tion of their ideas and needs. The German Biosphere reserves, in collaboration with BMU, will work out cooperation initiatives.

Furthermore, the participants stressed the need for an internet-based "market-place" where biosphere reserves may announce offers and needs in the context of networking with other biosphere reserves. The representative of the MAB Secretariat offered to realize such an instrument within the existing UNESCO/MAB homepage.

8. IPAM: TOOLS FOR INTEGRATIVE PROTECTED AREA MANAGEMENT

PLENARY PRESENTATION, BY MICHAEL JUNGMEIER, E.C.O. INSTITUTE OF ECOLOGY, AUSTRIA

SUMMARY

"Experience grows through being shared". This booklet presents a newly developed expert system that is intended to support planners, managers and consultants of Protected Areas through a system of self-assessment, focused recommendations and a comprehensive knowledge base. The interactive Toolbox provides substantial information on the integrative management of Protected Areas by means of new information technologies. The interactive system is free of charge and is open to everybody on the homepage www.ipam.info. Developed in cooperation with international partners and organisations, this expert system aims to be an important backbone for the future development of Protected Areas in Central and Eastern Europe.

The expert system consists of three components, a self-assessment, a set of standardised recommendations and a knowledge base. The three components aim to provide any information that is necessary to develop a particular Protected Area. The self-assessment is an interactive checklist of questions. They help to identify and focus the problem and the most recent state of development of the Protected Area. The structure of the self-assessment follows the "life cycle" of the Protected Area (pre-phase, planning, ongoing management) and cross checks 25 fields of activity. However, the self-assessment finally results in a Progress Report that points out the deficits in planning and managing the Protected Area and in standardised recommendations. The knowledge base, as an ongoing tool, provides additional materials: reports, projects, organisations, people, best practice, etc. are compiled in an extensive database. Materials may also be added and uploaded by the visitor. Additionally, a Glossary of the most important tech-

nical terms is available in five languages. As a first step the Toolbox is available in English, Czech, German, Slovenian and Croatian. Further languages may be added. For the convenience of visitors, a virtual assistant has been created: IPAM Joe is at visitors' disposal for any information they may need.

HIGH-TECH FOR PROTECTED AREAS

Integrative Planning and Management

The protection of areas and sites is one of the most important instruments of modern, anticipatory strategies in nature conservation and in planning for sustainable rural development. Therefore, an enormous increase in the number and acreage as well as in the number of site categories has been registered. The number of Protected Areas in Europe listed by the IUCN (category I-VI) doubled between 1970 (2060) and 1990 (4400). The development of the coherent Protected Area system NATURA 2000 also indicates a rapidly increasing network of sites, meanwhile covering approximately 436,887 square kilometres.

Figure 2: Different Protected Area categories. The variety of different types of Protected Areas sometimes leads to confusion. On the other hand, this variety offers many possibilities of categorising sites to match regional or international requirements.

The management of these sites has become a challenge for nature conservation and regional planning policies. For example, within EC-Europe an average of 23% of the land surface is under some type of legal protection. With regards to the acreage, planning a Protected Area has become one of the most extensive planning processes in any modern society. In this process, all three dimensions of sustainability play an important role.

- Ecological dimension (natural heritage, ecosystems, land use regulations, spatial conflicts, spatial development policies, disaster prevention, etc.)
- Socio-cultural dimension (acceptance, involvement, participation, traditions etc.)
- Economic dimension (regional added value, marketing and branding, sponsoring, subsidy systems, etc.)
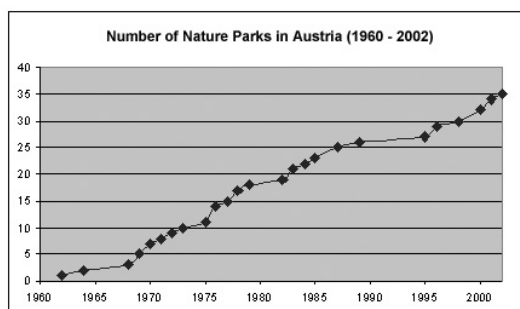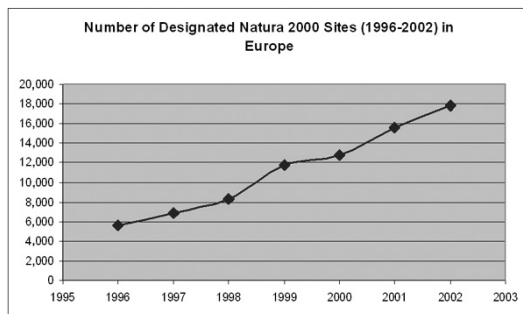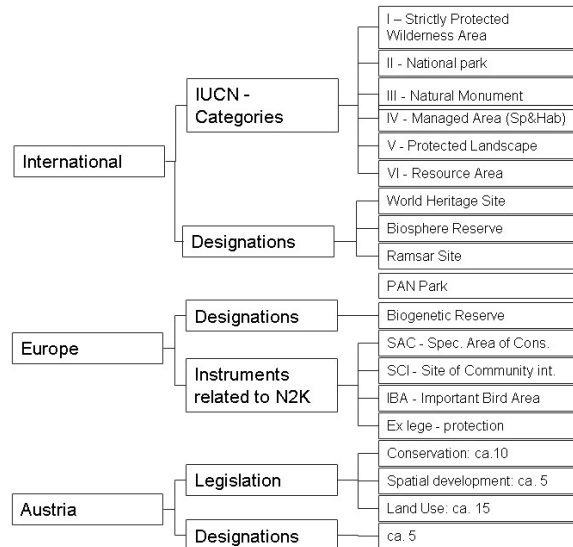
Figure 1: Increase in Protected Areas. At the regional, national and international level, the number of Protected Areas has been steadily increasing over the past few years. Here the development is exemplified by the Natura 2000 sites in Europe and the number of nature parks in Austria.
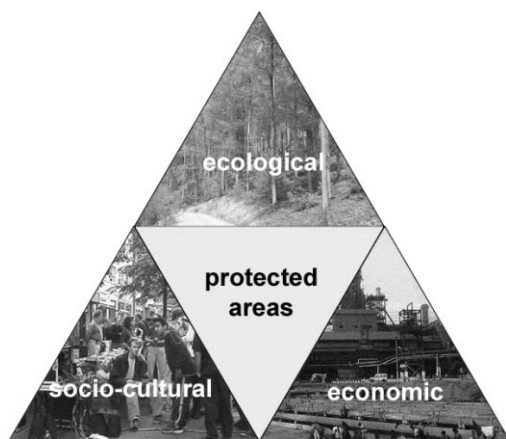
Figure 3: The integration of
all three dimensions.

Since planning and managing Protected Areas involves many different legal, administrative and technical realities, the experts in charge have to face an unmanageable variety of tasks.

- Integration of different interests
- Diversity of categories
- Diversity of technical issues
- Diversity of approaches
- International requirements and regional demands
- Permanent lack of resources

In this complex environment, those persons in charge of the Protected Area are under constant pressure to decide, communicate, market, finance and – last but not least – to create benefits.

This is why the demand for highly skilled and highly motivated people has steadily increased over the past few years. Many of these Protected Area managers and planners see themselves overwhelmed by (ir)relevant information, but complain of a significant lack of knowledge. The IPAM Toolbox is intended to bridge this gap and has been developed in order to provide focused information for the questions "what should be done, and when and how should we do it?"

THE IPAM PROJECT

The Toolbox was developed in a large-scale Interreg III CADSES – project, involving partners from Central and Eastern Europe. The IPAM Toolbox project (Integrative Protected Area Management taking the Alps as an example - Adriatic Region) focuses on the evaluation, harmonisation and development of methods, instruments and infrastructures for planning and managing Protected Areas.

The development of the project took 3 years, from April 2003 to March 2006. A total budget of 2,400,000 was available. Cooperation partners in the project are Carinthia (Office of the Government of Carinthia, Dept. Spatial Planning, A), Styria (Office of the Federal State Government of Styria, Dept. Nature Conservation, A), Friuli Venezia Giula (Regional Directorate of Agricultural, Natural and Forestry Resources of the Autonomous Region FVG, I), Veneto (Regional Park of Colli Euganei, I), Czech Republic (Academy of Sciences, Institute of Landscape Ecology, CZ), Croatia (Medimurje County, Department of Spatial Planning, HR) and Slovenia (Ministry of the Environment and Spatial Planning, SLO). The leading role in the partnership has been undertaken by the Government of Carinthia, Subsection for Nature Conservation.

The pilot actions focused on different aspects of planning and managing Protected Areas. The following activities were implemented:
- Austria, Carinthia: all Protected Areas in Carinthia, specifically Natura 2000 sites
- Austria, Styria: Niedere Tauern, Natura 2000 site (SPA)
- Italy, Friuli Venezia Giulia: Val Alba, Zuc dal Bor (pSCI)
- Italy, Veneto: Colli Euganei, Regional Park
- Croatia, Mura, protected landscape, potential Natura 2000 site
- Czech Republic, Sudeten Mts.: Bohemian Forest/ Sumava (National Park, Biosphere Reserve) and Novohradské hory Mts. (Protected landscape)
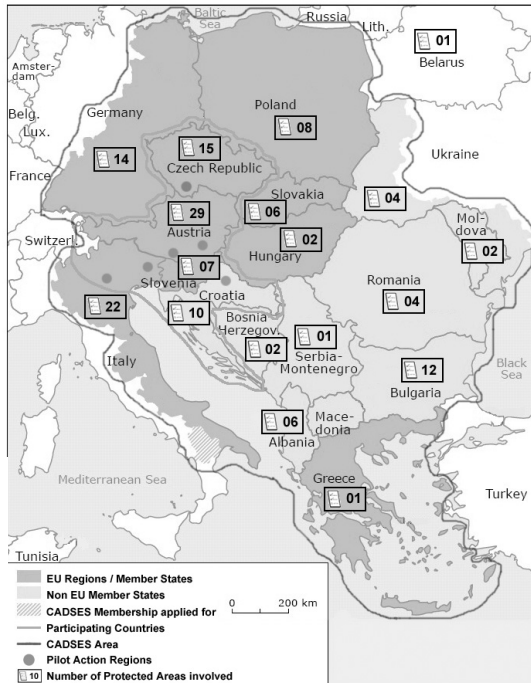
Figure 4: The project area, participating countries, pilot action regions and institutions involved. The project focused on Protected Areas throughout the entire CADSES area. In 6 regions, pilot actions were implemented in order to exemplify best practice in planning and managing Protected Areas. In order to fulfil the user's demands and requirements, some 150 Protected Areas were involved in an inquiry that showed up with exciting results.

Figure 5: The toolbox• -team. The toolbox has been developed in a three-year effort by a small core team (l.t.r.): first row: Michael Jungmeier (conception), Johann "Joe" Wagner (overall responsibility), Iris Velik (project management), Caro Stuchetz (team assistant), and second row: Hanns Kirchmeir (technical implementation), Martin Kühmaier (technical implementation), Daniel Zollner (contents). The team was substantially supported by international partners, experts and consulters.

The expected effects of all these activities are:

- integration of Protected Area management into regional economy and rural development
- improvement of the quality of Protected Area management
- the raising of public awareness of the complex tasks of Protected Area management
- an effort to link Protected Area management with the tasks, instruments and tools of spatial planning and support for the implementation of European standards, policies, procedures and technologies.

The development of the expert system that is presented in this booklet was an essential result of the project "Integrative Protected Area Management" (IPAM). It makes available results and findings of the projects and also of follow-up activities and related activities.

THE IPAM TOOLBOX

"We have We gathered information, but are lacking in knowledge" – this was one of the results of the international inquiry conducted amongst 150 Protected Areas in Central and Eastern Europe. The lack of availability of good know-how and best practice has been pointed out by several different international institutions and therefore the Toolbox is based on explicit demands by:

- IUCN (International Union for the Conservation of Nature and Natural Resources)
- The UNESCO Man and Biosphere Program (United Nations Educational, Scientific and Cultural Organisation)
- CBD (Convention on Biological Diversity).

Technically speaking, such a Toolbox is a knowledge-based expert system, or simply an expert system. It combines expert knowledge (data and rules) with information technologies (database, models, scenario technologies, interactive user interfaces). An expert system will reduce complexity for the user and provide information that matches demand.

- The expertise lies in the system (structure, weightings).

- The user's requirements are identified.
- The available knowledge is precisely preselected (reduced).

The expert system IPAM Toolbox provides a dynamical, interactive consulting process to identify problems, to focus questions and to find solutions. It is addressed to:
- Planners, managers and consultants of Protected Areas
- Mainly issues that are relevant for Central and Eastern Europe
- Individual sites of all relevant international and European categories of Protected Area

Being substantially (co)financed by European funds, the Toolbox is free of charge and provides up-to-date information that is based on an internationally accepted concept. The Toolbox can be accessed on the IPAM-Homepage (www.ipam.info). Furthermore detailed technical documentation is available. The technical solution is composed of a large variety of IT tools (PHP, HTML, SQL, PHP, eZ-publish, Apache Web Server, Linux operating system) and is described in the chapter "Technical solution".

For the convenience of visitors, many features have been implemented. The system is multilingual. The first edition is English, Czech, German and Slovenian. Further languages will be added. A versioning system stores your information. A Glossary provides definitions and translations. However, the system is quite technical. To prevent visitors from getting lost in depths of the system, a virtual assistant guides them through the expert system. The assistant's name is IPAM Joe. He is a helpful, friendly person and is at the visitor's disposal to provide any information.

Figure 6: IPAM Joe the virtual assistant of the IPAM Toolbox. He is at the visitor's disposal for any information. His personality and name are based on a real person who proved to be the spirit of the project IPAM.

Figure 7: The IPAM Toolbox – make use of it! The expert system provides information free of charge. The know-how can be accessed for planning, managing and consulting purposes, but also for research and training.

Figure 8: Protected Areas in Central and Eastern Europe. Managing Protected Areas has become a complex task. The IPAM Toolbox is a platform for the exchange of information, experience and best practice.

CONCEPTIONAL CONCLUSION

As has been pointed out above, the mass, sometimes the confusion of available information can be overwhelming. Therefore, expert systems in general and the IPAM expert system in particular are built up in order to provide precisely focused information only. The IPAM Toolbox consists of three components.

SELF-ASSESSMENT. In a self-assessment procedure, filters are set up in order to primarily eliminate information that is irrelevant for the situation and to (later) rank information by importance. A major "side-effect" of this self-assessment process is a

clear positioning of the Protected Area in different fields of activity. In the life-cycle of a Protected Area, 25 fields of activity have been identified and described. Through running through an ideal life-cycle (preparation, basic planning, detailed planning and ongoing management), all fields of activity are covered and therefore provide a helpful framework for determining the Protected Area's status. In an interactively guided process, the user of the expert system answers a group of key questions to identify the recent situation and the obvious problems.

KNOWLEDGE BASE. In a comprehensive database, various examples of best practice, in-depth information about literature, projects and available data, as well as links and further expertise, are proposed. The information is automatically ranked by requirements derived from the self-assessment, but also can be individually selected. The content of the knowledge base focuses geographically on Central and Eastern Europe, but also presents international standards and approaches. Information on audio-visual media, best practice examples, reports, studies, projects, as well as people and institutions, are available.

RECOMMENDATIONS. On a general level - yet, naturally, closely corresponding to the recent situation of the Protected Area, the expert system provides a set of recommendations. These are automatically generated by the system. The conceptual structure behind these recommendations is the analysis of the difference between those fields of activity that are needed in the particular situation and those fields of activity that have actually been (well) executed so far. The recommendations are provided in standardised reports. They therefore also enable reporting on the progress of the development or management of the Protected Area (time series). The system's information is illustrated using some examples of best practice and, furthermore, leads to the most detailed information provided in the knowledge base.
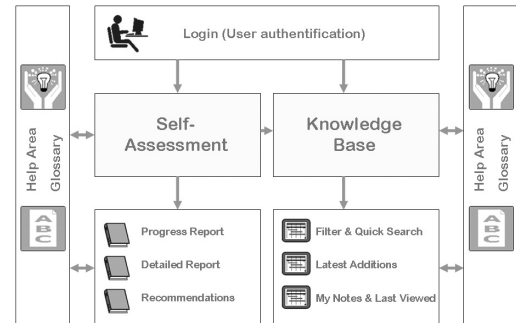

Figure 9: Overview of the Toolbox structure. Do you already know what you are looking for? In that case, you can directly enter the knowledge base and look for the information by setting filters or through the quick search function. The features "Latest Additions" and "My Notes" are intended for your convenience. If you do not know exactly what you are looking for, the interactive consulting process in the Self-Assessment will provide different reports and standardised recommendations. When entering the knowledge base, filters are set automatically in accordance with your requirements. Additionally, a Help area and a Glossary support your search.

Phases		Fields of Activity (FoA)
Pre-Phase		Development of Idea and Vision
		Feasibility Check
		Communication and Participation I
		Incorporation into PA-Systems
Planning Phase	Basic Planning	Planning Handbook
		Communication and Participation II
		Basic Investigation
		Implementation Planning
		Designation and Establishment
	Detailed Planning	Mission Statement and Basic Concepts
		Ecosystem-based Management Plans
		Design of (Regional) Economic Programs
		Specific Planning (Subsidiary Plans)
Implementation Phase		Personnel and Organisational Development
		Evaluating Management Effectiveness
		Financing (Business Plan)
		Impact Assessment and Limitation
		Data and Information Management
		Research Setting and Monitoring
		Communication and Participation III
		Development of Protected Area's Region
		Co-operation Design
		Information, Interpretation and Education
		Visitor Management, Services and Infrastructure
		Marketing and Public Relations

Figure 10: The fields of activity in Protected Area management - an overview. Planners and managers of a typical Protected Area have to run through all the fields of activity. These fields of activity have been developed in close cooperation with international experts and international institutions (IUCN, Europarc, Ramsar Convention, MaB (UNESCO) and are for the first time shown with a comprehensive overview of all obligations included in Protected Area management.
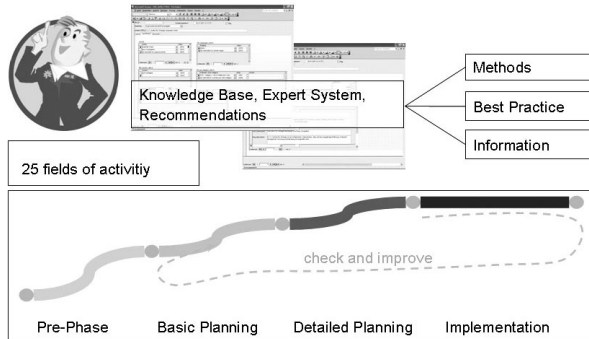
Figure 11: The life cycle of a Protected Area. The Toolbox shows up with 25 fields of activities. They follow the life cycle of the Protected Area, all the way from a pre-phase, through a planning phase, to an implementation phase.

TECHNICAL SOLUTION

The IPAM Toolbox is based on an Apache 2.0 web server, a widely-used HTTP Server for the internet which runs on a Linux operating system. The clients enter the system with a common web browser. The user identification is implemented at the IPAM portal. The self-assessment and knowledge base are developed with a php application, which is embedded in a HTML code. The content is saved by a MYSQL database.
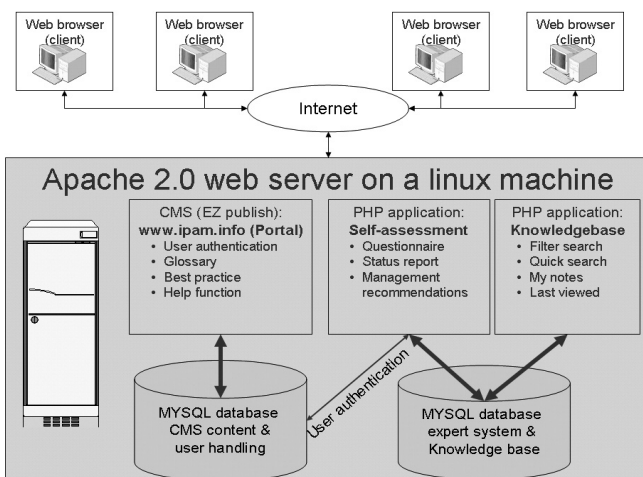

Figure 12: Technical solution of the IPAM Toolbox. For freaks only: the view behind the user´s interface shows the confusing acronyms of the most recent IT tools. The ordinary user should not have to bother with MYSQL and PHP.

MAKE USE OF THE IPAM TOOLBOX

The Toolbox is a newly-developed high-tech instrument for sharing experiences and information on the integrative management of Protected Areas. Although the "house" has (so to speak) been built, it still needs to be filled with life. The more people make use of the Toolbox, the more useful it will become. So feel free to use the Toolbox in your everyday work.

- Share your results / experiences: if you have any information to share, do not hesitate to upload it to the knowledge base. Your information will be reviewed and then published in the knowledge base.
- Look for specific information: search the knowledge base if you are in need of specific information.
- Check for new developments: search the knowledge base for recent information (rank by date of entry).
- Check the success of your Protected Area: evaluate the progress of your Protected Area by going through the self-assessment at regular intervals.
- Base the process of discussion on the self-assessment: the cross- checking questions in the self-assessment can form the base for a continuous process of discussion in your Protected Area.
- Make use of the additional features: order the newsletter, post your announcements and visit the chat room (not available yet).
- Document and report any problems: the Toolbox is – of course – work in progress. If you have any complaints or recommendations, do not hesitate to contact the Toolbox team: expert@ipam.info.
- Become a Toolbox partner: by contracting with the IPAM team (represented by: the Government of Carinthia) you may add non-commercial features, services or additional languages to the Toolbox. For information contact: expert@ipam.info.

FUTURE PROSPECTS

"Experience grows through being shared". The IPAM Toolbox aims to be a central platform for infor-

mation on the integrative planning and management of Protected Areas. The system is to be kept free of charge. Therefore, mainly open source technologies are used. Also the handling of data and information follows open source philosophies: the uploading and downloading of data is done on a strictly non-commercial basis. The Toolbox is to be sustained and enhanced by a network of partners. These may be institutions dedicated to planning, researching, educating or managing Protected Areas.

One of the first partners to join the network was the University of Klagenfurt. An MSc course in the "Management of Protected Areas" (www.mpa.uni-klu.ac.at) uses the Toolbox as the main support instrument for a two-year postgraduate course of studies. Participants from some ten countries will learn how to make use of the Toolbox and will enter further information into the system. The Toolbox will improve through use.

Furthermore the IPAM Toolbox is to be linked to the worldwide expert system PALNet. The Protected Areas Learning Network (PALNet) is an interactive, web-based knowledge management tool for Protected Area managers and stakeholders, developed and run by IUCN. The intention is to enable Protected Area managers, policy makers and stakeholders to adapt their policies, strategies, and practices to anticipate the threats to Protected Areas and, at the same time, to take advantage of new opportunities. The IPAM Toolbox aims to become the European component of this system.

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Walkey, M., & Swingland, I. 1999: Integrated Protected Area Management. Kluwer Academic Publishers, Boston.

Project title: IPAM Toolbox: Integrated Protected Area Management

Organisation(s) name: Lead Partner: Office of the Government of Carinthia, Dept. Spatial Planning

Contact persons: Lead Partner: Johann Wagner, johann.wagner@ktn.gv.at

Project Management: Iris Velik, velik@e-c-o.at

Technical aspects of the toolbox: Michael Jungmeier, jungmeier@e-c.o.at

Budget: 2.400.000,- Euro

Financing: co-financed by the European Union within the Interreg III B Cadses Programme

(Financing) partners:

- Office of the Government of Carinthia, Dept. Spatial Planning (A)
- Office of the Federal State Government of Styria, Dept. Nature Conservation (A)
- Regional Directorate of agricultural, natural and forestal Resources of Autonomous Region Friuli Venezia-Giulia (I)
- Regional Park of Colli Euganei, Veneto (I)
- Academy of Sciences, Institute of Landscape Ecology (CZ)
- Medimurje County, Department of Spatial Planning (HR)
- Ministry of the Environment and Spatial Planning (SLO)

Project duration: 2003/04 - 2006/03

Web-site: www.ipam.info

8.1 WORKSHOP SESSION RESULTS

PARTICIPANTS:

1. Zoran Acimov (Retezat National Park, RO)
2. Stefano Fabian (Regional Directorate of agricultural, natural and forestal Resources of Autonomous Region FVG, I)
3. Michael Jungmeier (E.C.O. Institute for Ecology, A)
4. Toomas Kokovkin (West-Estonian Archipelago Biosphere Reserve, EST)
5. Marijana Lakic (Tara Biosphere Reserve, YU)
6. Daniele Manfroi (University of Padova, I)
7. Juraj Svajda (Tatra National Park, SK)
8. Reinhold Turk (Office of the Styrian Government, Dept. 13C – Nature Conservation, A)
9. Iris Velik (E.C.O. Institute for Ecology, A)
10. Johann Wagner (Office of the Government of Carinthia, Dept. 20, Subsection Nature Conservation, A)
11. Laura Zvingule (Biosphere Reserve North Vidzeme, LV)

CASE STUDIES PRESENTED:

- EMAS Registration Project of the Euganean Thermal Basin – Daniele Manfroi (I)
- Remote sensing based habitat assessment for alpine protected areas – Reinhold Turk (A)
- Establishing and Managing a New Ramsar Site in Carinthia – Johann Wagner (A)
- Communication processes accompanying the enlargement and management of a Natura 2000 site in "Val Alba", Region Friuli Venezia Giulia – Stefano Fabian (I)

PRINCIPLE DISCUSSION POINTS:

- Integrated protected area management
- Tools and instruments for the management of protected areas
- Expert System

MAIN IDEAS AND CONCLUSIONS:

- Recommendations for the Expert System: more open, benchmarking, a self-assessment per protected area, bigger knowledge base, better performance, step-by-step guide, automatic

process to proceed, upload function, offline working possibility, discussion forum
- The Expert System is a good tool especially for initiatives and for the planning phase. It is a data-base for integrated protected area management as well and for the self-assessment for stakeholders.
- Further examples for integrated protected area management: coastal area of the Baltic Sea – http://www.arhipelaag.ee/vainameri/ (Estonia), communication with schools, scouts and nature trails (SCG), establishment of large protected areas (RO), REEPAN from WWF and participatory project (SK)

BACKGROUND:

The protection of areas and sites is one of the most important instruments of modern anticipatory strategies in nature conservation and planning for sustainable rural development. The enormous increase of number and acreage as well as the number of types or categories of sites has been pointed out repeatedly.

Since planning and managing Protected Areas (PAs) hit many different legal administrative and technical realities, the experts in charge have to face an unmanageable variety of tasks:

- Integration of different interests
- Diversity of categories
- Diversity of technical issues
- Diversity of approaches
- International requirement and regional demands
- Permanent lack of resources
- Permanent need of deciding, communicating, marketing, financing and creating benefits

That´s why the demand for highly skilled and highly motivated personalities has steadily increased within the last years. Many of these PAs´ managers and planners see themselves drowning in (ir)relevant information, but moan about a significant lack of knowledge. The IPAM-Toolbox intends to bridge this gap and has been developed in order to provide focused information for the question "what to do, when and how?"

The Toolbox was developed in a large-scale Interreg

III B CADSES project, involving partners from Austria, Croatia, the Czech Republic, Italy and Slovenia. The toolbox is based on explicit demands by IUCN (International Union for Conservation of Nature and Natural Resources), Man and Biosphere Program of UNESCO (United Nations Educational, Scientific and Cultural Organisation) and the CBD (Convention on Biological Diversity). The development was prepared by an international inquiry among some 150 PAs in Middle and Eastern Europe and on expert interviews (Europarc, IUCN, Ramsar, MaB, WWF and many practitioners from different PAs).

Being substantially co-financed by European funds the toolbox is free of charge and provides up-to-date information that is based on an internationally accepted concept. It is applicable for all relevant international categories of PAs. The toolbox can be accessed on the IPAM-Homepage (www.ipam.info).

SUMMARY:

Experience grows by sharing it. The newly developed expert system supports planners, managers and consultants of Protected Areas (PAs) by a system of self-assessment, focused recommendations and a comprehensive knowledge base. The interactive "toolbox" provides substantial information on integrative management of PAs by means of new information technologies. Developed in cooperation with international partners and organisations this expert system aims to be an important backbone for the future development of PAs in Middle and Eastern Europe.