 Environmental Aspect Landscape Development and Flowing Water

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Ecological Land Use Planning

Instruments for Regulating Landscape Planning in Germany
Landscape framework programme as a part of the rural development plan (*"Landesentwicklungsplan"*, LEP), landscape framework plan for regional development

In communal urban land use planning:
- ⇨ Preparatory urban land use plan: integration of landscape plan into the zoning plan (ZP)
- ⇨ Binding land use plan: green area plan as a part of the communal development plan (CDP)
- ⇨ Preliminary decision: on the basis of new building code (BauROG) in particular in external areas (models, compensation, and new alternatives...)
- ⇨ Environmental acceptability assessment (EAA) and flora-fauna-habitat directive (FFH)

(N.B.: expanded field of protected resources; monitoring)

On a voluntary basis:
- ⇨ Specialised plans and expert assessments
- ⇨ Agenda 21 and environmental balances As of July, 2004
- ⇨ Strategic environmental acceptability assessment - SUP (*"Strategische Umweltverträglichkeitsprüfung"*)

See presentation Lenz, 2003

Landscape Planning as an Instrument

The landscape plan is an ecological specialised plan that regulates the overall form of communal surroundings as a part of the zoning plan. In order to ensure that the standards for sustainable settlement development are met, the landscape plan and the zoning plan must be reviewed and amended at the same time and in close co-operation. At present, this is unfortunately not always the case. For example, in 2003, about 70% of all cities and municipalities in Baden-Württemberg had drawn up landscape plans or were in the process of doing so. In order to preserve a functioning natural balance for future generations, goals and measures in the field of landscape planning must be formulated. The overall goal is the preservation and development of landscape potential.

Nature Conservation Law's Regulation of Interventions into Landscape and Environment

In the German federal nature conservation law, § 21 BNatschG regulates its relationship to the building code. If procedures within communal urban land use planning (§ 21 BNatschG) or statutes regulating the development of existing settlement areas in accordance with § 34, Par. 4, Clause 1Nr. BauGB have the potential to intervene in nature and landscape, the legal regulation of this intervention comes into effect. According to §1 a BauGB, the prevention of and the compensation for the expected interventions in the environment are to be taken into consideration in the weighing of interests.
Avoidable damage must be prevented and unavoidable harm compensated. Possible qualitative and quantitative avoidance, as well as alternative locations, are to be taken into consideration so that the project goals can be achieved while causing as little damage as possible.

NATURA 2000 Network

In 2002, nature conservation areas represented a mere 2.8% of the surface area of German territory. Under the name of NATURA 2000, the European Union has created a network of ecologically valuable areas in order to secure the long-term preservation of over 200 natural habitats as well as 700 plant and animal species. The legal foundation for this effort is the European Union's 1997 fauna-flora-habitat directive (FFH) and it1979 bird preservation directive. NATURA 2000 areas are drawn up within the individual nations in dialogue with communities, property owners, farmers, and the public. The Union member states communicate the designation of these areas to the EU, which in turn selects and codifies the areas of "significance to the community".

The EU Water Framework Directive

The water framework directive (WFD) extents protective measures to all bodies of water and aims at achieving a "good condition" for all European bodies of water by 2015 and sustainable consumption of water resources. The new directive contains provisions for the protection of all bodies of water, rives, lakes, coastal waters, and the groundwater. By December, 2004, all member states must have conducted an analysis of the condition and the commercial use of all bodies of water within their

7.6 Environmental Aspect Landscape Development and Flowing Water

borders. By the end of 2006, inspection programmes and by December, 2008 control programmes are to be drawn up for all river flood plain areas. The directive underlines the necessity for co-operation between countries and all political parties, as well as the participation of all interested groups (including municipalities and NGOs) in the controlled use of bodies of water.

Shoreline Areas

The preservation or the reconstruction of nearly natural shoreline conditions, also within settlements themselves, is of such overriding importance that it constitutes the overall goal for flowing water. Development plans for bodies of water and maintenance plans for bodies of standing water support these efforts.
In the water code, Paragraph (§68 b) in reference to shoreline areas is of special significance for communal urban land use planning. In external areas, a shoreline area of 10 metre's breadth on both sides of the body of water must remain undeveloped. This area's use should be redirected towards farming or open space. Within the borders of settled areas, a shoreline area of 5 metre's breadth on both sides of the body of water must be designated. This area should remain undeveloped as protection for plants and animals as well as the population against the threat of flooding.

Communal Policy Options

- The FFH directive and the strategic environmental assessment require monitoring systems. An environmental management system simplifies the implementation of this stipulation.

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The Precondition for Most Measures for the Protection of Flowing Water is the Availability of Surface Area

- A sound basis: a development concept for bodies of water (DCBW). This should pertain to flood plain areas, contain consistent reference figures for data collection, and seek to preserve, develop, and renovate
- Further precondition (also for funding programmes): development plan for bodies of water (DPBW) building on the development concept
- Shore areas defined at 5 or 10 metres; it would be preferable to establish a wider water corridor
- Contracts for extensive use of shoreline areas
- Property purchase by municipality (costs, surveying issues)
- Determine basic forms of usage
- Integration of related measures into communal urban land use planning (e.g. shoreline areas, flooding areas designated in zoning plan, ...)

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- Be aware of the scientific, statistical basis for orientation values
- A satisfactory compromise between the harmonisation of indicators or reference figured vs. a flexible approach. Must be reached in almost every current project
- Regulatory measures vs. voluntary co-operation - often people are willing to do more on a voluntary basis!
- Link indicators to policy fields: if you design the indicators so that it is clear which potential measures are to be undertaken by which department, implementation will be all the simpler!
- Plan a progress check because often the neglect of landscape issues is due to the fact that existing or applicable instruments have been overlooked

7.6 ECOLUP Reference Data Landscape Development / Flowing Water

Reference Data for Landscape Development Kennzahl

Reference Data	Calculation	Unit	Necessary Base Data
Proportion protected areas *	Surface area of Natura 2000 areas (ha), nature conservation areas, natural monuments, nature parks, protected green areas to total landscape surface area (ha)	%	Surface area of Natura 2000 areas, nature conservation areas, natural monuments, nature parks, protected green areas, total landscape surface area
Forest density per inhabitant	Forest surface area to inhabitants ha/ EW	ha/ inhab.	Forest area,number of inhabitants
Separation and isolation figure for landscape / forest	Effective breadth of landscape network elements (lneeff), average cohesive surface area to total landscape or forest surface area	%	Extent of surface area of cohesive landscape and forest surface area
Protective outer zones (form of forest surface area)	Surface area to total extent (smaller is worse)	%	Forest surface area, extent of surface area
Proportion of forest surface area with minimum surface area extent	Number of standard minimum extent forest areas (>50 ha) to total number of forest areas before-after	%	Number of forest areas > 50 ha,total number of forest surface areas

Reference Data for Flowing Water

Reference Data	Calculation	Unit	Necessary Base Data
Number of sections of flowing water with sufficient shoreline strip area within settled area **	Length of sections of flowing water with a minimum shoreline strip width of 10m within settled areas to total length of flowing water before-after	%	Length of flowing water sections
Proportion of renaturalised sections	Length of renaturalised sections / total length of flowing water before-after	%	Length of flowing water sections
Proportion of open water sections	Length of open sections/ total length of flowing water before-after	%	Length of flowing water sections

*(DEUTSCHE UMWELTHILFE (2002): *Zukunftsfähige Kommune - Wettbewerb und Kampagne zur Unterstützung der Lokalen Agenda 21 (Reference figure is also used in the Baden Württemberg environmental set of indicators)*
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7.6 Environmental Aspect Landscape Development and Flowing Water

- A number of communities have found it productive to draw up an environmental balance. However, you should exercise caution when using the reference figures, in particular in reference to biotopes. Reference figures must be drawn up on the basis of existing data, which in the case of the charting of species habitats is incomplete.
- Up to 80% of the stipulation in green area plans are not transferred into the legally binding development plan! Checks conducted within the context of continual environmental management can help to alleviate this problem.
- Most bodies of water are characterised by significant morphological (structural) changes. People perceive bodies of water in a very limited fashion, for they have more often than not been straightened, built up, or made subterranean. A positive contribution: make bodies of water visible to public (e.g. free those within the city from subterranean pipe systems).
- According to § 86 of the water code, municipalities must enact regulations for the preservation of shoreline strips. The implementation of this paragraph can find support through anchoring its standards in development plans.
- Designation/ introduction of flooding areas in the zoning plan. This has only seldom been achieved in the Lake Constance region. A positive example: the River Argen.
- The EU water framework directive has not yet been fully implemented in the German water code. For example, neither has the range of bodies of waters to which it is to apply been defined, nor has a catalogue of guidelines for the development of development plans for bodies of water been drawn up.
- The way bodies of water are structure makes it difficult to measure their characteristics with reference data. Because they can change form so quickly, even creating survey maps presents difficulties. The diversity of bodies of water is an important parameter.
- Municipality provides fundamental usage rights instead of buying property parcels: instead of selling his or her property (many good arguments against this), the property owner accepts an entry in the land register and must observe permanent conditions of use.

Further Information

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ECOLUP TIP

This chapter contains passages taken from the following presentations:

- Prof. Roman Lenz, Institute for Applied Research, Department of Landscape Architecture, Nürtingen University: "Landschaftsentwicklung - eine Einführung (D)",
- Ass. Prof. Arthur Kanonier, Institute for Legal Studies, Department of Architecture and Regional Planning, Technical University of Vienna: "Steuerung der Landschaftsentwicklung im Vorarlberger Rheintal (A)"
- Bernd Eversmann, Gewässerdirektion Donau-Bodensee, Bereich Ravensburg: "Vortrag Fließgewässer"

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7.6 Environmental Aspect Landscape Development and Flowing Water

ECOLUP EXAMPLE: Environmental Programme Überlingen: Environmental Aspect Landscape Development/Flowing Water

Environmental Goal	Measure	Reference Data	Responsible	Groundwork	Schedule	Budget	Priority
Preservation and development of existing forest areas and their functional diversity	Draw up and continually update forest development concept	■ Forest density per inhabitant ■ Degree of landscape or forest separation and isolation (average cohesive area) ■ Proportion of forest areas with minimum surface area / number of forest areas with minimum standard surface area (>50 ha) to total number of forest areas ■ Protective outer zones (Surface area to extent)	Department of Green Areas, Forests and the Environment (GAFE)	Lower Forestry Authorities Department of Agriculture	2007	not yet designated	B
	Continued rounding-off of forest areas through purchase and forestation of connecting areas on the basis of the forest development concept		GAFE	Lower Forestry Authorities	2007	Costs of potential purchases and forestation measures still to be determined	B
Preservation and development of man-made landscapes	Härlen Project	Surface area of man-made landscape to total surface area within municipal borders	City Planning Department (PLA)	Planning Office	continual	Part of official duties	A
	Landscape Park "Bodensee-Linzgau"		PLA	Planning Office	continual	Not yet designated	B
	Landscape Park "St. Leonhard"		PLA	Planning Office	continuous	Not yet determined	A
	IIGA 2017		PLA,	Planning Office	continuous	Not yet determined	C

7.6 Environmental Aspect Landscape Development and Flowing Water

Redesignate use of shoreline settlement areas into green areas	Complete revision of D-plans	Proportion of green areas (area of public grounds to total surface area before-after)	PLA	GAFE	continuous	Part of official duties	A
	Development Überlingen West		PLA	GAFE	As of 2004	Part of official duties	A
Renaturalisation of flowing waters, preservation, renovation and improvement of flowing waters	Implementation of measures found in the concept for the renaturalisation of bodies of water		GAFE	Department of Civil Engineering (DCE)	–	–	–
	Nuß Brook in Nußdorf	Proportion of renaturalised sections (length of renaturalised sections/ total length of flowing water)	GAFE	DCE	–	–	–
	Designate shoreline area strips in D-plans	Length of flowing water section with minimum shoreline strip breadth of 10 m within settled areas to total length of flowing water before-after	PLA	GAFE	continuous	Part of official duties	A

PLA = City Planning Department
DCE = Department of Civil Engineering
GAFE = Department of Green Areas, Forests and the Environment

Priority:
A: Envirinmental goals towards which ??? must be taken immediately
B: Environmental goals towards which mid-term actism must be taken
C: Environmental goals towards which action must be taken in the long term

7 Environmental Management

7.7 Environmental Aspect Energy and Climate

Significance of this Environmental Aspect

One of the central concerns of environmental policy is the protection of the climate. The Kyoto Protocol, supported by the EU, established as the first multilateral agreement of its kind concrete goals for reducing emissions in industrial nations. Over the period from 2008 to 2012, the EU plans to reduce emissions by 8% to the level of 1990, from 2012 to 2020 by another 1%, and in the long term by 70%. The European Climate Protection Programme (ECCP), in effect since 2000, foresees over 40 measures to these ends.

Every year, the world as a whole emits ca. 4 tons of CO_2 per person, in Germany on the average 11 tons per person are emitted, and in Baden-Württemberg 7.6 t. According to its Environmental Plan, the federal state of Baden-Württemberg intends to reduce CO_2 emissions from 77 mil. tons per year (2000) to a level of 70 mil. t in 2005 and 65 mil. t in 2010. By 2010, the state plans to double the proportion of regenerative energy sources used for primary energy. A programme to save energy in older buildings, sponsored energy checks, and extensive energy-saving measures on state property are all currently being implemented.

Settlement development has a fundamental effect on the level of energy use and is also of importance for the climate due to its association with CO_2 emissions. Energy is used not only in the production of construction materials and construction itself, but also in the demolition and recycling of existing structures and infrastructure, as well as in transportation and the energy structures require when they are in use. The fact that structures are used for long periods of time ranging from 50 to 100 years requires that we establish high standards for new structures and that the energy use in older ones is adapted to current standards.

Furthermore, settlement development influences the local microclimate through changes in heat radiation balances, prevailing air currents, level of atmospheric humidity, groundwater table, and vegetation, as well as through emission of dust and toxic substances, all of which factors in turn have an effect on the overall climatic system.

The energy required to heat buildings account for the greatest part of CO_2 emissions in cities. However, this area has a great deal of potential for improvement through decreasing energy use by switching to energy-efficient heating and building technology as well as by changing how residents use the buildings. Each citizen can make concrete contributions to this effort, creating high potential for public interest and innovative approaches on the part of the municipality.

In all sectors of consumer behaviour, three strategies are fundamental to saving energy and protecting the climate; this applies as well to settlement development:

- ⇨ efficient energy use through efficient consumers and use in proportion to need (energy-use behaviour and regulation technology)
- ⇨ efficient energy supply (e.g. through power-heat-combination)
- ⇨ use of renewable sources of energy

Ways Communal Urban Land Use Planning Can Influence the Environmental Aspect Energy and Climate

Government funding programmes for private investments in energy-saving technology and the requisite supporting legislation can increase the public's willingness to participate.

7.7 Environmental Aspect Energy and Climate

Factors Influencing Heating Energy Consumption:

Factors in Urban Planning

- ⇨ Density of urban development
- ⇨ Types of structures present
- ⇨ Orientation of structures
- ⇨ Arrangement of buildings
- ⇨ Roof form and orientation

Structural / technological factors

- ⇨ Degree of structure compactness (types of structures and detail design, e.g. avoiding "cooling ribs")
- ⇨ Structural heat retention factor and avoidance of heat-loss bridges
- ⇨ Degree of airtightness
- ⇨ Ventilation concept
  Energy supply
- ⇨ Central (local or distant source of energy) or decentral supply
- ⇨ Source of power supply
- ⇨ Heating technology and regulation
- ⇨ Central or decentral use of renewable sources of energy

Type of Use and Use Behaviour

The Most Important Factors Influencing the Need for Heating Energy in the Order of Their Quantitative Significance:

The *structural insulation* of the building. In comparison to the standards of construction currently being used, low-energy building methods can save up to 40% heating energy while passive heating technology achieves up to 85%.

By means of *local heat source network*s and efficient heat generation through *power-heat-combination* it is possible to save up to 45% of the CO_2 emissions caused by oil heating. The amount of energy saved depends on with which alternative source of energy oil heating is compared. In Germany, when overall power demand is at an average level electricity is drawn above all from coal power plants. In Austria, electricity for this level of power demand is mainly produced by hydroelectric plants with the result that lower levels of power can be saved through the application of power-heat-combination techniques. In addition, the level of power-loss through the network (typically

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Reference Data for Energy and Climate

Reference Date	Calculation	Unit	Necessary Base Data
Proportion of regenerative sources of energy to total energy use	Total energy use / energy use from regenerative sources	%	Communal energy data
Proportion of structures with solar stations	Number of structures with solar stations / Total number of buildings in the relevant area	%	Number of structures with solar stations in relevant area, total number of structures in relevant area Proportion of structures
meeting low energy-use or passive energy-use standards	Number of structures meeting low energy-use or passive energy-use standards/ total number of structures in related area	%	Number of structures with low energy-use and passive energy-use standards
Proportion of structures with orientation not conducive to solar energy generation	Number of structures with north-south orientation/ total number of structures in relevant area	%	Number of structures orientation not conducive to solar energy generation
Degree of compactness	O/ SAU- or O/LA relationship (Structure's outer surface area to surface area in use or living area)	--	Structure's outer surface area, surface area in use or living area
Proportion of commercial enterprises incompatible with housing needs	Number of commercial enterprises with toxic emissions that according to law are not compatible with housing needs/ total number of commercial enterprises	%	Number of commercial enterprises with toxic emissions, total number of commercial enterprises

7.7 Environmental Aspect Energy and Climate

ca. 5-15%) and the proportion of power-heat-combination of electricity used for heating as a whole play an important role. Typical levels of CO_2 reduction are ca. 25%. It is possible to achieve even more significant reductions in CO_2 emissions if *local heat-generating networks relying on renewable sources of energy* (wood-chipping power plants, locally generated solar power, and geothermal power) are used.

The *degree of structure compactness* can reduce the need for heating by up to 30% within buildings sharing a common construction standard. The greatest influence on this factor is the type of structure: multi-storey structures, compact forms, rows of structures or self-contained units, etc. Furthermore, we recommend that roof dormers (instead full storey and flatter roofs), bow windows, niches and angles not be used as elements of the building's outer structure as its purpose is to retain heat.

By *optimising the benefits drawn from solar energy* through appropriate orientation of the structures, distances between them, structure height and location in relation to one another, as well as planting tree and plant species to create passive solar energy, up to 10% of the energy required for heating can be saved (given that the size and the quality of the windows remains the same in comparison to less advantageous varieties that might be present in older buildings).
Along with reducing the amount

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Dornbirn:
The Energy Question-and-Answer-Office reviews energy sources planned for each building project, consultants give advice on optimisation

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Wolfurt:
E5 community, Energy Group since 1990, since 1992 energy question-and-answer office, 1997 joined Climate Alliance.
Minimum standards are applied to all renovation and new construction work on communal property (e.g. use of renewable sources of energy, insulation, etc.). In planning: Energy-use zoning plan, model for communal energy policy, standards to increase use of renewable sources of energy. Projects: Energy book-keeping, school projects, review of solar stations in community, revise eco-balance, use organic materials as source of energy in commercial district, organic gas power station.

Überlingen:
Member of Climate Alliance since 1997, number of non-variable power plants reduced, modernisation of heating plants in communal structures, since 1997 wood-chip heating station, support use of photovoltaic cells on residential structures, switch to condensation technology, communal hydroelectric plant. Goals: energy question-and-answer office, increased heating insulation, support for passive energy construction techniques.

Dornbirn:
Environmental model 1999, yearly catalogue of measures to increase energy efficiency with focus on public buildings. Project directorial group under deputy mayor meets quarterly. Energy question-and-answer office reviews energy standards for each building project, consultants give advice on optimisation.

Konstanz:
Member of Climate Alliance of 1992, energy question-and-answer office, block heating and generating plant, programmes to support public use of renewable sources of energy, heat-energy-combination, no local heating plant projects. Goal: Optimisation of energy efficiency in existing buildings, planned percentage initially affected 40-50%. The Constance Department of Works *("Stadtwerke")* offers residents the opportunity to become shareholders of power plants located at communal buildings.

7.7 Environmental Aspect Energy and Climate

of energy required for heating, optimisation of the benefits drawn from solar energy also results in sunnier apartments and offices with better daytime lighting conditions. By using daylight to this extent, the amount of energy used for artificial lighting can be reduced. However, having sunny rooms during the long winter month leads above all to an increase in quality of life. Orientating rows of houses north-south (roofs are thus orientated east-west) is an optimal way to benefit from passive solar energy during the winter and a practical way to keep cold air from unnecessarily wasting heat. This orientation does not lead to overheating in the summer, for then an east-west orientation plays a critical role due to the fact that the sun is lower on the horizon.

Active exploitation of solar energy on roof surfaces and possibly on structure facades is simpler if windows face south (so that the roof has an east-west orientation) and are large, and roofs have continuous forms. Active use of solar energy in a thermal solar power station used to warm water can provide 50–65% of the energy needed each year to run the water boiler. Combined collection stations for warm water and heating support typically cover 5–20% of the heating needs and up to 35% of the overall need for energy for warmth, for which of course large storage heaters are necessary. Solar cell stations mounted on the roof feed the energy they produce directly into the building's electrical network and can turn a well-constructed building into a "plus energy house" that produces more regenerative energy in a year than it uses up.

Sealed open sites such as parking lots can be targeted for roofing-over so that they can be used to produce solar energy by means of photovoltaic stations. (Ex. Solar energy complex, Constance municipal district) (Cf. presentation Bermich 2003)

Communal Policy Options

In order to encourage energy efficiency and to protect the climate within the framework of communal urban land use planning, communities have the following policy options:

Codifications in relation to settlement structure and energy utilisation technology in development plans based on federal and state legislation. This way, compact buildings can be made standard, the prerequisites for generating active solar energy created, and an optimisation of the use of passive solar energy and use of direct daylight implemented.

Limitations of and bans on usage for solid or solid and liquid fuels on the basis of legislation. The specifics of such limitations must as a rule be anchored in the local emission levels as well as sufficiently specific. It must be demonstrated that such measures are necessary by the standards of planning law and they must be weighed in comparison to alternative measures. In Heidelberg, a ban on solid and liquid fuels has been included in several development plans.
Stipulations for *distant sources of heating energy with required hook-up and use* (in legal terms, smaller systems usually termed distant sources are categorised as local sources) on the basis of the municipal regulations within each federal state. Heidelberg has used this instrument, too, in a number of fields.

Stipulation of energy-relevant and possibily. Environmentally relevant *measures in civil law property purchasing contracts or leasing contracts* in cases in which the city or municipality is the property owner.

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This is certainly the most effective instrument, as it can have direct influence on energy standards for buildings, the most important factor in saving energy. Along with requirements for low energy-use standards (e.g. in accordance with RAL seal of approval for low energy-use construction) and passive energy-use standards (in accordance with criteria drawn up by the Passive-House Institute *Passivhaus-institut*), in particular standards for sources of power, heating technology and solar energy-use be established.
Control mechanisms and sanctions for cases of non-compliance to contractual obligations are important. It is possible to make an additional entry in the property register recording particular utilisation requirements.
Similar stipulations can also be made in *urban development land use contracts* and *contracts regulating the realisation of projects and development plans.*
Synergy effects occur between efforts to save heating energy and to achieve concentration in urban development. The latter limits land used for new projects, reduces traffic volume, and simplifies the effort to make public transportation accessible:
- Density of urban development and compact building techniques complement one another.
- High density makes drawing energy from local sources more efficient.

A balance between the initially mutually contradictory goals of direct daylight/passive solar energy-use and the desired increased degree of concentration is to be aimed for. The “Schollengewann“ project demonstrates that this is quite reasonable. Nonetheless,

what residents expect from their surroundings should play the central role in achieving this balance. (Cf. Bermich 2003)

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Model project:

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7.7 Environmental Aspect Energy and Climate

ECOLUP INFO

This chapter contains excerpts from the following presentation by Ralf Bermich, City of Heidelberg:
"Energy Efficiency and Climate Protection"; "Energieeffizienz und Klimaschutz"
www.ecolup.info
- Wissenspool
- ECOLUP-Methodik
- kommunale Workshops

7.7 Environmental Aspect Energy and Climate

Environmental Goal	Measure	Reference Data	Responsible	Groundwork	Schedule	Budget	Priority
Raising public awareness of significance of energy-efficient building	⇨ Municipality requires energy balance calculation with documentation in case of application for new structure ⇨ Support for energy-use consultation for renovation projects	Number of consultations	Building Control Office		continuous	Financing staggered according to intensity of demand for consultations	A
Decrease in heating energy consumption	1. Support for low energy-use and insulation	⇨ Number of new structures with low level of insulation / m2 ⇨ KWh/m2 (energy reference figure)	Re. 1. Province of Vorarlberg Re. 2. Building Control Office and Facility Management	Re. 2. expert planners	1. Current 2. Continuous	1. Financed by province	A
	2. Establishment of and support for micro-networks, e.g. village centre, VS Mähdle					2. Costs of financial support and construction costs for own power plants	
Increase ecological sustainability	⇨ Future communal buildings to be planned and built according to minimum environmental standards ⇨ Catalogue of ecological standards	Number of communal buildings	Supervision in setting standards: Building Control Office Implementation: Facility Management	Expert planners	⇨ Continuous ⇨ Catalogue of standards drawn up 2002	Building costs incurred	A
Sustainable energy policy	⇨ Realisation of goals and measures for E5 communities	-	Energy coordinator E5 team (incl. Building Control Office and Facility Management)	-	Current	Continuous effort from case to case	A

7.8 Environmental Aspect Participation / Public Involvement

ECOLUP TIP
Ecological Land Use Planning

"Allowing the public to become involved as early as possible in the pre-planning phase contributes to our ability to work through conflicts and to find solutions that everyone can live with."
Wolfgang Rümmele, Mayor of Dornbirn at an ECOLUP Workshop, 09.12.02

Significance of Public Participating

It is not unproblematic to include the topic of public involvement among the environmental aspects listed in this guidance. This aspect requires that we perceive the term "environment" in its totality, for it also subsumes people. In this area, too, communal urban land use planning procedure can achieve improved environmental performance if a community chooses to encourage more public participation than is required by law.

Furthermore, providing opportunities for the participation and education of all interest groups is highly valued by EMAS. Among the requirements made of an environmental management system is for example making the environmental policy accessible to the public. The municipality must demonstrate that it provides information for and encourages contact with the outside world in order to indicate to what extent it has entered into a process of dialogue with the public and further interest groups.

Land use planning concepts affect the living environment of a great number of people, most of whom hold a wealth of knowledge about their immediate surroundings. The results of these planning concepts often bring about elementary changes of both positive and negative nature that are therefore of great importance for both people and the environment.

EU Policy and Regulatory Framework

At the European level, public participation in planning processes is encouraged through agreements and directives. One example is the "Aarhus Agreement". This international agreement treats public access to information, public involvement in decision-making procedures and access to the courts in relation to environmental matters. It is the agreement's goal to bring about greater involvement of employees in public institutions and the greater public in active environmental protection and to improve the environment for the good of future generations. The agreement will become part of the EU legal code in the form of two EU directives. These directives must in turn be integrated into the national legal codes of the member states by 2005.
If a municipality increases public education and involvement in planing processes as a part of ECOLUP, it thereby institutionalises core elements of the "Aarhus Agreement" in advance.

Planned Revision of Law in Germany and Austria

The German building code requires two-tiered public involvement as a part of communal urban land use planning procedure. Early public participation plays a role when a development plan draft is being drawn up, i.e. before it is officially released. However, this required involvement is defined in the building code only in its fundamental outline. In contrast to early-phase public participation, the later, more formal public participation is regulated in detail and is bound to certain formal procedures.

The strategic environmental assessment (*"Strategische Umweltprüfung", SUP*), an amendment to the building code, also calls for public participation in the field of landscape planning.

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In Austria, too, participation plays an important role in communal land use planning. Citizens are involved both in the drawing-up of the voluntary land development concept and in the zoning plan drafted on this basis. The land development concept and the zoning plan are, as elements of municipal regional planning, regulated in accordance with the respective regional planning and development laws of each Austrian province. It is required by law that all interests directly and indirectly effected by the planning procedure are to be identified and drawn into the process.

Opportunities for Communities to Influence Public Participation

Communities have a number of options when it comes to public participation. How direct and intensive citizen participation is to be and which dimensions it is to take on is not anchored in the legally binding regulations for each planning phase.
Municipalities have developed a wide range of approaches to get citizens involved in communal urban land use planning.
Whereas the formal (regulated by law) participatory processes are very similar, many communities implement various informal (not regulated by law) participatory processes. Examples such as future workshops, future forums, round-tables or planning cells represent only a very few of the variety of opportunities for informal participation (see CD-ROM for an extensive list of methods of informal public participation).
From the perspective of the municipal administration, public participation is important so that later objections, complaints and the resulting delays to progress and higher costs can be kept at a minimum. From the public's perspective, the opportunity for participation in the planning processes allows it to represent its concerns about its own living environment and to strengthen its trust in local government. This is a challenge that regional and city planners must take up together with all other effected parties.
Public participation must be conceived of as a process that accompanies the entire duration of the planning process. However, an ECOLUP survey established that citizens know too little of how all this works (see below and cf. www.ecolup.info).
This informal process aims at

ECOLUP Ecological Land Use Planning

Reference Data	Calculation	Voluntary
Source: "Prozess Kompass" by ecos and IKAÖ Bern		
Voluntary participation	Number of registered clubs and associations per 1,000 inhabitants	Number
Participation in process of achieving sustainability	Number of voluntary work hours within the context of the Local Agenda 21 per 1,000 inhabitants	Number
Contact office for public involvement	Number of visitors at contact office for public involvement	Number
Early public involvement starting before official public participation as called for by communal urban land use planning procedure, so that citizens can have an impact earlier when concepts are in the planning stage	Number of events towards involving the public at an early stage per development or zoning plan or development project	Number
Active informational work for the public as a part of the two participatory procedures in communal urban land use planning		Number
Informal public involvement (e.g. future workshops, planning cells, citizen assessments, project groups, etc.)	Number of informal public involvement events per development or zoning plan or development project	Number

Italics = additional details not present in source material

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establishing what arguments and interests the public has, so that they can be taken into consideration during the planning process. There is no legal framework for this type of communication: hearings, workshops, competitions - the measures can be determined according to what each situation calls for.

As part of ECOLUP, both formal and informal public participation was improved, more successfully orienting it to environmental issues and making it easier for the public to become involved. How was this accomplished? Examples for ways of improving public participation in ECOLUP:

- finding better ways of conveying sufficient information to the public (e.g. make newspaper articles more understandable with clear excepts from plans, including street names and information on planning concept and /or public participation in the Internet)
- Measures to better inform both voters and young people about opportunities for public participation, thus encouraging them to take action (e.g. informal participation methods, better education work in pedestrian areas, in schools or on the radio)

ECOLUP Examples from the Partner Communities

Wolfurt:
Semi-annual public meetings at which all new planning concepts are presented and the town councillors give reports, project presentations for those effected by particular projects, special information evenings on planning concepts with discussion, discussion forums with invited guests on specific topics (e.g. concepts for the care of the elderly, concepts for youth), open rounds on village renewal concepts ...

Überlingen:
Information evenings for those effected in individual neighbourhoods of a larger planning area, Local Agenda 21 groups: urban development, environment and energy, social concerns. Working group on Überlingen's city development plan open to all residents, the findings of which have in part been integrated into the city development plan.

Constance:
Future workshops in all Constance neighbourhoods, e.g. Petershausen ('99), Paradies ('00), Fürstenberg-Wollmatingen ('01), Allmannsdorf-Staad with Egg ('02), Litzelstetten ('03), Dettingen-Wallhausen ('03). Future forum Old City ('03), plenary meeting "Sustainable Constance" since '02 for presentation and exchange between groups of involved citizens and towards the formulation of the city development programme 2010.

Dornbirn:
Announcements in municipal newsletter; in reference to transportation concept "city chats" in all neighbourhoods with 100 to 200 participants at each; in reference to landscape and green area concept information provided to 12,000 households and by a stand at the Dornbirn trade fair; in reference to the renovation of city bathing facilities invitation for all user groups to discussions; in reference to green areas detailed information postings and consultation on location; public involvement in jury for an architectural competition; Youth Participation Club.

It has proven problematic that citizens often only become interested and involved when they themselves are personally effected. To a great extent, people only notice that they are personally effected by planning measures when it is already too late, namely at a point when decision-making processes have already reached a stage at which the possibility of influencing them is quite limited. This is often the case with the kind of public participation required by law. Public participation in planning processes that comes early enough to make a difference, e.g. through informal methods of participation and understandable explanations of the issues at hand, can also wake public interest and readiness to become involved at this early stage.

Policy Options for Communities

Within the ECOLUP model project, the following was undertaken to encourage public involvement in communal urban land use planning:

- surveys of public opinion in the 4 participating communities
- discussion rounds and surveys of young people in the 4 partner communities

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ECOLUP INFO
Ecological Land Use Planning

Public Opinion Survey in Participating Communities - Findings on Participation: Anaysis
Interviews with a standardised questionnaire in March of 2003, total of 235 citizens *(45 in Wolfurt, 60 in Dornbirn, 60 in Überlingen and 70 in Constance)*

Results (excerpt):

- Knowledge of opportunities for becoming involved (only 55%)
- Of these, the majority sees good to average potential for participation
- Opinion that the right to participate is makes sense (51%)
- Own level of influence of planning processes is low (61%)
- Urban development planning is important (66%)
- No active participation in initiatives (only 15% active!) due to lack of time (20%), no particular need (18%!) and lack of interest (11%)
- The majority of the 66 active citizens (=15%; see above) are dissatisfied with the results of their participation
- To date no personal participation in planning processes
- Personally involved in future city development (31% yes, 38% no, 31% don't know)

Only 44% of those surveyed could provide concrete suggestions:

- Higher degree of transparency o improved clarity of terminology o expansion of public relations work
- Greater involvement of young people o Public forums, referenda, open office hours, etc.
- Take citizens' concerns seriously

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Overview of Methods of Involving the Public and Recommendations from the Four Communal Workshops on the Aspect Participation ⇨ *www.ecolup.info*

ECOLUP INFO
Ecological Land Use Planning

Information and results of the communal and international ECOLUP workshops on participation and public involvement in communal urban land use planning under:
www.ecolup.info
⇨ *Wissenspool*
⇨ *ECOLUP-Methodik*
⇨ *kommunale Workshops*

- formal and informal participatory procedures were tried out in the communities
- international and local workshops on Public Involvement /Participation

- The public opinion surveys and discussion rounds with young people demonstrated to an equal extent that only one in two residents was aware of the public's right to participate in communal urban land use planning. The majority of adults surveyed saw limited possibilities for taking influence on planning procedures. Young people had even less trust in the ability of public involvement to bring about change. Recommendations for improving public involvement repeatedly called for better information, greater transparency, and more understandable information.

- Practical experience with informal public involvement within the communities proved to a great extent to be positive. However, there is still much room for improvement. It is often the case that local government believes that it is

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ECOLUP Ecological Land Use Planning Umweltprogramm Überlingen: Umweltaspekt: Partizipation (Stand: November 2003)

Environmental Goals	Measures	Reference Data	Responsible	Groundwork	Schedule	Budget	Priority
Greater transparency in planning processes	Information provided at the outset on opportunities for participation via local press and municipal gov't. newsletter	-	PLA	-	As of March, 2004 continuous	Part of official duties	A
	Increase use of Internet, a.o. development project plans as downloads	-	PLA Internet representative	-	As of 2005 continuous	Part of official duties	A
	Presentation of Ecolup exhibition in the Mayor's Office (before public town council meetings and over a period of 14 days)	-	PLA	-	2nd quarter 2004	Part of official duties	A
Improved contact with public	Direct contact and information on results provided at informal planning sessions	-	PLA	-	As of March, 2004 continuous	Part of official duties	A
	Optimise public involvement required by law, e.g. on-location events or planning walks (when productive)	-	PLA	-	As of March, 2004 continuous	Part of official duties	A
Improved communication ("It is not that the citizen is allowed to say something, rather the administration wants to know")	Exact information on structure and goals of public participation in advance	-	PLA	-	2nd quarter 2004 continuous	Part of official duties	A
	Announcements in municipal newsletter: make plans more understandable for readers (larger formats, glossary, sketch of procedures)	-	PLA	-	2nd quarter 2004 continuous	Part of official duties	A
	Increased reliance on moderated events (e.g. future workshop)	-	PLA	-	2nd quarter 2004 continuous	Yet to be determined	A

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Feedback questionnaire - questionnaire for public's evaluation of events	-	PLA	-	4th quarter 2004 continuous Part of official	duties	A
Citizen participation in urban development competitions (prize juries) in consulting function	-	PLA	-	4th quarter 2004 continuous	not needed	A
Direct contact to target groups that have previously showed less participation than others (e.g. young people)	Evaluation of feedback questionnaire	PLA	-	4th quarter 2004 continuous	Part of official duties	A

Priority:
A: Envirinmental goals towards which ..... must be taken immediately
B: Environmental goals towards which mid-term actism must be taken
C: Environmental goals towards which action must be taken in the long term

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providing the public with sufficient opportunities to get information and complains of the public's lack of interest and willingness to become involved. In contrast, citizens complain of a lack of information about opportunities for participation and that they are "not taken seriously".

7.8 Environmental Aspect Participation / Public Involvement

Sources

Model Projects

Future Freiburg - Dialogue on city development: As the first city in Germany, Freiburg preceded its draft for and the political decision-making process on the revision of its zoning plan with extensive opportunities for public involvement. This participation process was conducted under the name of ""Zukunft Freiburg-Dialog zur Stadtentwicklung" from May of 2001 until July of 2002.
www.zukunft.freiburg.de/prozess/ergebnisse.html

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8.1 What Standards Must an Environmental Management System Meet?

Environmental management cannot function without structured processes, i.e. a system. Most firms or organisations have already instituted elements of an environmental management system (EMS), or have established procedures that enable them to meet legal requirements or the standards set in permits.

In municipal administration, it is rare to find an all-encompassing regulatory system for competencies and responsibilities that covers all aspects of communal environmental protection policy. The hierarchical structure of an environmental management system is meant to be applied to the existing structures in municipal administration and all supporting offices and departments.

At the present time, there are two ways of obtaining certification or validation for an environmental management system: in accordance with the European Union Eco-Audit procedure or the DIN EN ISO 14001. Both of these are orientated to the management cycle "Plan - Execute - Assess - Adjust".

What Standards Does EMAS II Require of an EMS?

The organisation (instances responsible for the communal urban land use planning process = specialised offices, town council and mayor) must ensure that:

- its always has up-to-date information on the impact its activities have on the environment
- all legislation is observed, in particular environmental legislation
- environmentally relevant general and specific goals are drawn up and documented for each function and level within the organisation
- an environmental programme with responsibilities, tasks, and competencies, as well as information on the means and the time-frame for implementation is approved and regularly revised
- an environmental team is established so that all key organisational positions are integrated into the environmental management process
- an environmental management representative is designated as the person ultimately responsible for the EMS. He or she must be able to influence other departments in matters concerning environmental protection and eco-audits
- clear regulations exist for procedure and documentation in contact between all offices and departments, procedures, and activities with relevance to the environment
- training courses are conducted for all employees whose activities have a significant impact on the environment
- internal communication between various organisational levels, as well as between employees who field questions and pass along information coming from outside the organisation, and communication with the public (environmental education) all function smoothly

The "plan - execute - assess - adjust" management cycle can be applied to communal urban land use planning when concepts meant to be applied to firms are interpreted for application to communal urban land use planning, an instrument the effectiveness of which is determined by municipality's legal planning sovereignty in this field.

"Plan":
Applied to communal urban land use planning, this means the planning of the plan. Which environmental goals must definitely be integrated into the plan as determined by the significant environmental aspects (e.g. excessive urban expansion, sealing-over of soil, a.o.)? Which environmentally relevant organisational units are to be included in the management procedure beyond what is predetermined by the procedural steps (e.g. citizen, associations, municipal environmental representative, a.o.)?

"Execute"
How can it be ensured that the environmental goals identified as fundamental to those planning procedures affected by the management system are taken into consideration during every phase of the procedure? How is this regard for the environmental issues to be documented as a part of the planning process?

"Assess"
Which assessment procedures (e.g. introduction of development standards, establishment of reference figures, a.o.) are to be selected? How are their results to be documented and how are the conclusions drawn from them to be integrated into any subsequent comparable planning procedures?

"Adjust"
How are the changes called for by the environmental management system to be introduced into communal urban land use planning? Must preparation and evaluation phases be established so that improvements in environmental

8 System Audit

8.1 What Standards Must an Environmental Management System Meet?

impact can be defined and initial progress measured?
The overall goals the environmental management system requires for every pertinent function and level within the organisation are to be limited to the task of communal urban land use planning. Only those functions and areas of activity are included which actively influence the process of communal urban land use planning or take on responsible positions within this process.
It is of interest both to EMAS and of course to the community that the environmental system can be adjusted to existing administrative structures. What is important is that these structures create the necessary conditions for the realisation of "continually improving environmental performance". This is what the environmental verifier checks for during the validation process according to EMAS II or ISO 14001.

ECOLUP TIP
Ecological Land Use Planning

See *www.ecolup.info* for a presentation by Dr. Tröbs, Intechnika, on this topic.

8.2 Supervision of Environmental Management and Environmental Management Representative

According to the EMAS directive, the "uppermost executive instance" of an organisation is responsible for the environmental management system (EMS). In a municipality, the town council and the mayor are the final decision-making instances in planning processes, therefore also in communal urban land use planning.
Accordingly, the town council and the mayor supervise environmental management and are responsible for:

- making sure that the financial and personnel resources needed for a functioning EMS are present
- the designation of an environmental management representative who co-ordinates and checks the EMS and reports to the EMS supervisory bodies regularly
- approving the environmental policy, programme and the environmental statement

Although all those involved must contribute to the implementation of an EMS, the environmental management representative holds a decisive function as the person who drives on and moderates the management process. Aside from his or her personal qualities, this position should be held by someone whose position is endowed with enough competencies to get the job done. So that bureaucracy and complicated official procedures do not block the changes being attempted, the environmental management representative should be in a position to exert influence on other administrations and departments in matters concerning environmental protection and the EMS.

Description of the Environmental Management Representative's Responsibilities (EMR)

The EMR is responsible for coordinating and conducting internal reviews of the environmental management system. The following represents a detailed description of his or her responsibilities:

- co-ordination of the environmental team: preparation, calling and moderation of meetings, distribution of protocols
- co-ordination of reference data used within the EMS: request data from specialised departments, check that statistics are updated, comparison with the goals set down in the environmental programme, publication
- regular information on EMS progress for employees
- introduction to system for new employees
- keep job descriptions for activities relevant to the environment up to date
- keep information on the EMS communicated to the outside world up to date (reports, website, environmental statement)
- conduct a yearly internal audit in accordance with the organisation environmental assessment programme
- report regularly on the progress of the EMS, the current state of the environmental programme, which goals have been achieved, etc. to decision-making instances (town council and mayor)
- keep environmental manual up to date
- prepare for EMAS validation or re-validation conducted by environmental verifier

8.2 Supervision of Environmental Management and Environmental Management Representative

Environmental Team as Consulting Committee within the EMS

On the basis of our experience with ECOLUP, we strongly recommend that the environmental team be established as a permanent **consulting committee** as a part of the environmental management system. It is ideal if the environmental team is made up of representatives of the communal and regional authorities responsible for with environmental affairs, as well as of representatives of private interests such as private environmental protection organisations, the agricultural association, chambers of industry and labour, and Agenda 21 working groups. In most cases, it is enough to include the usual public interest groups as well as representatives of private interests.

Establishing an environmental team is a good way to include specialised offices and departments in the EMS and to get all bodies of experts together around a single table. An environmental team the members of which represent a wide scope of interests and authorities meets another fundamental EMAS requirement: that representatives of different interest groups be involved. If a community decides not to establish an environmental team, it must ensure by other means that all interest group representatives are regularly informed about the EMS' progress and are able to evaluate this progress. In other words, they must be directly involved in the mangement process.

Environmental Team's Responsibilities:

- groundwork for the environmental assessment (provide information, base data and reference figures)
- draw up and revise environmental programme (draft)
- support the EMR during the yearly assessment of the environmental programme (internal audit)

8.3 Environmental Management Structure: Who - What - How

As already explained in Chapter 6 "Environmental Assessment", the ECOLUP model project refrained from starting the third part of environmental assessment, the system audit, until after the four partner communities had conducted intensive studies of their significant environmental aspects and the first draft of the environmental programme had been completed. This manner of proceeding is advantageous because by the time the system audit is conducted, all the specialised offices and departments that need to participate in the EMS for communal urban land use planning have already been identified.

When conducting the analysis of existing administrative structures, the following tables are useful:

- organisational structure of the administration
- scheme of procedure for drawing up a zoning plan
- scheme of procedure for drawing up a development plan
- scheme of procedure for drawing up a plan for a project that falls under efforts to meet the requirements of the environmental acceptability assessment

As a part of ECOLUP, the EMS structure was discussed with the environmental team and all necessary management or EMAS elements were hooked into the existing organisational structure. The following EMAS elements are indispensable:

- town Council and mayor as "uppermost executive instance"
- environmental management system representative
- environmental team (not required by EMAS, but highly recommended)
- position responsible for observation of environmental legislation
- position responsible for organising training courses for staff
- position responsible for communication outside the organisation

EMAS does not stipulate how the EMS structure is to be documented, i.e. municipalities can present the structure in the form of graphics or a table or it can be described in a text.

ECOLUP INFO
Ecological Land Use Planning

EMAS-V O Annex I A: Requirements for an environmental management system (same as Section 4 of ISO 14.001:1996)
EMAS-V O Annex I B: Questions that must be answered by organisations participating in EMAS

8.3 Environmental Management Structure: Who - What - How

Scheme of Procedure for Drawing Up a Zoning Plan. Municipality of Überlingen

Procedural Step	Participants	Responsible	Additional ' EMAS/ECOLUP Elements
Decision to draw up a zoning plan	Town council		Town council takes into consideration environmental policy and programme goals
Participation of regional planning instances	Region, regional administrative authorities		
Draw up pre-draft for zoning plan	City planning department	Thomas Nöken, Director	Pre-draft approved with environmental policy and environmental programme
Public participation in early planning stages	The public		Goals and measures for improvement of public participation integrated
Participation of public interest groups	Public interest groups		PIGs kept informed re: environmental policy and programme and evaluate pre-draft on this basis
Approval of draft by neighbouring communities	City planning department	Thomas Nöken, Director	Neighbouring communities are informed about environmental policy and programme
Further work on zoning plan draft (weighing of interests)	City planning department	Thomas Nöken, Director	Check: is the plan in line with the environmental policy and programme goals? Collection of predetermined reference data
Public presentation of ZP	The public		Goals and measures for improvement of public participation integrated
Handling of suggestions	City planning department	Thomas Nöken, Director	
Public interest groups informed	Public interest groups		
Decision on ZP	Town council		Check: is the plan in line with the environmental policy and programme goals?
Approval of ZP	Higher administrative authorities		
Announcement, ZP goes into effect	Municipal administration		Information in environmental statement

8.3 Environmental Management Structure: Who - What - How

Schema of Procedure for a Development Plan. Municipality of Constance

Procedural Step	Participants	Responsible	Additional EMAS/ ECO-LUP Elements
Preparatory phase	Administration, city planning department	DCPE (Department of City Planning and the Environment)	Results of public participation taken into consideration (Local Agenda, Future Workshop, etc.)
Decision to draw up a D-plan	Town council	Draft from DCPE	Draft in accordance with environmental policy and programme
Draw up pre-draft of D-plan	City planning department	DCPE, planning experts	Pre-draft aligned to environmental policy and environmental programme
Public participation in early planning stages	The public and associations	(DCPE provides content), DCPE administration takes on organisational tasks	Goals and measures for improvement of public participation integrated
Public interest group participation	Public interest groups	(DCPE), DCPE administration makes announcement	PIGs are informed about environmental policy and programme and evaluate draft on this basis
Approval of draft by neighbouring communities	City planning department	(DCPE checks contents), DCPE administration takes on organisational tasks	Neighbouring communities are informed about environmental policy and programme
Further work on D-plan draft (weighing of interests)	City planning department	DCPE, planning experts	Check: is the plan in line with the environmental policy and programme goals? Collection of predetermined reference data
Public presentation of D-plan	The public and associations	(DCPE), DCPE administration, planning experts provide information	Goals and measures for improvement of public participation integrated
Handling of suggestions	City planning department	(DCPE checks contents), planning experts	
Public interest groups informed	Public interest groups	DCPE, (DCPE administration)	
D-plan approved and entered into municipal statutes	Town council	Draft from DCPE and/or planning experts	Check: is the plan in line with the environmental policy and programme goals?
Approval of D-plan	Higher administrative authorities		
Announcement, D-plan brought into effect	Municipal administration	DCPE, DCPE administration	

8.3 Environmental Management Structure: Who - What - How

EXAMPLE: Large Districition Überlingen – Oranisation of Environmental Management

The EMS structure used in Überlingen was drawn up in a communal workshop with the environmental team. A certified environmental verifier provided specialised knowledge and advice from the perspective of those responsible for validation. (Cf. Presentation Dr. Tröbs, Intechnica Umweltberatung, at www.ecolup.info > kommunale Workshops

Supervisory Board for Environmental Management (SBEM)

Mayor and town council

Tasks as part of EMS:
- Overall responsibility for envrionmental management
- Decision for approval of environmental policy, programme and statement
- Designates EMR
- Regular evaluation of EMS
- Makes adjustments to EMS, if needed

Building Commitee

Controls procedure:
Takes standards in environmental policy and programme into consideration during:
- Weighing of interests
- Consultation
- Recommendation made to town council
- Preparation of decisions

City Planning Department

Tasks as part of EMS:
- Implementation of environmental programme
- Provides reference data for environmental goals
- Environmentally relevant documentation
- Public involvement
- Integration of PIGs
- Communication with outside world (announcements)
- Integration of interest groups (PIGs, neighbours, NGOs)
- Provides relevant information to environmental team and EMR
- Informs planning experts about environmental programme

Planning Experts

Tasks as part of EMS:
- Determine present conditions using base data
- Calculate balances

Human Resources Department

- Task as part of EMS: Staff training courses

The Public

Tasks as part of EMS:
- Involvement in informal planning process
- Written suggestions and concerns as a part of public participation in the early-stage planning
- Included via Agenda working group ”Settlement development and transportation. Agenda working group has representative on the environmental managemment

Building Regulatory Office

- Task as part of EMS: Observation of legislation

Public Interest Groups

Tasks as part of EMS:
- Member of environmental team
- Ensures legal security by checking needs in repective area of expertise

8.3 Environmental Management Structure: Who - What - How

EXAMPLE: Large Districition Überlingen – Oranisation of Environmental Management

Environmental Management Representative (EMR)

Tasks as part of EMS:

- Co-ordinates environmental team: prepares, calls, and moderates meetings, distributes protocols
- Co-ordinates reference figures used in context of EMS: requests data from specialised departments, checks that statistics are updated, comparison with the goals set down in the environmental programme
- Regular information on EMS progress for employees, introduction to system for new employees
- Keeps job descriptions for activities relevant to the environment up-to-date
- Keeps information on the EMS communicated to the outside world up-to-date (reports, website, environmental statement)
- Conducts a yearly internal audit in accordance with the organisation environmental assessment programme
- Reports regularly on the progress of the EMS, the current state of the environmental programme, which goals have been achieved, etc. to decision-making instances (town council and mayor, SBEM)
- Keeps environmental manual up-to-date
- Prepares for EMAS validation or re-validation conducted by environmental verifier

Environmental Team

Specialised Departments and Offices

- City Planning Department
- Department for Green Areas, Forestry and the Environment
- Department of Civil Engineering
- Building Administration Offices
- Building Regulatory Office
- Property Registration Office

Private Interest Groups

- Commerce and Chamber of Commerce
- NABU
- Agenda 21 working group

Tasks as part of EMS:

- Drafts and revises environmental programme (draft for town council)
- Groundwork for environmental assessment
- Supports EMR during assessment of environmental programme (internal audit)
- Draws up environmental statement
- Groundwork for environmental statement

Higher Administrative Authorities

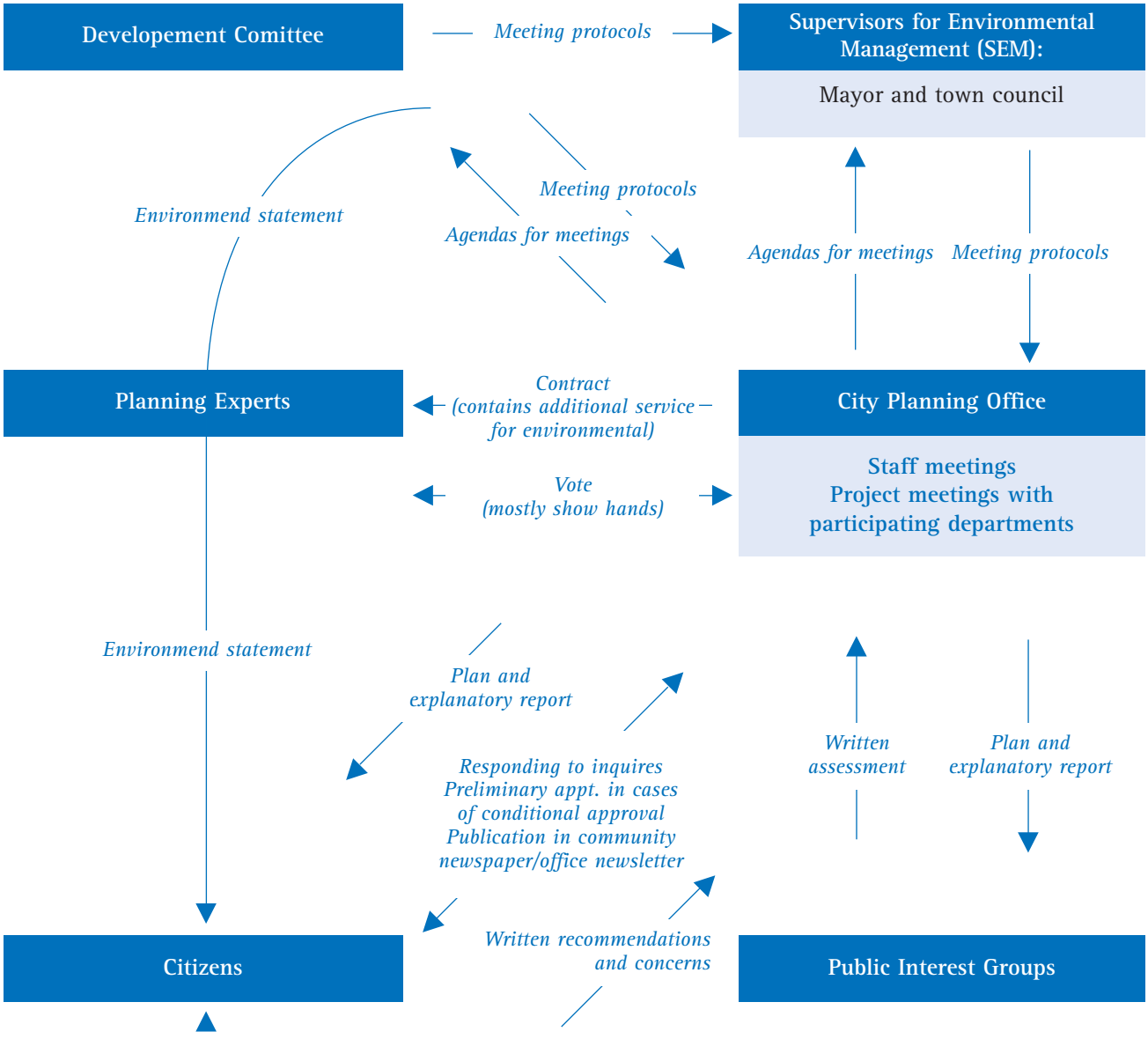
Tasks as part of EMS:

- Member of environmental team
- Ensures legal security through evaluation and approval

8.4 Communication and Documentation

EMAS requires that a procedure be introduced that guarantees good internal communication between the departments involved in the environmental management system. An environmental management system can only function well if all participants active in the system's various fields receive the information they require to meet its standards.
It is just as important to document steps taken and decisions made in order to ensure that developments, decisions, and agreements can be reconstructed and that it can be demonstrated to outside observers that they occurred (e.g. training courses for staff).

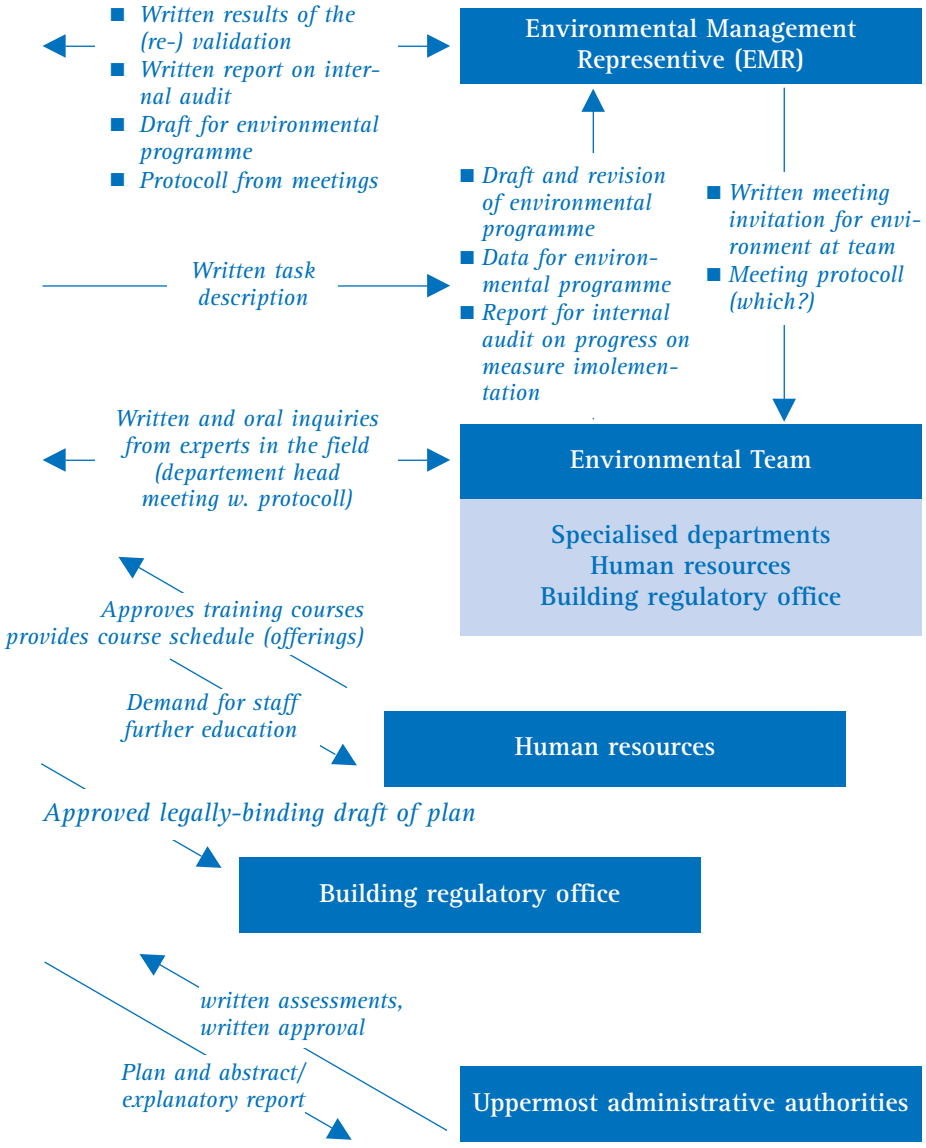
ECOLUP Example: Communication and Documentation Structure City of Überlingen



8.4 Communication and Documentation

In addition to communication within the community, providing information to the world outside of it is very important for EMAS. This can range from answering relevant communications from interested parties to presenting results and planning successes to the general public. Fielding questions from the public is already part of a planning office's daily business.

ECOLUP EXAMPLE:



What is decisive is how you deal with those external questions.

Questions relevant to EMAS:

- What happens when the municipal administration receives an inquiry having to do with environment from someone outside the organisation?
- How is this inquiry passed along within the organisation?
- What general paths does the flow of information take?
- How is information related to the public?
- Which data are provided to outside sources?

In communal urban land use planning administration, plans are drawn up according to a set procedure. Administrative procedure being what it is, this process, like all others, must be documented to the fullest possible extent.
The participation of specialised administrative departments and co-operation between them is a permanent attribute of this procedure. In this way, it is assured that both documentation and communication conform to EMAS standards and that the questions listed above are answered.
As part of ECOLUP, procedures in urban land use planning in the participating communities were represented as graphics and the elements relevant to EMAS added or made more evident.
Because procedure was so strictly regulated, a framework existed within which it was comparably simple to add the EMAS elements communication and documentation. It was mainly a matter of identifying the contents present in given structures and of ordering them.

8.5 Positions and Specialised Departments and Offices Relevant to the Environment

As a part of the system audit, EMAS requires the thorough regulation of competencies and responsibilities for all employees in environmentally relevant positions. The following offices and departments are generally relevant to the environment within the context of communal urban land use planning:

Offices / Specialised department	Areas of Work Relevant to the Environment	Name of Employee
Mayor + town council	Decisions	
Building Committee	Advises town council	
City Planning Department	■ Draws up overall goals and policy concepts for city development ■ Draws up urban development goals ■ General plan for urban development, informal planning ■ Urban development draft ■ Concepts for construction and open spaces ■ City design ■ Draws up of fundamental principles of city development and urban renewal ■ Preparatory urban land use plan (ZP) ■ General urban development planning ■ Preparation for Town Council decision ■ Vote with all participants ■ Codification of binding standards for development planning in zoning plan ■ Adaptation to other cross-border planning concepts outside the city ■ Binding communal urban land use planning, draws up development plans ■ Informs public of contents of D-plans ■ Conducts public forums	
Department of Public Grounds	■ Maintains and supports health, biological diversity, and sustainable successful adaptation of natural environment ■ Preventative measures for the protection of humankind, animals, plants, air, water, soil, as well as cultural and other material goods against corrosive toxic substances, air and noise pollution, tremors, light, heat, radiation, and further harmful impact on the environment ■ Concepts and measures to ensure sustainable use of the natural environment ■ Waste disposal and prevention of threats for the protection of humankind, animals, plants, air, water, soil, as well as cultural and other material goods from harmful impact on the environment ■ Co-operation to develop a sustainable urban environment ■ Development of concepts for the protection of nature and the landscape ■ Protection, securing, maintenance, formation and development of nature and the landscape ■ Measures towards the protection of nature and biodiversity	

8.5 Positions and Specialised Departments and Offices Relevant to the Environment

Offices / Specialised department	Areas of Work Relevant to the Environment	Name of Employee
Department of Public Grounds	■ Creation of a network of biotope-systems ■ Maintenance of appearance of landscape ■ Designation and maintenance of nature and landscape conservancy areas and areas of particular significance (natural monuments) ■ Development of concepts for water protection ■ Measures to protect water ■ Communal protection of bodies of water ■ Restoration of bodies of water to natural state ■ Development of concepts to maintain and support the environmental function of forest areas ■ Measures to maintain and support the environmental function of forest areas ■ Managed forestry ■ Draws up landscape development plans and green area plans ■ Designation and maintenance of green strips along roadways ■ Green area planning and development of open area (park and open areas, sport and playgrounds, cemeteries) ■ Designation and maintenance of green areas and parking facilities ■ Designation and maintenance of recreation areas and play areas ■ Designation and maintenance of small garden areas ■ Care and maintenance of green areas, sport and playgrounds, street plantings, ditches and bodies of water, natural monuments ■ Eco-audit·Formal and informal events in the field of environmental protection ■ Planning for compensatory measures ■ Environmental acceptability assessments	
Department of Municipal Engineering	■ Development of concepts for prevention of noise pollution ■ Measures against noise pollution ■ Development of concepts for protection of soil ■ Measure to protect soil ■ Mapping, investigation, and redevelopment of contaminated sites ■ Maintenance of property register incl. parcel descriptions accessible to the public ■ Development of concepts for the protection of ground water ■ Measures for protection of groundwater ■ Development of concepts to prevent air pollution, for energy planning and to protect the climate ■ Measures to limit emissions ■ Measures to protect the climate ■ Concepts for traffic planning ■ Concepts for traffic-flow and -regulation planning ■ Transportation development plan ■ Measures for traffic regulation ■ Designation and maintenance of roadways, paths and public squares ■ Designation and maintenance of roadway conditions	

8.5 Positions and Specialised Departments and Offices Relevant to the Environment

Offices / Specialised department	Areas of Work Relevant to the Environment	Name of Employee
	■ Designation and maintenance of public transportation and requisite infrastructure ■ Designation and maintenance of public bodies of water and hydraulic engineering plants ■ Drainage of waste water ■ Maintenance of city waste water disposal service ■ New construction, maintenance, and repair of roadways, paths, public squares and waterways ■ New construction, maintenance, and repair of pedestrian and bicycle paths ■ New construction, maintenance, and repair of street lighting, traffic light systems ■ Input for urban development ■ Input for building permit procedure	
Building Administration Department	■ Administration of funding programmes	
Building Regulatory Department	■ Assessments on planning concepts and projects of third parties ■ Handle building permit application and approval process ■ Consulting services for building contractors ■ Division of property parcels ■ Supervision of building projects ■ Inspection of building projects	
Property Registration Office and Building Administration	■ Basic information concerning properties ■ Conduct procedures for change in property ownership	
Department of Public Works	■ Designation and running of public transportation services and requisite infrastructure	
Roads Department	Administrative district	
Department of Agriculture, Landscape and Soil	Administrative district	
District Forestry Office	Administrative district	
Environmental representative	*See Chapter 8.2*	
Environmental team	*See Chapter 8.2*	

8.6 Position-Related and Procedural Regulations

As explained in Chapter 8.2, the implementation of an environmental management system is not the responsibility of the environmental management representative alone, but rather that of all staff and departments concerned with the process of urban land use planning. The planning departments must be kept up to date as well and included in the implementation of the environmental programme.
In order to establish binding fields of competency for this co-operative process, the mayor as head of the administrative organisation and/or the department head must set position-related and procedural regulations or contractual stipulations.

ECOLUP EXAMPLE
Ecological Land Use Planning

Example for a Procedural Regulation
Procedural Regulation for the Public Grounds Department, Municipal Engineering Office, Building Administration Department, Building Regulatory Department, Property Registration Office, Department of Public Works ...

In 2004, an environmental management system in accordance with the EU eco-audit regulation (EMAS II) was introduced in the municipality of xy for application in the field of communal urban land use planning.
Mr./Ms xy is as environmental management representative responsible for the co-ordination of the environmental management system. You will find complete information on the environmental programme and EMS structure in the environmental management manual in Mr./Ms xy's office and in the Intranet/Internet under ...

Environmental management can only be successful if all employees and departments co-operate and do their part to implement the measures agreed upon and to achieve our environmental goals.

All specialised departments and offices are instructed to:

- update staff regularly (at least twice annually) on current progress on the environmental management system and the environmental programme
- encourage staff to contribute their ideas for achieving our environmental goals
- collect and analyse the reference data stipulated in the environmental programme and pass this information on to the environmental management representative
- participate in environmental team meetings
- implement the environmental measures agreed upon in good time to the extent that they fall into the department's area of responsibility and make regular reports to the environmental management representative
- support the environmental management representative to conduct an internal audit if needed

Date *Mayor XY*

ECOLUP EXAMPLE
Ecological Land Use Planning

Example Überlingen: Contractual Stipulation

City of Überlingen – Environmental Management for Communal Urban Land Use Planning
Stipulation in Contracts for Administrative Posts as of March 2004 § 2 Basis of Contract

The signing party must comply with the following plan excerpts or other standards as a part of his/her duties:

The environmental policy and environmental programme of the City of Überlingen, passed by the Town Council on .....
(see attachments)
§ 8 Additional Agreements

As a part of his/her duties, the signing party must collect and update the reference data stipulated in the environmental programme for urban land use planning for the City of Überlingen. For this contract, these are specifically:
.....

Überlingen, ...
Thomas Nöken, Director,
City Planning Department

Volkmar Weber,
Mayor of Überlingen

8.7 Training Courses for Employees

The expertise of every employee is of great importance for an environmental management system. The continual improvement that EMAS requires also applies to administrative employees' knowledge. Employees' level of competency should be continually improved in particular through training courses as a complement to their job-related education and job experience. For this reason, "education, level of awareness and competency" are important fields for the implementation and success of environmental management.

Along with training courses for job-related topics, employees should regularly receive information about environmental management and its progress in the organisation.

The head of an office or department should co-ordinate the important work of establishing what educational needs are present among the staff. In this way, course topics requested by employees can be integrated into the training plan and the co-ordinating instance can keep track of the wide range of course offerings. The staff's feedback on the training courses can be used to pass on information about high-quality courses to other employees and to communicate the contents of courses to a wider public.
From beginning to end, successful environmental management requires the participation of staff from all levels. Continuity can be ensured from the outset by establishing a continually maintained Intranet that connects the administrations of a number of municipalities. This medium can provide up-to-date links and information concerning new legislation, procedures, ideas, and examples from communal urban land use planning, as well as informing staff on the latest scheduling and personnel issues within the individual administrations. Because such an Intranet provides so many important services, it is worth establishing even in small communities. Through this medium, it is ensured that all participants receive the latest information on city planning and its progress.

The field of land use planning and urban development already offers a wide range of training courses in Germany and Austria. You can find information on them in the Internet and at conferences and trade fairs in the field. Often you will discover that in your own region there are specialised offices that offers further education courses in the field of communal urban land use planning or on new programmes such as the Strategic Environmental Assessment. Other opportunities are offered at the state level.
Example: Landsiedlung Baden-Württemberg GmbH offers interdisciplinary courses on urban and municipal planning, or the Office for Future Development ("Büro für Zukunftsfragen"), a part of the Vorarlberg provincial government. Internet example: www.umweltbildung.de

ECOLUP INFO
Ecological Land Use Planning

The Municipality's Responsibilities as an Organisation:

- Acknowledge the importance of continual information and further education on environmental issues
- Take stock of need for training courses, always taking upper management into consideration, as well
- Training courses for all employees whose activities have an impact on the environment

Raise level of awareness at all levels:

- Significance of conforming to environmental policy and environmental management system
- Significance of the real and potential impact of their activities on the environment
- Significance of their duties and responsibilities for successfully implementing the environmental policy, the procedure and stipulations of the environmental management system
- The significance of the consequences of deviating from given procedures
- Documentation of training courses

9. The Environmental Statement

Keeping the public informed is a very important issue for EMAS. The most important issue for doing so is the environmental statement containing all-important information about the EMS and the environmental policy, as well as the complete environmental programme.

The environmental statement, including new findings and validated by the environmental verifier, must be updated after each internal audit. If the environmental verifier makes a yearly visit to the municipality (because he or she is conducting the yearly ISO certification or a yearly EMAD validation is necessary), he or she will assess it. Otherwise, he or she can assess the updates environmental statements and the reference documents (reports on internal audit, current environmental programme, etc.) from his or her own office desk.

Annex III of the EMAS directive sets criteria for what information must be contained in the environmental statement:

- Introduction written by the "highest executive authorities", i.e. the mayor
- Short description of the organisation and its activities (see Chapter 4.2) and assessment of the relevance to the environment of these activities (see Chapter 6.3)
- Description of the current condition of the environment using qualitative statements and the basic reference figures (see Chapters 6.1, 6.4, 13)
- Environmental policy (see Chapter 7.2)
- Environmental programme with goals and measures (see Chapters 7.3. through 7.8)
- Management structure with designation of EM-representative, environmental team and person responsible for communication with the outside world (see Chapters 8.2 through 8.4)

The environmental statement is intended to inform and encourage local residents and all other interest groups to take interest in the topic of communal urban land use planning and to become involved in local government. Incomprehensible official language and deadly expanses of statistics do nothing to contribute to achieving this goal. What is needed is an understandable and informative overview of environmental management and the progress being made.

9. The Environmental Statement

The Environmental Statement – Municipality of Wolfurt

ECOLUP: Environmental Management for the Communal Land Use Planning in the Municipality of Wolfurt

Environmental management for commercial businesses, service providers, or particular community locations such as town administration buildings, the city greenhouses or swimming areas – of course! But for communal planning processes? Is that at all possible, and if so, is it worth it?

When the Lake Constance Foundation asked our community in July 2001 if we would like to participate in the ECOLUP LIFE project, we had a great deal of open questions. To that point, no community had rigorously applied the ambitious official European environmental system EMAS to its urban land use planning processes.

Nevertheless, we did not hesitate to join the other partner communities Constance, Überlingen, and Dornbirn in participating in this pilot project supported by the European Commission. Under the co-ordination of the Lake Constance Foundation and supported by the Ecological Institute in Bregenz and Nürtingen University, we developed an environmental management system with which we aimed to continually improve the environmental performance of our municipality's urban land use planning.

In the last two years, we have been intensely occupied with the effects our urban land use planning has on the environment. Under the supervision of the Lake Constance Foundation and experts from the Ecological Institute and Nürtingen University, an environmental team consisting of specialised offices and representatives of the Town Council drew up an environmental programme touching on all environmental aspects of relevance to the field over the course of eight workshops. "Environmental programme" is a term taken from the EU Eco-Audit Regulations that designates the concrete environmental goals and measures that specific instances are responsible for realising within set time frames.

The following environmental statement is the result of Wolfurt's participation in the ECOLUP LIFE project and will inform you about our concrete contribution to solving the primary environmental problem in the thickly settled centre of Europe: the ever-increasing rate of land use and the excessive settlement of the landscape.

Erwin Mohr
Mayor of Wolfurt

Our Community

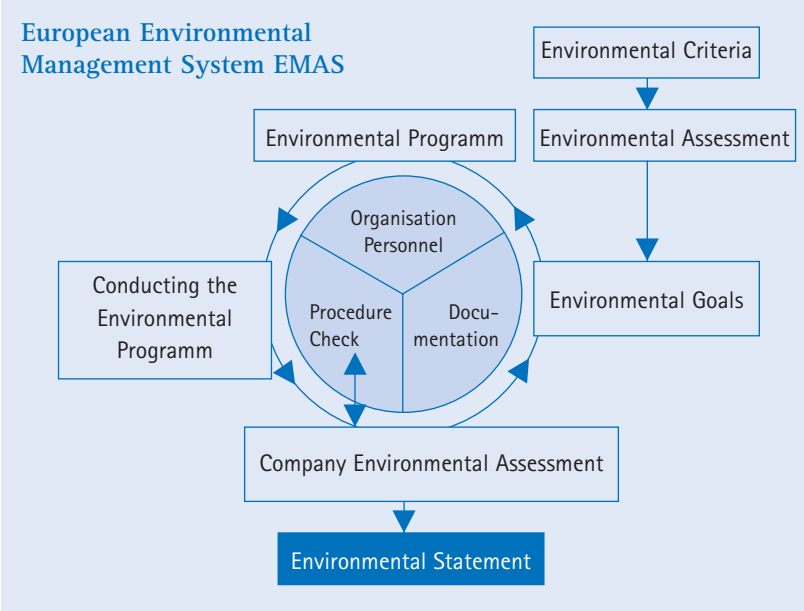
Wolfurt lies on a western slope of the Vorarlberg Rhine valley between the provincial capital Bregenz and the largest city in the Vorarlberg province, Dornbirn. Due to its central location in the "Dreiländereck" ("place where three countries meet"), Wolfurt has in the course of recent decades developed from a rural agricultural village to a prospering site for commercial firms. Despite the increased influx of population in connection with this change and the general demographic development, the area has been able to retain a great number of its families, which in particular has had a positive effect on private care provided for the elderly.

At the beginning of the seventies, when the zoning plan was passed, the area underwent a population explosion, which led to a disproportional designation of construction sites. Studies conducted as a part of the communal land use development concept have calculated that construction sites for approx. 30,000 inhabitants exist. Within this context, the planned development of settlement surface area using the instruments available to land use planning is hardly possible. One of the few management possibilities is the application of specific requirements for construction. For example, in this way retrospective concentration within existing settlement areas can be made more attractive than new construction, thus reducing the amount of new land used. All that can be done within the context of urban development planning has been to maintain existing settlement borders, develop the "Hohe Brücke" business district, control the number of individual construction projects by regulating the number of projects that can be conducted at once time and in particular through non-invasive changes in current projects so as to ensure that urban development planning goals are met. Most recently, the pressure put on those remaining open spaces by recreational use has created a particular need for intelligent solutions.

European Environmental Management System EMAS

EMAS for communal urban land use planning conforms to all prerequisites for registration in accordance with Chapter 2 of the Organisation Guidance as established by the Commission (2001/861/EG). This text stipulates that an organi-

9. The Environmental Statement – Municipality of Wolfurt



sation may also register smaller units than an organisational location under exceptional circumstances, given:

- the subfield of the organisational location produces clearly defined products, performs services or undertakes activities of its own and the environmental aspects and effects of the subfield can be clearly identified and differentiated from those of other, non-registered parts of the organisation location
- the subfield possesses its own executive management and administration by means of which to organise and check its EMS and the subfield's effects on the environment and if necessary to under take corrective measures
- the subfield has been allocated clearly defined responsibilities so that it can achieve the appropriate standards for approval and thereafter maintain the valid environmental standards

Communal urban land use planning is a perfect example of fundamental indirect environmental aspects such as excessive urban expansion, sealing-over of soil, the use of green areas, energy, transportation, landscape development and free-flowing waters (see Chapter 6.1.) ECOLUP is focused on continual improvement within these environmental areas.

Nonetheless, the town planning office or urban development office is also to be regarded as an organisational location, i.e. we must make careful use of the resources that its employees directly consume to go about their daily tasks such as energy, water, paper, etc. Environmental pollution caused by business trips is another environmental aspect related to location that we take into consideration.

EMAS for Communal Urban Land Use Planning

Who undergoes validation?

The local government as the institution directly responsible for the process of urban land use planning is the object of the validation process. Executive instances within the local government are the specialised offices (building control office or city planning office), the community council and the mayor.

What undergoes validation?

The planning process and (to the extent possible) its execution is validated. Urban land use planning is made up of zoning regulations and a development plan. Further programmes and plans, such as the town development plan, the framework for urban development or specialised plans can be included in the programme.
The city planning office is responsible for the expert supervision and the implementation of communal urban land use planning. Among its responsibilities are:

- Establishing urban development goals and policy concepts
- Framework for urban planning, drafting urban development plan, informal planning
- Preparatory communal urban land use planning (zoning plan)
- Binding urban land use planning, establishing land use plans
- Concepts for construction and open sites, as well as city design for as a whole
- Co-ordination of local planning with planning concepts from outside the city which effect areas extending beyond municipal boundaries

Further elements are the co-ordination with instances responsible for issues of public concern, the conduction of public forums, and providing citizens with information on the contents of urban land use planning. As a part of

9. The Environmental Statement

this procedure, the final planning draft is turned over to the responsible offices, the city council and the higher administrative authorities for approval.

Our Environmental Management System Meets the Standards of the European EMAS and Contains Following Elements:

Environmental Policy:

This is the centrepiece of EMAS. It defines the organisation's overall goals for environmental protection to which all its programmes and activities must be attuned. Link to Wolfurt

Environmental Assessment / Performance Audit:

As a first stocktaking and as part of the SWOT analysis, the effects our communal urban land use planning was having on the environment were recorded and evaluated. Through this process, the following environmental aspects were identified as significant: excessive urban expansion, sealing-over of soil, use of green areas, transportation, energy/climate, landscape and flowing water. The aspect public involvement/participation was also added, as it plays an important role in this planning process. Link to protocol of SWOT workshop and SWOT profile Wolfurt

Environmental Assessment / Compliance Audit:

EMAS requires evidence that the community is aware of all relevant environmental legislation, has access to this body of law and always keeps its information up to date. In the Compliance Audit, the municipality's conformity to legal standards, i.e. its ability to observe legal guidelines, is reviewed.
In the municipality of Wolfurt, all employees occupied with urban land use planning have access to a federal (RIS) and a provincial legal data bank for Vorarlberg (VORIS). There, they can use the continually updated legal texts relevant to their work. In addition, a loose-leaf collection of current provincial law, various legal commentaries, and a collection of municipal protocols are available in the office of the Amtsleiter. Furthermore, protocols and decisions can be access by every employee through the "Consolidate" workflow system. As a part of the evaluation they draw up, representatives of public interest groups also investigate whether the legal standards in their respective area of expertise are being observed. Among the groups regularly asked to assess the management system are the spatial planning office and the district agricultural authorities seated in the Vorarlberg provincial government, as well as the chambers of labour, commerce and agriculture.

Environmental Assessment / System Audit

An environmental management system requires systematic processes, i.e. an overall systematic in order to function. For this reason, we have adapted or expanded our administrative structures to meet EMAS requirements.
Our environmental management representative is Wolfgang Dittrich from the Building Control Office (*Bauamt*). With support from the environmental team, he is responsible for co-ordinating environmental management and reports regularly to the mayor and town council on the current environmental situation, the implementation of the environmental programme, and the results of the measures already undertaken. Mr. Dittrich is also responsible for providing information to the public. If you have questions or suggestions concerning our environmental management system, please feel free to contact him:
Tel: 0 55 74/68 40-22
Fax: 0 55 74/68 40-20
e-mail: wolfgang.dittrich@wolfurt.at
Link to organisational structure

Environmental Programme:

Our environmental programme contains concrete goals for municipal urban land use planning; in order to review these, we have also formulated reference figures. In doing so, we concentrated on the following significant environmental aspects: excessive urban expansion, sealing-off of soil, use of green areas, transportation, energy/climate, landscape and flowing water. The environmental programme defines our work schedule for March, 2004 to March, 2007 on the basis of concrete measures delegated to clearly defined competencies, a schedule, and the personnel and financial resources necessary for implementing them. The reference data we have chosen are intended to permit us to follow the development of each environmental aspect and to measure the results of the measures we undertake. Both the environmental policy and the environmental programme will be approved[1] by the town council on ....., making it binding for the entirety of our urban land use planning.

9. The Environmental Statement

Link to environmental programme Wolfurt

Assessment (Validation) of the Environmental Statement

An independent environmental verifier assesses whether our communal administration has observed the standards set down in the Eco-Audit regulations and whether the data in the environmental statement are correct. If this is the case, the communal administration can be entered into the EU register of validated localities and can use the EMAS logo in its public relations The land use planning in our community was validated on ..... by ..... , an environmental verifier from .....

Environmental Assessment / Internal Audit:

Every management system contains procedures for self-supervision and –correction. One of the responsibilities of our environmental management representative is to conduct a yearly internal audit in order to establish whether the environmental management system is working and the environmental policy is being implemented. Every three years, a re-validation is conducted by an external environmental verifier. It is only by means of regular assessments and updates of goals and measures that environmental management can achieve its purpose of continually improving the environmental performance of our urban land use planning.

What advantages does ECOLUP, i.e. and environmental management system in accordance with EMAS, provide for our community?

- Systematic environmental protection via eco-audit: all areas relevant to the environment are reviewed. Only then are goals set and measures planned.
- Eco-audit brings about systematisation of environmental data; as a result of the environmental assessment, data are collected that were previously spread in the records of different departments.
- Eco-audit as a communicative process supports trans-departmental co-operation.
- Administrations that introduce an eco-audit show that they are taking their position as a role model for the rest of the community seriously.
- The clear designation of responsibilities and competencies, as well as the clear description of processes can contribute to the elimination of points of conflict between departments: Environmental controlling holds within it the prerequisites for the successful implementation of measures for the protection of the environment.
- Employees are motivation because they have been actively involved in the system.
- Greater transparency and more communication with the public make it easier to approach problems and conflicts in a constructive manner.
- The environmental management system for communal urban land use planning in accordance with EMAS simplifies the introduction of the Strategic Environmental Assessment for Plans and Programmes, required as of July, 2004 in all European countries. Similarly, the implementation of European regulations such as the Fauna-Flora-Habitat Regulation or the EU Water Guidelines will also be easier, since the necessary information is now available and prepared and participating communities can demonstrate that they have introduced monitoring procedures.
- EMAS is compatible with other instruments and creates the groundwork for synergy effects, e.g. with the Local Agenda 21 programme. Agenda results take on greater significance if they have been integrated into an obligatory environmental programme.

[1] *Mayor Mohr intends to present the environmental policy and programme to representatives of the community so as not only to discuss it with the community council. This will occur spring of 2004.*

10 Monitoring

10 Organisational Environmental Assessment: Internal Audit

Procedures to check and correct activities are part of every management system. EMAS, too, requires a concrete test of procedures in order to ensure on a regular basis that the measures undertaken as apart of the EMS and the environmental programme are truly being implemented. The procedure test consists of two elements:

- a regular procedure check that can be conducted by a representative of the town planning department and/or another of the specialised offices and departments involved
- the internal audit (organisational environmental assessment), which is conducted by an outside auditor (or team) who has no connection to the field to be verified. This can be the EM-representative if he or she is not an employee of the town planning department. Otherwise, someone from another specialised office or department, from a neighbouring community or an external consultant must be commissioned.

During the regular procedure test, not all areas need be examined. In the case of town planning departments and other involved specialised offices and departments, we recommend that:

- development plans are checked for their compatibility with the established environmental goals and programme when they are being drawn up;
- the statistics used in the environmental programme are collected on a yearly basis and compared with the figures from the previous year as well as with the environmental goals that have been set;
- the description of all authorities and specialised offices and departments having to do with the environment are brought up to date on a regular basis;
- the updated versions of laws and regulations with relevance to the environment and their observation are checked on a regular basis;
- regular procedure check is a permanent point on the agenda of the environmental team's meetings.

All municipal authorities and specialised offices are to be made responsible for continual checks or co-operation by means of instructions issued by the mayor as the chief executive of the municipal administration (see Chapter 8.5).
All procedure checks are to be documented by a protocol (e.g. protocol of the environmental team meeting in which the topic was discussed).
In addition to continual checks, EMAS requires an internal audit (organisational environmental assessment), i.e. an independent study of the new management system with the purpose of comparing the then- and now-situations. This internal audit must be conducted for the first time before the system has been verified by the executive instance in the local government or by the EM-representative in charge of it. Afterwards, the audit should be conducted at regular intervals, and at least every three years (EMAS, Annex II).
The internal audit emphasises:

- determining whether the direct and indirect environmental issues and their evaluation are up to date
- determining whether the environmental policy is up to date
- comparing present and target realisation of the environmental programme
- comparison of current and target progress towards achieving environmental goals
- checking whether the laws and regulations of relevance to the environment have been updated and are being followed
- checking the EMS's functions (organisation, documentation, internal communication as well as with the community as a whole, regular procedure check)
- checking the training plan for employees and that it is being held to

If the EM-representative is employed outside of the town planning department, he or she may conduct the internal audit. Depending on the extent of the assessment, he or she can seek support in conducting it and in all cases should expect preparatory work from the environmental team. If the director of the town planning department or one of his or her employees has been named EMS representative, then an independent auditor or an auditing team from another specialised office or department, a neighbouring municipality or an external consultant or verifier must be designated. Of overall importance is that the auditor or auditing team have a solid grounding in the expert knowledge necessary to conduct EMAS and communal urban land use planning.

In order to make it easier to conduct the internal audit and to ensure the comparability of the results, a set procedure has been drawn up in the programme for the company environmental assessment. All specialised offices and departments or the environmental team must be informed an appropriate amount of time in advance as to the exact steps to be taken and the timeframe so that they are able to make the appropriate preparations and co-operate as requi-

10 Organisational Environmental Assessment: Internal Audit

red. The results of the audit are to be evaluated and presented to the town council or the mayor in the form of an audit report, along with recommendations for improvements to procedure, if called for. Any corrective measures subsequently agreed upon and their implementation must also be recorded in documentation.

10 Organisational Environmental Assessment: Internal Audit

ECOLUP Ecological Land Use Planning TIP: CHECKLIST /PROGRAMME FOR THE INTERNAL AUDIT

EMAS Element	Objects of Audit	Check /Possible Corrections
Environmental Assessment *External Definition of System*	■ Which data were collected? ■ Framework for SWOT-analysis ■ List of information analysed and reference figures along with year sample taken	Must / can further reference figures or information be collected?
Performance-Audit	■ Results of SWOT-Analysis (report) ■ Protocol from SWOT workshop ■ List of direct and indirect areas of impact on environment ■ Evaluation of direct and indirect impact on environment according to significance (description on analytical criteria)	Has the environmental situation changed? Must further direct or indirect areas of impact on the environment be taken into consideration?
Compliance Audit	■ List of environmentally relevant legal stipulations ■ Description: How is it ensured that legal stipulations are kept up to date? Who is responsible for the observation of which laws and regulations?	Have the laws and regulations relevant to the environment been brought up to date? Is their observation guaranteed?
System-Audit	■ Protocols of the EMS workshops ■ Organigram of organisation relevant for EMS ■ Organigram of documentation relevant for EMS ■ Organigram of internal and external communication relevant to EMS	Must further specialised offices and departments, documentation, communication relevant to the EMA be taken into consideration?
Environmental Programme	■ Have all environmental issues identified as significant been taken into consideration in the environmental programme? ■ Have the environmental goals been quantified where possible? ■ Environmental measures: Have task responsibilities and schedule been set, the necessary financing been allocated in the budget? ■ Has the programme been approved by the town council? ■ Current stage of environmental policy's realisation ■ Evaluation of results of environmental measures taken (successful, moderately successful, unsuccessful - why) ■ Comparison of current and target progress towards environmental goals ■ Protocols of environmental team's meetings	■ Must further or other issues of relevance to the environment be taken into consideration? ■ Can further environmental goals be quantified? ■ Must environmental goals be modified? Explanation. ■ Have there been delays in the realisation of certain measures? Talk with office or department responsible. ■ Must the schedule be revised? ■ Must environmental measures be expanded or replaced? ■ Are the reference data and other information concerning the environment readily available? Has this information been evaluated? ■ Have any environmental measures not been undertaken? Any environmental goals not realised?
Environmental Policy	■ Are all the fundamental environmental goals listed in the environmental policy? ■ Has the commitment to observing environmental law and regulations and to continually increasing benefits to the environment been included? ■ Has the environmental policy been passed by the town council?	■ Must fundamental changes to one or more issues with impact on the environment be taken into consideration? ■ Has the revised environmental policy been passed by the town council?

10 Organisational Environmental Assessment: Internal Audit

TIP: CHECKLIST /PROGRAMME FOR THE INTERNAL AUDIT

EMAS Element	Objects of Audit	Check /Possible Corrections
Documentation of the EMS	Structure for the implementation of the EMS:Organigram of the instances responsible for EMS-relevant matters	■ Have all relevant specialised offices, departments, instances responsible for issues of public concern been involved? ■ Is there a complete listing of instances with responsibilities relevant to the environment?
	■ Description of tasks for environmental management system representative ■ Description of tasks for employees involved ■ Description of activities within specialised offices relevant to environment, specific employees or positions responsible	■ Is the task description for the EM-representative complete? Does he or she hold the appropriate competencies to fulfil them? ■ Is the description of the activities with relevance to the environment complete?
	Procedural or position-related instructions and/or regulations of relevance to EMAS, contract elements	■ Must current procedural or position-related regulations be revised? ■ Must any further regulations be drawn up?
	Checklists for the collection of further reference data and environmental information: who, what, when	■ Were all agreed-upon reference data collected on a regular basis and routed to the EM-representative? ■ Were the reference data evaluated? What do they tell us about developments in the condition of the environment? ■ Do they indicate a continual increase in benefits to the environment?
	Organigram for documentation structures relevant to EMAS (which documents, where located, distribution list) Organigram for communication structures relevant to EMAS	■ Are existing structures for documentation and communication adequate? Have all pertinent instances been included? ■ Have the procedures specific to EMAS been adequately documented? Has there been excessive documentation?
Documentation of EMS	Training schedule for employeesInvolvement of employees in the EMS	■ Could the previous year's training programme be realised? If not, explanation. ■ Were environmental issues currently relevant to urban land use planning taken into consideration in training programme? ■ Were all employees kept up to date on the development of the EMS? (protocols of meetings with employees of all involved specialised offices) ■ Were their suggestions, ideas, points of criticism taken into adequate consideration?

10 Organisational Environmental Assessment: Internal Audit

TIP: CHECKLIST /PROGRAMME FOR THE INTERNAL AUDIT

EMAS Element	Objects of Audit	Check /Possible Corrections
Documentation of EMS	Description of measures intended to gain public participation: Procedures required by law and procedures open to voluntary participation	■ Was the procedure required by law improved? (see measures listed in environmental programme) ■ Were the procedures open to voluntary participation undertaken, documented and evaluated?
	Description of environmental team in respect to participation of all relevant interest groups: participants, function of environmental team within the EMS, working method, documentation	■ Do all designated specialised offices and interest groups participate in environmental team meetings? ■ Are meeting results documented and passed on to the mayor /city council for discussion or approval? ■ Does the environmental team provide the required support / groundwork for the EM-representative? Is this support adequate?
	Statement to the effect that emergencies in urban land use planning will not occur, as the issues being dealt with are in the planning phase, not in the process of realisation Programme for company environmental assessment for the EM-representative. Procedure /checklist for use in the company environmental assessment (internal audit).	■ Has the statement been drawn up?
Environmental Statement		■ Has the town council passed the environmental statement? ■ Is the statement updated regularly? ■ Is it available to the public? (in print, in the Internet) ■ Are public reactions processed with care?
Environmental Manual	All documents in printed or digital form with relevance to the EMAS	■ Has the environmental handbook been regularly updated? ■ Were employees informed of the existence of an environmental handbook? ■ Is it accessible for all employees? ■ Have the employees been reminded /motivated at regular intervals to learn about the processes and current state of the EMS?

13. ECOLUP Core Reference Figures Set

A core set of reference figures has been developed for use in the ECOLUP management system by means of which sustainable development through communal urban land use planning can be measured and checked. In most cases, these reference figures can be applied no matter which measures have been chosen for realisation. Reference figures particular to specific measures have been collected and presented according to environmental aspect elsewhere (see Chapters 7.3 through 7.8). If a statistic is to be chosen for the core set of data, it must be simple to calculate from the given data material, the so-called base data, and be easily applicable as well as meaningful for the purposes of communal urban land use planning. Some reference figures can also be implemented as indicators for sustainable local development and are also used in this way in the literature. What is new about how ECOLUP uses data is the concentration on that information which is available as a part of all spatial planning concepts or at least are a necessary aspect of the planning process. In addition, the core set of reference data represents all environmental aspects which have been identified as significant for communal urban land use planning (see CD-ROM). Most of the reference figures indicate a status quo and must be adapted to serial data or a benchmarking system so that the improvement in environmental performance can be shown.

ECOLUP Excessive Urban Expansion

Reference Figure	Calculation	Unit	Necessary Base Data
Land Use Conditions			
Proportion of settled surface area	Settlement and transportation surface area to surface area of municipality	%	Settlement and transportation surface area, surface area of municipality
Density of Use			
Settlement density (*1)	Number of inhab. to settlement and transportation surface area	inhab./ha	Number of inhabitants, settment and transportation surface area
Housing density (*1)	Number of inhab. to structure and open site surface area in ha	inhab./ha	Number of inhabitants, structure and open site surface area
Change over Time			
Change in density	Present number of inhabitants plus influx of inhabitants to present centre surface area2 plus surface area to be incorporated minus present number of inhabitants to present centre surface area yearly	inhab./ha	Present number of inhabitants, influx of inhabitants present centre surface area, surface area to be incorporated

(*1) as value found in the statistical records and as figure for comparison before and after
(*2) Centre surface area = settlement and transportation surface area within centre of municipality

ECOLUP Sealing-Off of Soil

Reference Figure	Calculation	Unit	Necessary Base Data
Amount of sealed transportation surface in relevant area	Transportation surface area/ total relevant surface area	%	Transportation surface area in relevant area, Total surface area of relevant area
Extent of sealing-off of soil per unit of relevant area1	Structure floor area + transportation surface area to total relevant surface area	%	Structure floor area, transportation surface area in relevant area, total relevant area

13. ECOLUP Core Reference Figures Set

ECOLUP Use of Green Areas

Reference Figure	Calculation	Unit	Necessary Base Data
Available open areas2	Total public green areas to number of inhabitants	mΞ /inhab.	Total surface area of public green areas, Recreation areas, Number of inhabitants,Number of storeys
Green area figure 3 for relevant area	Total surface area + paved courtyards + transportation surface area to green areas (the lower, the better)	figure	Structure floor area, number of storeys transportation surface area in relevant area, paved courtyard areas,remaining surface area that could be made into green areas in relevant area

2ARLT/KOWARIK/ MATHEY/REBELE (2003): Urbane Innenentwicklung in Ökologie und Planung; IÖR Schriften / Vol. 39, 3EVERTS (1989): Materialien der Grünordnungplanung, Part II, LFU-Schriften, Vol. 18

ECOLUP Transportation / Mobility

Reference Figure	Calculation	Unit	Necessary Base Data
General extent of development	Transportation surface area to total surface area or municipal surface area	%	Transportation surface area, total surface area (*3), municipal surface area
Extent of development planned in project	Transportation surface area to total zoned construction land	%	Transportation surface area, total zone construction land
"Modal split" – choice of mode of transportation	Proportion of various modes of transportation (NMV (bicycle), MIV (auto, motorcycle, public transportation) to the total amount of traffic (Comparative measure: routes/ legs of journey)	%	Number of bicycles, number of motorists and motorcyclists, number of public transportation users
Kilometres per person	Kilometres per person/ inhabitant/day (according to mode of transportation)	Pkm per day	Local statistics

ECOLUP Climate / Energy / Emissions

Reference Figure	Calculation	Unit	Necessary Base Data
Proportion regenerative sources of energy to total energy use	Total energy use/ energy use from regenerative raw materials	%	Communal energy statistics
Proportion of commercial enterprises incompatible with housing needs	Number of commercial enterprises with toxic emissions that according to law are not compatible with housing needs/ total number of commercial enterprises	%	Number of commercial enterprises with toxic emissions*, total number of commercial enterprises

*Guideline for evaluating the level of emissions at outdoor locations in core settlement areas, village areas and mixed usage areas:

	60 dB(A) daytime
	45 dB(A) night-time
in general housing areas and small settlement areas:	55 dB(A) daytime
	40 dB(A) night-time
in purely housing areas:	50 dB(A) daytime
	35 dB(A) night-time
in spa areas, for hospitals and permanent care institutions:	45 dB(A) daytime
	35 dB (A) night-time

Source: Sechste Allgemeine Verwaltungsvorschrift zum Bundes-Immissionsschutzgesetz (TA Lärm) from 26th August, 1998

13. ECOLUP Core Reference Figures Set

ECOLUP Landscape Development

Reference Figure	Calculation	Unit	Necessary Base Data
Proportion conservation area[4]	Surface area Natura 2000 regions (ha), nature conservancy areas, natural monuments, natural parks, protected green areas to total landscape surface area (ha)	%	Surface areas of: Natura 2000 regions, nature conservancy areas, natural monuments, natural parks, protected green areas,total landscape surface area

[4]DEUTSCHE UMWELTHILFE (2002): Zukunftsfähige Kommune – Wettbewerb und Kampagne zur Unterstützung der Lokalen Agenda 21 / This reference is also used in the set of environmental indicators for Baden Württemberg

ECOLUP Flowing Water

Reference Figure	Calculation	Unit	Necessary Base Data
Proportion of flowing water segments with adequate shoreline strips within the locality 5	Length of those flowing water segments with at least 10 m wide shoreline strips within the locality to the total length of flowing waters	%	Length of flowing water segments

[5] RUHR-UNIVERSITÄT-BOCHUM (2000): Indikatoren für eine nachhaltige Entwicklung in Bochum, Part II: Liste der Indikatoren

14 . External Assessment Conducted by an Environmental Verifier

As one of the requirements for the introduction of an environmental management system the EMAS calls for an assessment by an independent, certified environmental verifier. It is only after this person has "validated" the management system that it may be termed an approved environmental management system according to EMAS criteria.

The environmental verifier must be accredited by the German Accreditation and Certification Association for Environmental Verifiers and Organisations (*Deutsche Akkreditierungs- und Zulassungsgesellschaft für Umweltgutachter und -organisationen, DAU*) in Bonn. The accreditation is granted for individual branches of industry in accordance with existing NACE codes. You will find an index of certified environmental verifiers under www.diht.de
To date, no separate NACE code has been introduced for the validation of planning processes. The most applicable NACE code is 75.1 Public Administration of Municipalities and Districts. As explained in Chapter 3, EMAS meets the requirements of ISO 14001. Therefore, the verifier can also certify your organisation in accordance with ISO at no extra effort or cost. However, the ISO requires a yearly on-site reassessment.

The environmental verifier validates the environmental statement, i.e. he or she checks that the information it contains is correct and reliable and confirms its validity. It lies within the powers of the environmental verifier to determine whether an on-site reassessment must be conducted every one or three years. He or she makes this decision on the basis of the number of employees (fewer that 50) and the impact the organisation has on the environment (appreciable or less so). The long periods of time required in the field of communal urban land use planning to realise objectives means that changes are therefore only measurable in the long term. This ought to convince the environmental verifier that a validation cycle of 36 months is appropriate for an EMS in this field.

The environmental verifier carries out the validation in two steps: a review of the documents and an on-site visit. The assessment of the documents includes all constituent parts of the environmental management manual (see Chapter 11), including a draft of the environmental statement. The EM-representative is responsible for preparing for the verifier's on-site visit. He or she must ensure that:

- the environmental verifier is given an appointment with the "top executive" (the mayor) in

14 . External Assessment Conducted by an Environmental Verifier

order to talk to him or her about the environmental policy and programme as well as the inclusion of the decision-making instances in the EMS
- the environmental management manual has been brought up to date and is complete
- all employees have been informed of the verifier's visit and can provide information on their duties within the framework of EM if necessary
- the environmental verifier takes random data samples and is shown information related to EM (protocols from environmental team meetings, updates to reference data, the process by which the observation of legal requirements relevant to the environment is ensured, the contractual elements handed over to the planning office ....)

The results of the audit as well as necessary corrections are discussed at the end of the visit. After the on-site assessment, the mayor receives a detailed audit report. If specific EMAS requirements have not been met, the municipal administration normally is granted a period of time to make corrections. In the case of serious deviations that cannot be adequately corrected within this period, the environmental verifier does not grant the validation. But since you have the ECOLUP Guidance to rely on, this cannot happen to you!
Once the environmental verifier has declared the validity of the environmental statement, the municipal administration can apply to the appropriate office (in Germany, usually the IHK - Chamber of Commerce) to be entered into the EMAS register. To this end, the validated environmental statement must be handed in and a registration fee paid. The IHK then requests that the responsible supervisory authorities - in this case the governmental presidium for cities with over 20,000 inhabitants or the office of the county administrator for smaller towns and municipalities - issue a statement as to whether the municipality concerned observes all pertinent environmental legislation and grants the supervisory authority a period of four weeks in which to assess the environmental statement. If no objections arise, then the municipality is entered into the official EMAS registry and is granted the right to use the EMAS logo in its public relations.
The revalidation is conducted according to the same scheme.

ECOLUP INFORMATION:

EMAS Logos

Logos in the Internet:
How the individual versions can be used is set down in Art. 8 of the EMAS regulations.

Version 1 for a validated environmental management system

Version 2 for validated information

ECOLUP INFORMATION:

Costs Incurred by Validation

You should be prepared to cover the following costs: the environmental verifier's fee, the DAU fee, and the fee for registration with the IHK. What the environmental verifier charges generally vary with the size of the organisation, the number of employees and the the size of the location. The latter is not a factor in the validation of a planning process. The DAU also sets its fees according to the number of employees (50 - 920 EURO) and the registration fee lies between 220 and 800 EURO. depending on the size of the organisation.
An environmental verifier charges a daily fee of ca. 1.000 EURO plus expenses. Depending on the size of the municipality and the number of employees in the participating specialised offices, you should expect validation to cost from 4.000 to 10.000 EURO plus expenses.

We recommend that when choosing an environmental verifier you ask other communities about their experience and be sure to ask a number of verifiers for their price offers. If a neighbouring community has also applied for validation, then be sure to ask for a "two-for-one" offer and negotiate a reduction in fees.
If the environmental verifier comes from your region, it saves you travel costs, plus which it is the ecologically sounder choice.

What Distinguishes ECOLUP from Other Instruments and Regulations?

How can we define characteristics distinguishing ECOLUP from other instruments for environmentally friendly community development? Are there similarities, synergies, advantages or disadvantages to the various instruments available? In the following, we present the most important instruments that are similar to ECOLUP and compare them with ECOLUP.

Strategic Environmental Assessment (*"Strategische Umweltprüfung"*, SUP) and ECOLUP

By July of 2004, EU directive 2001/42/EG for the assessment of the environmental impact of certain plans and programmes (so-called Plan-UP directive) must be integrated into federal legislation. In Germany, the Building Code is to be amended toward this end. The planned amendments are intended to unify and strengthen by means of the strategic environmental assessment the procedural steps in the field of communal urban land use planning so as to increase the level of environmental protection afforded. The SUP is closely linked to the environmental acceptability assessment (*"Umweltverträglichkeitsprüfung"*, UVP), anchored in Germany by the UVP law (2000). In the following, we will limit ourselves the SUP and not go into greater detail about the UVP, since the SUP is a more concrete successor to the UVP especially intended for application to planning concepts and programmes.

At the heart of the SUP lies the **environmental report**, which establishes, describes and analyses the environmental impact of, as well as alternatives to, a planned project in the field of communal urban land use. The environmental report is intended to contribute to the assessment of the project, thus taking environmental concerns into consideration more extensively than has been the case. The SUP aims to prevent the approval of projects that do substantial harm to the environment. This is also what ECOLUP seeks to do! However, can the voluntary EMAS for communal urban land use planning replace the SUP, which will probably be obligatory for this planning as of July, 2004? Unfortunately not, due to the following differences between these sets of regulations:

1) The SUP is a reactive assessment instrument that reviews the expected environmental impact of a project, whereas ECOLUP is a project-oriented environmental management instrument that is intended to bring about continual improvement to environmental performance in urban land use planning.
2) The SUP's environmental report is drawn up in reference to a single concrete project, whereas ECOLUP's environmental assessment is applicable to all plans within the context of a municipality's urban land use planning.
3) The SUP serves the purpose of preventing the negative impact a project would have on the environment; ECOLUP goes one step further in that the environmental performance within the field of communal urban land use planning is to be improved continually. However, the implementation of both an SUP and of ECOLUP depends on approval from the town council.

Nevertheless, a community profits from an SUP conducted within the context of ECOLUP. Much of what ECOLUP accomplishes can be drawn upon for an SUP, which greatly simplifies the SUP procedure. For example, the environmental goals that must be drawn up for the SUP environmental report are already present in the form of the environmental goals established as a part of ECOLUP, making it unnecessary to work out goals especially for the SUP. You will find further synergy effects listed on the following table:

Environmental Acceptability Assessment within the Framework of NATURA 2000 and ECOLUP

NATURA 2000 is a European Union system of conservation areas that encompasses all areas that are protected by the **FFH and bird protection directives.** NATURA 2000 is intended to create a network of ecologically valuable areas in order to ensure the survival of over 2000 types of habitats and 700 plant and animal species in Europe.

Before new projects or plans (from regional development plans to small-scale development plans) may be undertaken in the vicinity of Natura 2000 areas, it must be established whether these activities would have a harmful influence on a Natura 2000 area (FFH and bird protection areas). If an examination of the plan or project concludes that no significant harm is to be expected, no further procedures are necessary. However, if significant harm seems probable, an **acceptability assessment** in accordance with §19a ff. BNatSchG (2003) in combination with article 6 of the FFH directive must be conducted. An examination according to the standards of

15 ECOLUP-Model Project

What Distinguishes ECOLUP from Other Instruments and Regulations?

ECOLUP's Synergy Effects for the SUP EMAS / ECOLUP

EMAS/ECOLUP	Synergy	SUP
Environmental goals for communal urban land use planning are drawn up.	**EMAS environmental goals can be used for the SUP, thus simplifying its procedure.**	**Environmental goals** form the basis of the environmental report.
Measures are drawn up in the environmental programme in order to achieve the environmental goals.	**EMAS measures from the environmental programme can be used for the SUP as the (compensatory) measures it requires.**	Measures are drawn up to prevent, to decrease and as far as possible to compensate substantial harm to the environment caused by the plan's implementation.
An EMAS **organisational structure** is created that includes all environmentally relevant departments and office. ECOLUP recommends that an environmental team be created.	**An existing organisational structure in accordance with EMAS simplifies the implementation of the SUP.**	Environmental data are collected through **co-operation between various authorities.**
Environmental data including reference figures and standards are collected and calculated.	**ECOLUP environmental data can be used for the SUP.**	**Environmental data,** parts of which must be calculated, form the basis of the information in the SUP environmental report.
Monitoring the environmental performance is a precondition to the introduction of environmental management according to EMAS, thus for ECOLUP as well.	**ECOLUP monitoring can be used in determining environmental impact in accordance with SUP, thus preventing redundancy.**	The environmental impact of plans and programmes must be supervised, to which end existing **supervisory mechanisms** can be used (see EU directive 2001/42/EG, article 10)

article 6, paragraph 2 to 4, FFH directive is also binding for bird protection areas. The acceptability assessment is conducted on the basis of the environmental protection goals that have been set for the area. The significance of the possible harm is as a rule measured in terms of a decline in the natural condition of the area and the possibility of a loss of surface area to the habitat types or species habitat present. If the acceptability assessment establishes that the area's present condition is threatened, the applicant must undertake all possible measures to avoid or minimise this harm. In addition, possible alternatives, for example the project's implementation at another location, must be taken into consideration.

Like the SUP, the FFH acceptability assessment is a reactive assessment instrument intended to prevent a project's harmful influence on protected areas. ECOLUP, in contrast, aims as an environmental management system at continually improving the environmental situation, thus going beyond the preservation of given ecological or natural conditions. A further difference lies in the FFH acceptability assessment's and ECOLUP's range of applicability. The FFH acceptability assessment must be conducted for plans, projects or concepts for locations within or bordering on a FHH or bird protection area that might cause substantial harm to the area. ECOLUP implements an environmental assessment and an environmental management system for the full scope of a community's urban land use planning. Another difference is the area affected by the programs: the FFH directive applies to areas that might include territory in a number of municipalities, whereas ECOLUP can only be applied within the administrative framework of one community.

European Water Framework Directive and ECOLUP

In comparison to the environmental acceptability assessments depicted above, the European water

What Distinguishes ECOLUP from Other Instruments and Regulations?

framework directive demonstrates much greater similarity to ECOLUP due to its management character. On the 22nd of December, 2000, the European water framework directive came into effect. Its goal is to replace the former multiplicity of water directives with a modern, coherent European water code, thereby improving the condition of the aquatic ecosystem and the presence of groundwater Keystones are the evaluation of water conditions by means of biological and chemical test parameters as well as river area management. The evaluation of the structure of bodies of water is as a part of this process an element of **recording the biological condition** of the surface of bodies of water. **River area management** is comprised of an analysis and classification of the river areas as well as the drawing up and implementation of **programmes of concerted measures** based these finding in order to improve the river area's condition. The directive calls for the drawing-up of **river area plans** applicable to the body of water from its source to its mouth. One aspect of this progress is the designation of influx areas on partial influx areas, as well as naming the administrative authorities or other organisations to be responsible for co-ordinating the planning and implementation process. On the basis of what kind of chemical and ecological impact current conditions are having on water conditions as established by the river area plans, **programmes of concerted measures** are to be drawn up in order to achieve the plan's environmental goals.

The **similarities** between the European water framework directive and ECOLUP are:

- the measurement if the impact human activities have on the condition of bodies of water and the depiction of the ecological and chemical water conditions (environmental assessment in ECOLUP)
- the programmes of concerted measures (environmental programme and measures in ECOLUP)
- the revision of the programmes of concerted measures and river area plans every six years (re-validation of the environmental management system in ECOLUP every 3 years)
- river area management (environmental management for communal urban land use planning in ECOLUP)
- the continuous improvement of water conditions (continuous improvement of environmental performance in ECOLUP)

There is, however, a **difference** in the **areas of applicability**. The European water framework directive refers to the surface of bodies of water and ground water in the form of river areas and requires that obligatory river management plans and programmes of concerted measures be applied to them. ECOLUP, in contrast, draws up an environmental management system for communal urban land use planing that can include river areas among other things.

Local Agenda 21 and ECOLUP

The so-called Agenda 21 was passed at the 1992 UN Conference for Environment and Development (UNCED) in Rio de Janeiro as an action programme calling for the introduction of sustainable, environmentally appropriate development. In Chapter 28 of the action programme, the world's communities are called upon to further develop the framework set by Agenda 21 at the local level. Fields important to the Local Agenda 21 correspond to the following ECOLUP environmental aspects:

- Excessive urban expansion
- Public participation
- Energy and climate
- Mobility
- Water

However, ECOLUP procedure is not comparable to the instruments used in the Local Agenda 21 process. ECOLUP employs an environmental management system to conduct an environmental audit of communal urban land use planning. Local Agenda 21 projects are partially political processes initiated by agenda groups and are not subject to the EMAS guidelines or other binding procedures. Nonetheless, both instruments seek to achieve similar environmental goals. ECOLUP sets high environmental goals for the Agenda 21 areas named above, thereby achieving a wide-ranging contribution to sustainable development within communities. In this way, ECOLUP supports the Local Agenda 21 by working at the communal level by means of another instrument, namely EMAS. If Agenda representatives are included in the ECOLUP environmental team, ECOLUP can contribute to the integration of Agenda goals into a binding EMAS environmental programme.

15 ECOLUP-Model Project

What Distinguishes ECOLUP from Other Instruments and Regulations?

Literature and Links

On the SUP

http://www.uvp.de/welcome.html?
http://www.uvp.de/veroeff/zusf.15.htm
http://www.umweltbundesamt.at/umwelt/uvpsupemas0/sup/
http://www.bmu.de/files/sup_richtlinie.pdf
http://bundesrecht.juris.de/bundesrecht/uvpg/index.html

On NATURA 2000

http://www.bfn.de/03/0303.htm
http://www.bfn.de/03/030304.htm
http://www.mlur.brandenburg.de/n/n_siche2.htm

On the European Water Framework Directive

http://europa.eu.int/eur-lex/de/archive/2000/l_32720001222de.html
http://europa.eu.int/comm/environment/pubs/nature.htm
http://www.umweltbundesamt.de

16. ECOLUP: Three Years of Project Experience

Since 1998 communities have been able to introduce an environmental management system in accordance with the EMAS directive into any number of their functions and services. To date, cities and municipalities in Germany have secured the validation of around 77 local government buildings, fleets of vehicles, city greenhouses, bathing facilities, schools or communal service providers such as departments of public works.

To date, planning processes have found only superficial consideration - if any at all - in this process.

As a part of the ECOLUP LIFE project, the EMAS system was applied for the first time in a thorough fashion to the planning processes in communal urban land use planning. This is a field with undeniably high relevance to the environment. Naturally, not all questions that arose could be answered within the context of a model project. Indeed, it is imperative that other communities participate in ECOLUP in order to make its implementation of EMAS even more efficient and to raise the benefits for the environment and for the community. However, ECOLUP has provided us with valuable results that can be achieved in other communities, as well.

The fundamental purpose of the entire procedure is to a great extent to promote environmental education. It makes the environmental impact of planning processes more transparent and includes in the environmental team important representatives of the community's structure and its citizens who can disseminate the knowledge they gain through their participation. As a part of this process, all possible environmental goals and measures for each relevant environmental aspect are discussed in detail and with passion. The fact that the specialised departments and offices, representatives of economic interest groups and of private nature conservation all participate in it "spice up" the process and contribute to the formulation of more ambitious goals and measures. External expert speakers or representatives of other communities can provide impetus and recommendations for goals and measures that have not yet been undertaken.

ECOLUP makes the environmental benefits, to date scarcely discussed and believed to be unquantifiable, involved in the field of communal land use planning the central topic of interest.
Thus, they can be given a more important position in the process of interest-weighing. The estimation of environmental impact already required by law (BauGB § 1a) is expanded upon through the call for additional environmental performance, made measurable and thus becomes subject to influence.

Environmentally friendly city development can be made measurable through the use of reference figures. This is the most important prerequisite to the monitoring process. It also allows communities to recognise harmful developments in the environment early on and to manage them through targeted measures.

The management system helps to ensure that all specialised offices included in the project and the

16. ECOLUP: Three Years of Project Experience

regional authorities are better informed about it. Administrative procedures can also be made more efficient through the clear regulation of competencies, communication and documentation. In addition, better information and more effective staff integration has a positive effect on the quality of planning and of administrative procedure.

The EMAS structure and its predetermined elements such as the environmental assessment, the environmental goals and programme and the yearly internal audit provide the community with support for the application and observation of new EU directives like the Strategic Environmental Assessment (*"Strategische Umweltprüfung"*, SUP), the EU Water Framework Directive or the Fauna-Flora Habitat Directive (NATURA 2000). The EMAS framework is able to integrate other instruments such as the Local Agenda 21 and to take advantage of synergies that come about as a result.

However, the quality of environmental management and its benefit for the environment depends, as always, on the good will of those currently in political office. EMAS does not specify any environmental goals of its own, but rather accepts the goals the organisation sets and assesses their implementation. The environmental programmes drawn up by the environmental teams are merely drafts or recommendations that become binding only after they have been passed by the town council. Only after the environmental policy and the programme have been integrated into the daily practice of municipal politics and have shaped town council decisions can the concrete benefit to the environment gained through the implementation of the environmental programme be estimated.

The continual improvement to the condition of the environment is felt only in the long term in most of the relevant environmental aspects. During the ECOLUP project, we discovered that the field of communal urban land use planning sometimes does not go far enough to protect the environment, due to the fact that urban land use planning has very few opportunities to influence particular aspects such as energy or transportation. "Urban development" as an object of environmental management would open a wider scope of action towards the codification of goals and measures. The procedures for implementing an EMS described in this guidance can be applied to all planning processes within the context of urban development.

"What does the whole thing cost and what economic benefits can we expect?" - this is the question that political decision makers ask time and again. In contrast to environmental management in commercial firms or for administration buildings, no exact figures can be presented in terms of reduced water, energy or office equipment use to make the argument for cost savings. How can improvements to the quality of the environment be monetarised into cents and euros? A municipality using environmental management in its urban land use planning will most likely not achieve higher prices for its building sites, nor will it become more attractive for firms looking for a new location.

Especially in economically difficult times, it is not a simple task to convince a town council of the benefits of environmental management while arguing from the economic perspective. Deregulation of how local governments can adjust and alter structures at higher levels of administration, plus points for applications to funding programmes, etc. would serve to make the benefits EMAS brings to communities, and therefore to their motivation to become active, even greater. In this respect, it is up to the national and European authorities responsible for the EMAS programme to provide incentives that would give a municipality with EMAS validation further advantages over other communities.

17 ECOLUP Model Projekt

Contacts and Information

Contacts for Similar Topic Areas:

AK Stadtentwicklung im DVAG
www.geographie.de/dvag/ak-stadtplanung/

Akademie für Natur und Umweltschutz Baden-Württemberg
www.uvm.baden-wuerttemberg.de/akademie

ARL - Akademie für Raumforschung und Landesplanung
www.arl-net.de/ie/index.html

BMBF Nachhaltige Stadtteile
www.oeko.de/service/cities/index.html

BMBF Ideenwettbewerb "Stadt 2030"
www.stadt2030.de/index.shtml

Some of the Authorities in Baden-Württemberg with Powers of Certification:

Bodensee Agenda 21 der Internationalen Bodensee-Konferenz
www.regio-bodensee.net/agenda/

BofaWeb Bodenschutz Fachinformationen im World-Wide Web
www.uvm.baden-wuerttemberg.de/bofaweb/xindex.html

Bund Deutscher LandschaftsArchitekten (BDLA)
www.bdla.de/main.htm

Bund für Umwelt und Naturschutz Deutschland (BUND)
www.bund.net

Bundesamt für Bauwesen und Raumordnung (BBR) Flächennutzungsmonitoring
www.bbr.bund.de/index.html?/raumordnung/siedlung/flaechenmonitoring.htm

Deutscher Verband für Wohnungswesen, Städtebau und Raumordnung e.V.
www.deutscher-verband.org/seiten/startseite/dv_aktuell.html

Deutscher Verein für Vermessungswesen (DVW)
www.dvw.de

Deutsches Institut für Urbanistik (Difu)
www.difu.de

Model Projects with Similar Topic Areas:

Deutsches Seminar für Städtebau und Wirtschaft (DSSW)
www.dssw.de/seiten/startseite/startseite.asp

ecobudget - Environmental Budgeting (ICLEI)
www.ecobudget.com

European Academy of the Urban Environment - Europaeische Akademie fuer staedtische Umwelt
www.eaue.de/winuwd/default.htm

European Land and Soil Alliance (ELSA) e.V.
www.bodenbuendnis.org/

Forum Stadtökologie
www.difu.de/stadtoekologie/

Fraunhofer-Informationszentrum Raum und Bau IRB
www.irb.fhg.de/

ILS - Institut für Landes- und Stadtentwicklungsforschung des Landes NRW
www.ils.nrw.de/

ICLEI - International Council for Local Environmental Initiatives
www.iclei.org

Informationskreis für Raumplanung (IfR)
www.ifr-ev.de/ifr.htm

Institut für kommunale Wirtschaft und Umweltplanung (IKU)
www.iku.fh-wiesbaden.de/index.html

Institut für Stadt- und Regionalplanung (ISR)
http://isr.gp.tu-berlin.de/

Institut für ökologische Raumentwicklung (IÖR)
www.ioer.de/homepage.html

Internationale Bodenseekonferenz (IBK)
www.regio-bodensee.net/

Contacts and Information

Contacts for Similar Topic Areas:

Internetportal für nachhaltige Gemeindeprojekte in Vorarlberg
www.unternehmen-v.at

ISW Institut für Städtebau und Wohnungswesen, München
www.isw.de

IWU- Institut Wohnen und Umwelt
www.iwu.de

KIS 0.2 Kommunales Informationssystem
www.stadtmanagement.de/index2.htm

Landschaftsplanung.NET Das Online-Portal für die Landschaftsplanung
www.lapla-net.de

Lehrstuhl für Bodenordnung und Landentwicklung TU-Muenchen
www.landentwicklung-muenchen.de

Ruhr-Uni-Bochum Fachgebiet Umwelttechnik + Ökologie im Bauwesen
www.ruhr-uni-bochum.de/ecology/frame.htm

SEMPA - Suburban Environmental Management Participatory Approach
www.sempa.ie

SRL - Vereinigung für Stadt-, Regional- und Landesplanung e.V.
www.srl.de

TU Berlin - Instituts für Management in der Umweltplanung (IMUP)
www.tu-berlin.de/fb7/imup/

Umweltbundesamt: Fachbereich I - Umweltplanung und Umweltstrategien
www.umweltbundesamt.de/uba-info/d-fach1.htm

Uni Kaiserslautern - Fachgebiet Regionalentwicklung und Raumordnung
www.uni-kl.de/FG-RuR/

Municipia Plattform für Stadt- und Regionalentwicklung
www.municipia.at

Nachbar Natur - Ökologische Konzepte für Städte und Dörfer
www.nachbar-natur.de

neuLand: nachhaltige Landnutzung
www.neuland-regionalentwicklung.de/Landnutzung/landnutzung.html

Portal für kommunale Forschung und Praxis
www.kommunalweb.de

Raumplanung Schweiz - Termine
www.planning.ch/agenda_g.php

Raumplanung Universität Dortmund
www.raumplanung.uni-dortmund.de

WerkstattStadt ausgewählte Städtebauprojekte

www.werkstatt-stadt.de/

Literature

Literature:

The literature list includes the publications used to write this guidance and has been expanded to include suggestions for further reading. At the end of Chapters 7.3 through 7.8 you will find additional sources directly related to the topics of the respective chapters.

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EU-LIFE-Programm Europäische Kommission,
Generaldirektion Umwelt
http://europa.eu.int/comm/environment/index_de.htm

Ministerium für Umwelt und Verkehr Baden-Württemberg
www.uvm.baden-wuerttemberg.de/

Land Vorarlberg
www.vorarlberg.at

Umweltbundesamt
www.umweltbundesamt.de

Landratsamt Bodenseekreis
www.bodenseekreis.de

Deutsche Umwelthilfe
www.duh.de

Global Nature Fund /Living Lakes
www.globalnature.org

Stiftung Landesbank Baden-Württemberg
www.lbbw.de

T-Mobile
www.t-mobile.de
Lever Fabergé Deutschland, Hamburg
www.lever-faberge.de

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Umwelt Bundes Amt

Living Lakes

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LBBW

Lever Fabergé Deutschland

T-Mobile

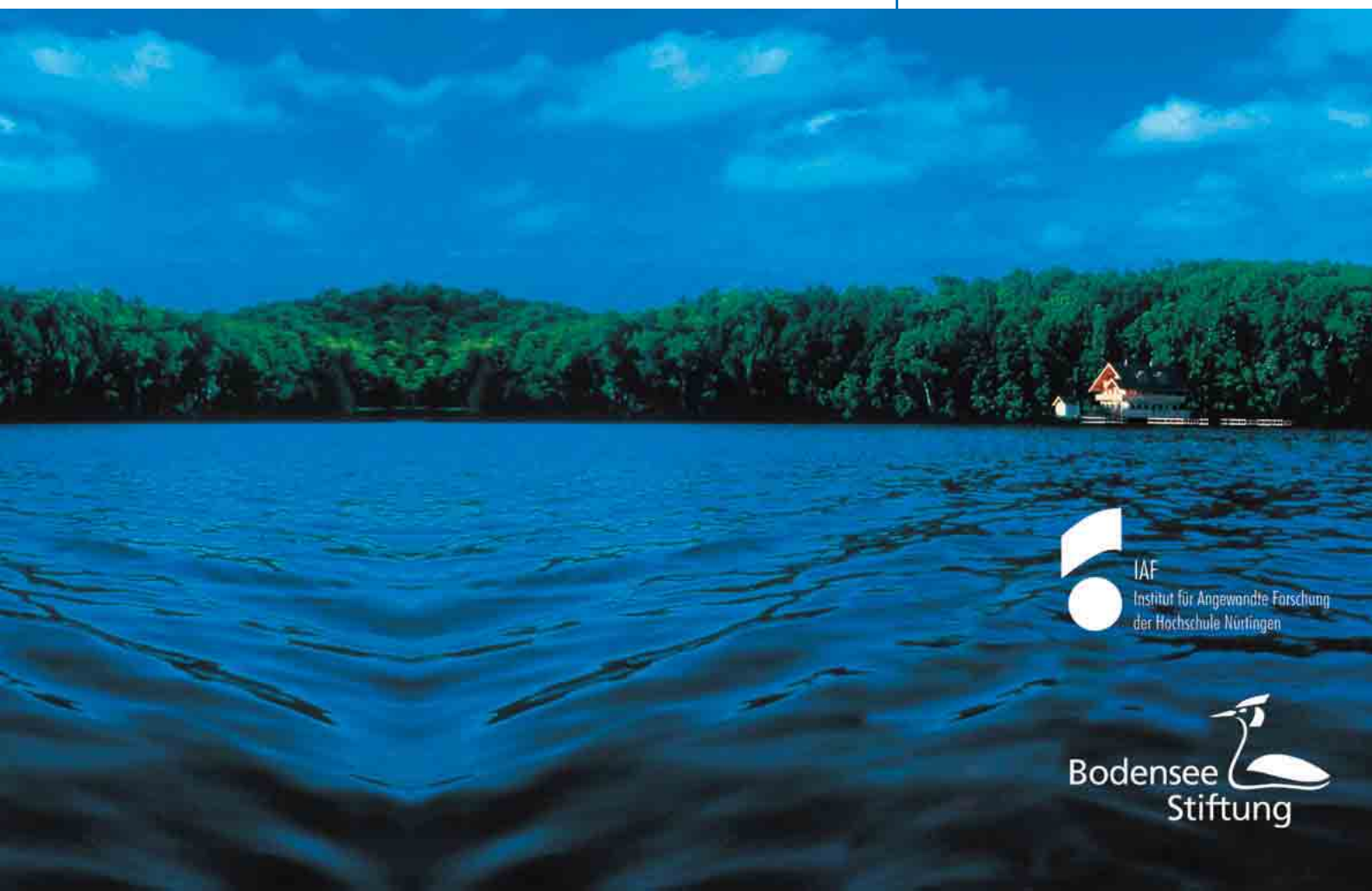
and its Partnercommunities…

KONSTANZ
Die Stadt zum See

Überlingen

STADT DORNBIRN

Wolfurt



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