10th Living Lakes Conference
15-19 May 2005
Tagaytay City, Philippines

Environmental Management for Local Communities

Marion Hammerl
Bodensee-Stiftung (Lake Constance Foundation)
Fritz Reichle-Ring 4
78315 Radolfzell, Germany
E-mail: marion.hammerl@bodensee-stiftung.org
www.bodensee-stiftung.org
www.ecolup.info

Model-Project ECOLUP: Environmental Management for Land Use Planning

With 147 inhabitants per square kilometre, the European is among the most thickly settled regions in the world (European Commission: Caring for our future, 2000). Here, the built-up surface area increases by 2% every ten years. Aspects of the substantial impact on nature and the environment are: the release of environmental pollutants into the soil, the air and water, increasing traffic volume, excessive settlement of the landscape and natural habitats.

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. With 289 inhabitants per square kilometre, the Lake Constance district lies above the EU average. Areas that lie near the lake are particularly desirable - up to 500 inhabitants per km² live there. It is attractive to live and work on the lake and this is not going to change in coming years. This means that the communities of the region must take particular care to preserve local natural resources, especially the finite resource land.

Together with the cities of Constance, Überlingen and Dornbirn and the municipality (Marktgemeinde) of Wolfurt and within the framework of the EU Life-Programme, the Lake Constance Foundation has put together a model project centred on ecologically oriented land use planning. The Institute of Applied Research at Nürtingen University was responsible for the supervision of the

scientific aspects of this project, which was carried out from July 1st, 2001 through March 31st, 2004.

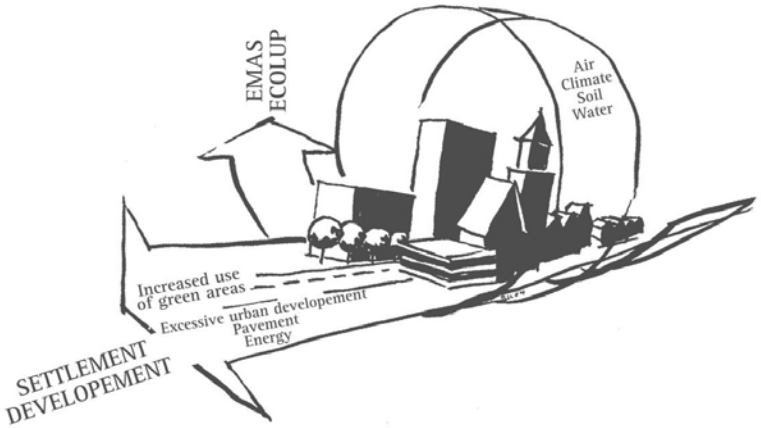
ECOLUP (Ecological Land Use Planning) provides a framework within which the European Environmental Management System EMAS II can for the first time be applied to the processes in communal urban land use planning. Through the implementation of EMAS, the environmental impact of communal urban land use planning can be represented in a measurable fashion and the continual improvement of the quality of the environment ensured. The exchange of information between communities and an improved inclusion of local residents and other representatives of interest groups are also among the project's primary aims.

Environmental Management for Local Communities: How can it work?
The European Eco-Audit (EMAS) and ISO 14001 are voluntary management systems 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 and the international ISO 14001 environmental management system are very similar in structure and contents.

All organisations participating in EMAS or ISO 14001 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. Each environmental statement must be evaluated by an independent, government-certified environmental verifier. If it meets the requirements of the EC eco-audit ordinance, the environmental auditor declares the environmental statement to be valid.

At present, EMS systems have been implemented into production processes, organisational locations or services. Only in a very few cases they have been applied to municipal planning processes. Within ECOLUP the environmental management system EMAS has been applied to communal urban land use planning:

The municipal administration as the institution directly responsible for the process

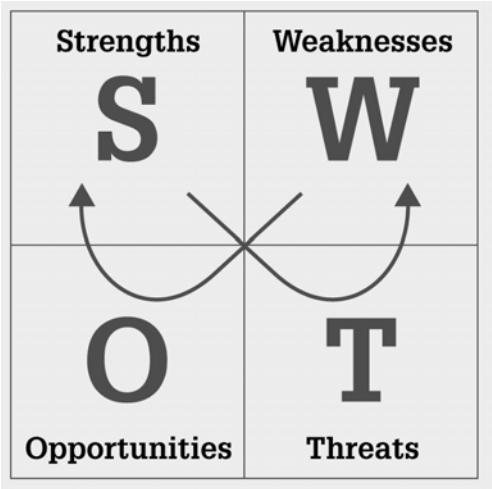


of urban land use planning undergoes validation. Executive instances within the municipal administration are the specialised departments and offices (building control office or department of city planning), the town council and the mayor. Further specialised and informal plans can also be taken into consideration.

Procedure to implement EMAS or ISO 14.001

EMAS or ISO 14001 can be applied to communal urban land use planning under the following conditions: communal urban land use planning must take influence on the given environmental aspects, the community must be able to influence land use planning, and, finally, the community must be able to involve its citizens and representatives of other interest groups and to establish a monitoring system.

Environmental Assessment



EMS requires as a first step an environmental assessment. A appropriate instrument is the to realize this review is the SWOT-analysis. A SWOT-analysis is a useful method for conducting a qualitative analysis of the data and information on the relevant environmental aspects. In addition, these aspects were categorised as either directly or indirectly affecting the environment and the most significant among them were identified. The communities need to collect all available information and reference data to define their actual situation

in the most important environmentally-relevant areas. In the case of environmental aspects for which no current reference figures were available, an exclusively qualitative evaluation will be carried out. On the basis of the SWOT-analyses within ECOLUP, the most significant environmental aspects to be used throughout the project were identified:

- land consumption
- sealing-over of soil/use of green areas
- transportation and mobility
- energy and climate
- landscape development

In order to create a basis for a grounded and reliable evaluation of a community's environmental situation, it should make an addition contribution the SWOT-analysis by compiling a table of reference figures reflecting current conditions. These reference figures should whenever possible be contrasted with those of other communities or with standard values so that the community can see in which areas improvement is needed.

Environmental Policy, Environmental Goals, and Environmental Programme

Each community should create an environmental team consisting of representatives from specialised departments and offices, regional authorities, the business sector, environmental organisations and citizen's initiatives. The responsibility of the environmental team is the elaboration of a draft of the Environmental Programme which includes environmental goals and the concrete measures to be undertaken in achieving them. Within ECLUP, the environmental programme was developed and discussed in five topical workshops. The overarching aspect citizen involvement / participation was discussed in a workshop of its own, where goals and measures for the improvement of participation were established. Experts and regional authorities provided background information and indicated potential for political action. The environmental programme is a decisive element of EMAS and ISO 14.001, for on the basis of its contents, the mid- and long-term benefits for the environment (continual improvement) are determined.

The environmental policy includes a commitment of the community to achieve continual improvement of the environmental quality of their urban land use planning and summarise the most important goals within this context. The environmental policy and programme are to be made accessible to the public by means of an environmental statement.

Compliance Audit and Management Structure (System Audit)
EMAS and ISO 14.001 require 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.

To work successful, an Environmental Management System needs an appropriate management structure. It is important to adapt the structure to the existing organisation and not the other way around. Key elements for the management structure are:

Leadership (Mayor and Municipality Council): Approves environmental policy and Environmental Programme. Signs Environmental Report.

Management coordinator: Coordination of SWOT-Analysis, coordination of elaboration and implementation of environmental programme, coordination of reports and documentation, realization of internal audits, coordination and publication of environmental report, coordination of external audit.

Environmental Team: Supports coordinator regarding SWOT-Analysis, elaboration and implementation of environmental programme, internal audits, and environmental reports.

Management should keep its documentation to the minimum while making it as informative as possible. Records should however be explicit showing by whom, for whom, when it was produced and where it can be found. All staff members should have access to the relevant information, preferable in form of a handbook.

The action of staff directly influences the environment where they work can have a positive or negative effect. Well trained employees are more motivated and will make better decisions. Management should emphasise the importance of good training for its field staff and insist on good communication. Management should also define who is responsible for the dissemination of information to the staff and to the public. EMAS obliges the municipality to publish an environmental report. Within ISO 14.001 it is not an obligation, but anyway, it is very much recommended to publish an environmental report and a periodic actualisation.

Monitoring and Audits
Management is a cyclical process involving planning, allocation of resources, implementation, monitoring and evaluation, and feedback. Monitoring and

evaluation is crucial to effective management. Within EMAS and ISO 14.001 periodical internal audits (at least yearly) are required. EMAS and ISO 14.001 require also an assessment by an independent, certified environmental verifier (minimum every three years). It is only after this person has "validated" the management system that it may be termed an approved environmental management.

For evaluation and monitoring it is important to agree on a set of core reference data. This data should be meaningful and relatively easy to obtain during a long-term period. They should cover all relevant environmental aspects. Most of the reference data 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.

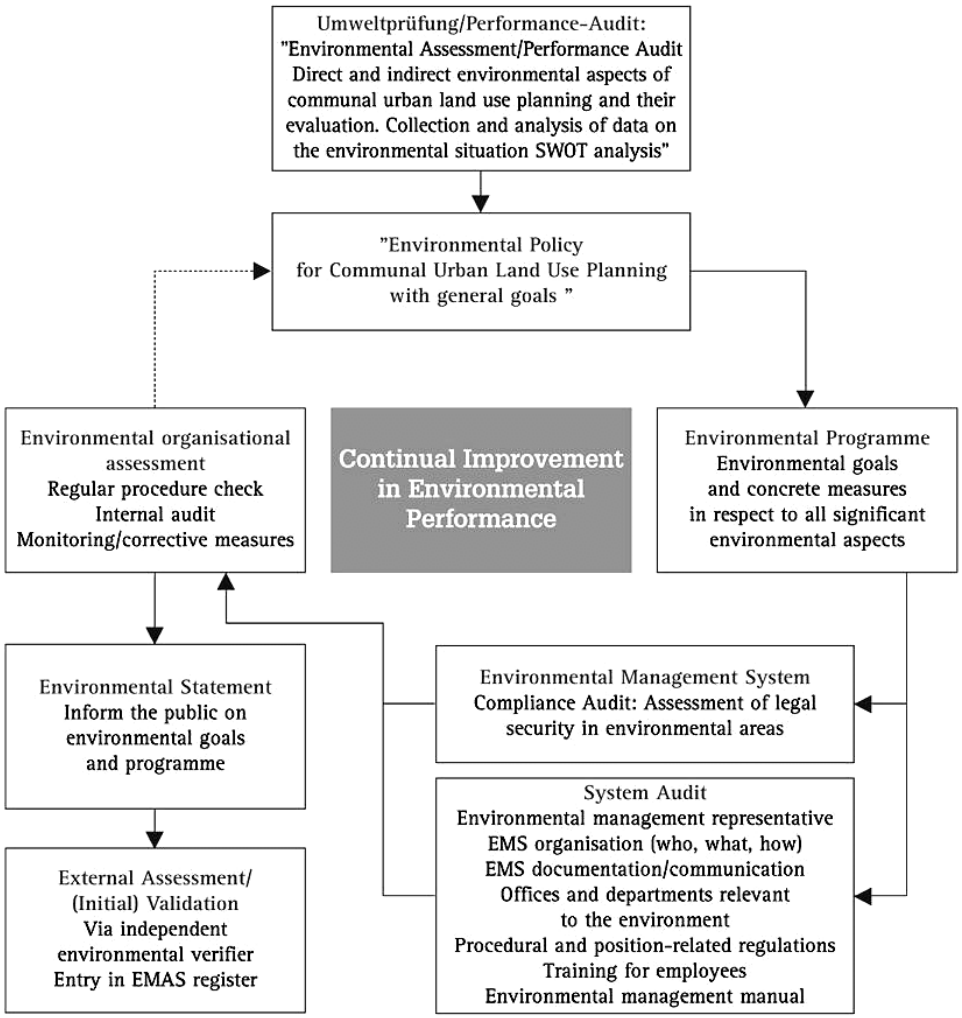
Within ECOLUP, Nürtingen University identified a core set of 16 reference figures by means of which the achievement of sustainable development within communal local land use planning can be measured in order to quantify the goals set and to provide a means of checking the effectivity of the measures undertaken. For example, reference figures are calculated on the percentage of land used for various purposes and the intensity of that use, the degree to which soil has been sealed off, to what extent green areas have found use in various areas, to what extent land use potential has been exhausted, the percentage of regenerative energy of total energy use or the percentage of protected areas within the community.

These reference figures are easy to calculate and provide a great deal of relevant information. Further reference figures are provided in a list of environmental aspects to be found in the ECOLUP guidance.

ECOLUP Guidance

Among the most important instruments for communicating the project results is, along with the pool of knowledge available at the website, the ECOLUP Guidance. In the course of its 120 pages, the manner in which all elements of an environmental management system in accordance with EMAS II can be brought together are explained step by step, as well as the procedure to be used in introducing it. The structure of the guidance is of course determined by that of the EMAS ordinance:

Available as download in English from the www.ecolup.info website



ECOLUP Experience, Benefits to the Environment

Despite the difficulties presented by determining a date all can attend, the method of holding **communal workshops** proved very effective and is to be recommended:

- the environmental aspects can be discussed from different perspectives by the environmental team members representing various disciplines, who often devise ambitious measures
- the workshops offer an excellent opportunity for the team members and the participating communities to exchange information and ideas
- the expert input helps these workshops to serve as continuing education for all participants

- in the workshop, the communities can take advantage of the positive effects engendered by groups dynamics; furthermore, the costs for the consulting services are lower.

To date, many municipalities have seldom worked with **reference figures**, if at all. The most important core data, e.g. on population density and sealed-over soil may be present, but in varying forms that can often not be compared. It is rare that a city or municipality have its own office of statistics that collects and calculates at a central location all relevant data for communal urban land use planning. Therefore, a first environmental programme from urban land use planning will have to contain a number of measures that do not serve the immediate improvement of the environmental situation, but rather are necessary for the introduction of a continual monitoring system.
Involving the town council requires a good deal of tact! It would be best if there were a member of the council on the ECOLUP environmental teams.

However, the team moderator cannot permit the discussion to be misused for the exchange of political blows. If the town council has no time to attend the workshops, it should by all means receive their protocols and be kept informed on the project's progress by the environmental management representative at regular intervals.

Nevertheless, the quality of an environmental management system and the benefits it brings to the environment depends on **political good will**, when all is said and done. EMAS and ISO 14.001 do not set environmental goals, but instead accepts those established by the organisation and assesses their realisation. The environmental programmes drawn up by the environmental teams are only drafts or recommendation that can only be made binding through their being passed by the town council. Only when environmental policy and programme are integrated into daily practice and are taken into account in the town council's decisions, can the concrete benefits to the environment brought about through the environmental programme be estimated.

Continual improvement to environmental quality tends to manifest itself in most environmental aspects in the long term. During the ECOLUP project, it became apparent that the area of communal urban land use planning was often too limited due to the fact that the possibility of influence within these planning processes, in particular with respect to aspects such as energy or transportation, is quite limited. The field of urban development would provide more room for

adjustment in respect to which goals and measures can be set. The procedure for implementing an EMS described in the guidance can be applied to all planning processes within the field of urban development.

Examples for improvement of environmental quality

Überlingen, Measures Affecting Register of Land Zoned for Building

A potential addition 2,000 people could be provided with new housing through retrospective concentration: the study showed a reserve surface area for housing of approx. 150,000 m². Assuming a city structure density with a property parcel surface area of 0.8, this level of housing usage would require a new housing settlement of approx. 20 ha. The desired more efficient use of surface area would be achieved through not zoning additional building parcels for use. This would occur to the extent that the need for additional housing could be directed onto property parcels with low structure density within the city‘s centre.

Constance: Measures for Increased Structure Density within the City’s Centre

For a new construction project providing commercial space within the city’s centre, a prize-winning project has achieved a functional mixture of housing and services with a high usage density. The usage of available space lies at a level markedly above the average found in the rest of the centre, thus raising the housing density of the city as a whole. The exact extent of this increase has not yet been calculated, but it should lie around 1%, which makes a significant contribution to savings in surface area considering how high Constance’s settlement density already is.

Dornbirn, Measures Towards the Construction of New Neighbourhoods, Use of Green Areas

An additional park area was created on a former commercial site for the use of a city neighbourhood. In this way, the surrounding private housing properties have increased in value, as have the flats in the area. As a result, the demand for such properties has increased which in turn has attracted housing interest away from the city’s outskirts to sites at its centre. Further related potential and the surface area that can be saved in the process have not yet been calculated.

Wolfurt, Measures for Efficient Use of New Commercial Surface Area and Use of Green Areas

An area zoned for commercial use has been defined via a land use plan as being divided into large, interconnected construction sites with shared “manipulation areas“ for access needs, parking and storage as well as interconnected green areas of the same proportions. The usual designation of 50% total structure surface area, 20% access area, 25% courtyard area, and 5% green areas has been adjusted (figures have been rounded off) to 60% total structure surface area, 20% access and courtyard area (“manipulation“), and 20% green areas. This has led to not only a more efficient usage but also to a clear decrease in sealed-off surface area.

“**What does all this cost** and what benefits does it bring us?“ – this is of course the question that decision-makers in politics always ask. In contrast to environmental management in firms or for administrative facilities, in the case of communal urban land use planning there is no savings to cost through the reduction of water, office material or energy use. How can we monetarise improvements to the quality of the environment in Euros and Cents? A community with environmental management in urban land use planning certainly does not receive higher prices for its construction land, nor does it become more attractive as a place for firms to set up shop.

Above all in economic hard times, it is not easy to convince a town council of the economically beneficial aspects of an environmental management system for a community’s urban land use planning. Deregulation of municipal interaction with higher levels of government administration and plus-points for applications for government funds would be of aid in increasing the applicability of EMAS /ISO 14.001 and thus the communities’ motivation to participate. In this way, the authorities responsible for EMAS /ISO 14.001 at the national and international level face the challenge of creating initiatives so that a community with an EMS validation has even greater benefits in comparison to those without.

Further information: www.ecolup.info, marion.hammerl@bodensee-stiftung.org