

Integrated Sustainable Wildlife Management in the Biosphere Reserve Wienerwald – the step from sector-specific to cross-sectoral sustainability

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Summary

The project has developed tools and concepts for integrated, i.e. cross-sectorally harmonised assessment, management and monitoring of sustainable conservation and use of wild animals and wildlife habitats. Participatory research methods (expert interviews, land user surveys, stakeholder participation panel) have been applied to identify, analyse and evaluate key interfaces (antagonistic and synergistic interactions) between wildlife, hunting and other regional land uses. Main results include operational frameworks of principles, criteria and indicators (PCI-sets) for integrated sustainable wildlife management with practice-related user guidelines that are harmonised across land use sectors. The PCI-sets were designed as self-evaluation tools, and shall be applied by major regional land user groups (forestry, agriculture, hunting, recreation management) to evaluate their own respective influences on the conservation of wild animal species, habitats and sustainable hunting. The assessment set of each group also considers relevant sustainability requirements of other user groups. This new step from merely sector-specific towards sector-crossed (integrated) assessment of sustainable use has been taken for the first time, by focussing on the cross-cutting issue "wildlife management". In addition, recommendations for conflict management and for respective monitoring have been elaborated. Project results shall contribute to the avoidance, mitigation and resolution of wildlife - land use conflicts in the Biosphere Reserve and to the integration of wild animals and their habitat requirements into sustainable regional land use.

Keywords

Biosphere Reserve, integrated sustainability assessment, participatory research, sustainable hunting, sustainable use, wildlife management.

Project aims

The main objective of the project (ISWI-MAB, duration 2005-2008; Man and the Biosphere Programme, Austrian Academy of Sciences) was to develop tools, concepts and guidelines for the assessment, management and monitoring of sustainable wildlife management which are harmonised across the most wildlife-relevant regional land use activities. Derived sub-goals included:

- regional adjustment of existing principles, criteria and indicators of sustainable hunting (FORSTNER et al., 2001; 2006);

- identification and analysis of conflicts and potential synergies in the relationship between regional land user groups, wild animals, habitats, and sustainable hunting;

- development of principles, criteria and indicators of cross-sectorally integrated sustainable wildlife management for self-evaluation by land user groups that have strong impact on wild animals, habitats and sustainable hunting;

- elaboration of recommendations and guidelines for management and monitoring (Biosphere Reserve-wide and for core zones).

Study area

The Wienerwald Biosphere Reserve (WBR) was chosen as a model area because it is, on the one hand, a large-scale habitat for species-rich, native wildlife communities with high nature potential and conservation value and, on the other hand, a typical multiple-use cultural landscape in the immediate proximity of the urban agglomeration Vienna with a broad spectrum of use interests, high recreational use intensities, strong demand for hunting activities and related pressures on wildlife. This specific situation accounts for a variety of wildlife - land use conflicts that threaten sustainable development and accomplishment of the WBR conservation and management objectives.

Research questions

Wild animals (species, populations, individuals, habitats, genetic diversity) are exposed to multiple impacts caused by hunting and many other often overlapping and competing land use activities within the wildlife habitat. In particular in multiple-use landscapes such as the WBR, the resulting interactions between the habitat requirements of wild animals, hunting interests and other land use demands often lead to conflicts that can negatively affect sustainable conservation of native wild animal species and their habitats, the sustainability of involved forms of land use, and sustainable regional development at large. Stand-alone sectoral approaches to sustainable use are insufficient and often result in unintended adverse effects on both other land use sectors and the respective ecosystem. In contrast, sustainable wildlife management requires that all land user groups in the wildlife habitat are aware of and consider the effects of their activities on both wildlife resources and other user groups.

Over the last decades, concepts of sustainable use, including assessment approaches, have been developed for various land use sectors. A respective gap that existed in hunting and wildlife management for a long time has recently been filled by the development of criteria and indicators of sustainable hunting in Austria (FORSTNER et al., 2001, 2003, 2006; Umweltbundesamt, 2005). However, there still is an unsatisfied need for truly integrated approaches to cross-sectoral assessment of sustainability that consider the interactions, interdependencies and antagonistic effects that may arise between land use sectors and on the given ecosystem, often without the respective actors being aware of that risk. For example, the scope of action of hunting to be practiced in a sustainable way is often restricted by various impacts of other land user groups on wildlife resources and hunting management, and vice versa. However, sustainable use of wildlife is only achievable if all land user groups within the wildlife habitat are aware of the consequences of their actions on wildlife resources as well as on other user groups, and if sustainability requirements of other groups are considered in each group's practice of land use. With this in mind, the ISWI-MAB project has developed intersectorally harmonised approaches to sustainable use by the model of the common theme "wildlife and hunting" - a cross-cutting issue touched upon by many land use activities - and has operationalised them on a regional scale.

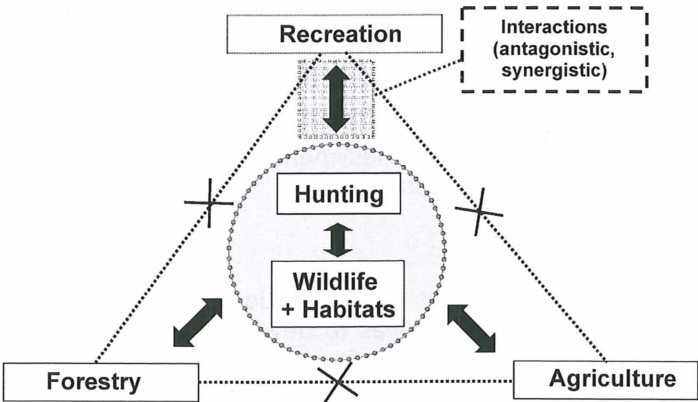


Figure 1: System definition for the development of indicators of integrated sustainable wildlife management (arrows: considered interactions; crosses: not directly considered interactions).

Methods

Embedded in a transdisciplinary process, a range of participatory research methods was applied to identify, discuss and evaluate wildlife-land use interactions, related conflict potentials, problem perceptions of stakeholder groups and preferences for management options. Covering the participation levels "information", "consultation" and "collaborative research", methods comprised qualitative expert interviews, broad land user and visitor surveys (on-site interviews, mail surveys)

with descriptive evaluation and explorative statistical analysis, a series of work sessions of an interdisciplinary stakeholder panel, and practical test applications by key stakeholders. The knowledge gained from involvement of stakeholders and the public was used to identify key fields of interaction between wildlife, hunting and other land use demands. These are defined as interactions involving three main system components: i) wildlife resources (native wild animals, species, populations, habitats), ii) hunting, and iii) other land use activities that impact upon wildlife resources and the sustainability of hunting (and are often influenced by them in return). At the centre of interest were those interactions that are relevant to sustainable development and that restrict or promote the clearance for sustainable use by other land user groups. That conceptualisation of "wildlife-land use interactions" is illustrated by figures 1 and 2.

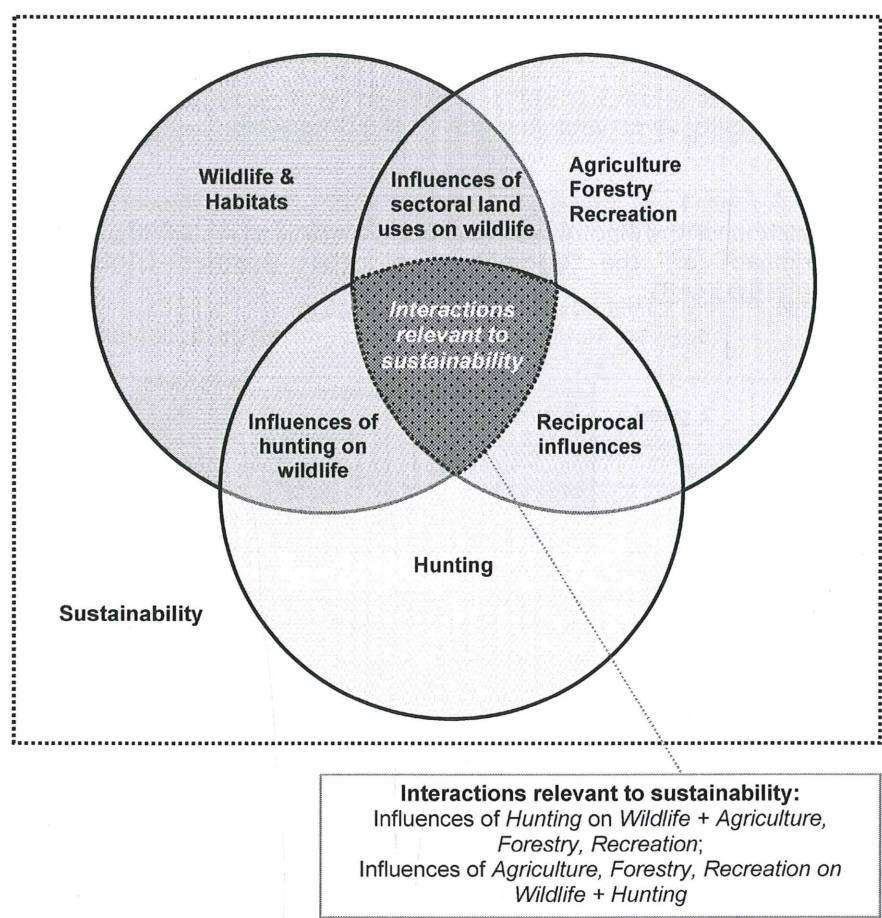


Figure 2: Scheme of ecological, economic and socio-cultural spheres of influence and interactions relevant to sustainability.

Results

Based on the interfaces identified, inter-sectoral assessment sets consisting of principles, criteria and indicators with performance scales and application guidelines have been developed for the four land user groups forestry, agriculture, recreation management, and hunting. To improve applicability and user-friendliness, each assessment set is also edited in a short version with selected priority indicators. Table 1 gives an overview of the number of principles, criteria and indicators per set. The range of application is indicated in table 2. Figures 3 and 4 illustrate the proposed evaluation scheme.

Table 1: Structure of the assessment sets with number of principles, criteria, and indicators with performance scales (point system); in brackets: number of indicators per short version.

Land use sector addressed (domain of action)	Principles (number)	Criteria (number)	Sub-criteria with indication and evaluation schemes (number)
Hunting	14	25	56 (30)
Forest Management	11	18	42 (21)
Agriculture	11	17	28 (15)
Recreation Management	9	17	36 (16)

Table 2: Fields of application of the assessment sets

Self-evaluation of the sustainability of land use activities of one's own group in relation to wild animals, habitats, hunting, and other land use demands
Analysis of individual strengths and weaknesses in terms of sustainability
Support in considering the impacts of one's own activities on wild animals, habitats and sustainable hunting
Decision-support and guidance in framing measures to optimise sustainability
Measuring effectiveness of measures and monitoring progress in implementation of sustainability
Stimulation for questioning of one's own practice of land use (awareness-raising, learning effect)
- Monitoring of sustainability levels and changes on the time scale

The full-length publication of the final project report (REIMOSER et al. 2008), including annexes, is available for download at the homepage of the Austrian Academy of Sciences (<http://hw.oeaw.ac.at/ISWIMAB>).

Ecology	1 very good	2 good	3 average	4 bad	5 very bad	max. point score	min. point score
	sustainable			not sustainable			
			47 % (28 points)			60	-63
Economy	1 very good	2 good	3 average	4 bad	5 very bad	max. point score	min. point score
	sustainable			not sustainable			
				23 % (6 points)		26	-14
Socio-cultural aspects	1 very good	2 good	3 average	4 bad	5 very bad	max. point score	min. point score
	Sustainable			not sustainable			
		62 % (18 points)				29	-37

Figure 3: Evaluation scheme, type 1 - Aggregation of assessment results within each major group of sustainability aspects (fictitious evaluation example for sector hunting). Additive aggregation of scored points, calculation in percentage of maximum number of points per group, allocation to one of 5 evaluation classes, verbal rating of intervals, sustainability performance scale with continuous transition between sustainable and unsustainable (grey). Maximum and minimum numbers of points are variable to allow for consideration of omitting of optional indicators.

Discussion and outlook

The assessment frameworks are mainly intended as decision-supporting and awareness-raising self-governance tools for land users and landholders. While any non-mandatory self-evaluation tool has natural limitations related to subjectivity, lack of bindingness, and trade-offs between scientific accuracy and practicability, nevertheless such "soft" approaches also have a number of specific strengths, e.g. higher acceptance, inclusion of qualitative, "observable" instead of merely measurable attributes, and high potential for learning effects (LEXER et al. 2005). The assessment sets are conceived as dynamic expert systems that are open to future improvements and adaptations to other regions and scales. In the WBR, key stakeholders seem to be willing to integrate the results into existing management rules.

Acknowledgements

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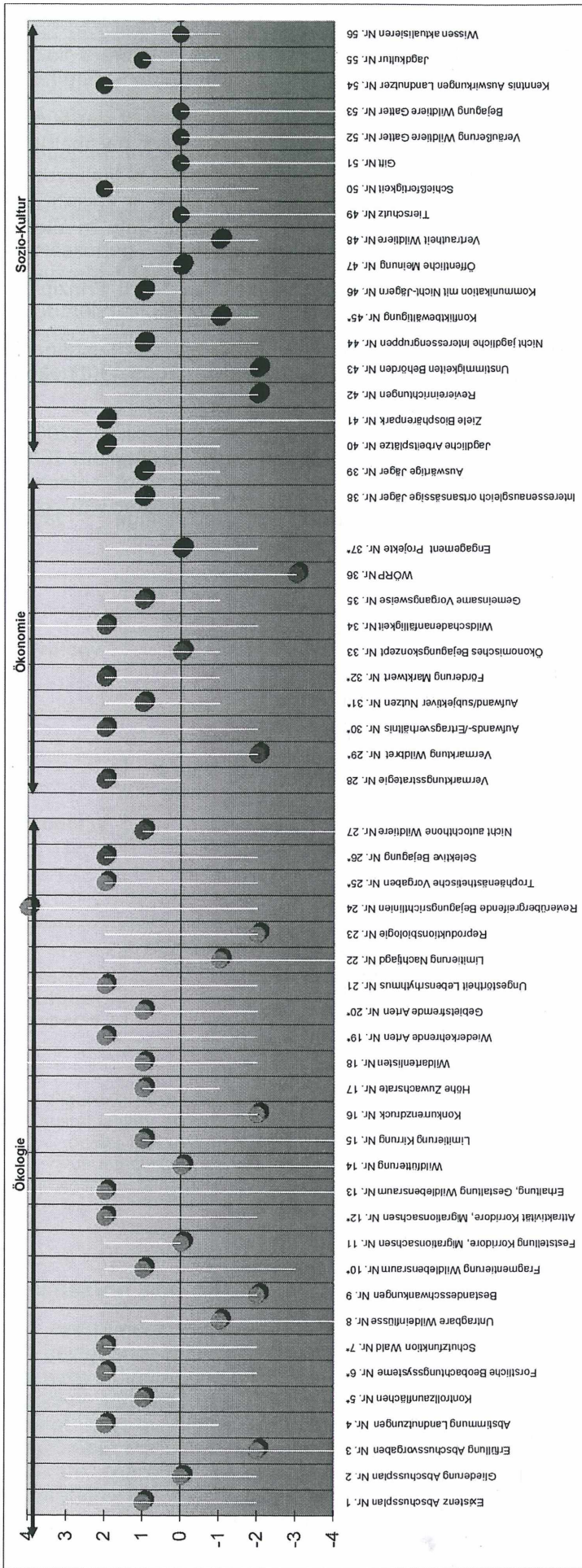


Figure 4: Evaluation scheme, type 2 - Assessment profile of one assessment unit (profiles of all individual indicators; fictitious evaluation example for sector hunting).