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Authors: Heeb, Johannes, and Hindenlang, Karin

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Negotiating Landscape in the Swiss Alps

Experience with Implementation of a Systemic Landscape Development Approach

Johannes Heeb
Karin Hindenlang

Through its biodiversity, landscape, and culture, the Swiss Alpine region has great social and economic significance. The Alpine landscape and its natural resources yield a whole range of benefits that are utilized by a large number of stakeholders who have widely differing interests in use and protection of these resources. Management of landscape development processes is a trans-sectoral task, requiring that different stakeholders work together. Conflicts need to be resolved and sustainable solutions need to be found and implemented. The present article describes how Systemic Landscape Development, a methodological approach for participatory control and organization of these processes, was applied to deal with the complex challenge of a deteriorating protection forest above a motorway of international importance in Central Switzerland. The resulting Stotzigwald Platform project took place as part of the Swiss National Research Program NRP 48, Landscapes and Habitats of the Alps.

Challenges in Alpine landscape management

The Stotzigwald ("Very Steep Forest") near Gurtnellen (Canton of Uri, Central Switzerland) protects the trans-European Gotthard motorway A2, the cantonal main road, and the Swiss federal railway line from rockfall, erosion and avalanches (Figure 1). Lack of regrowth—particularly of silver fir—is progressively weakening this protective function, to the extent that the forest now requires shoring up with built structures (Figure 2). Young trees are subjected to high grazing pressure from chamois that winter in the Stotzigwald.

Damage or impact from game animals was already noticeable in the Stotzigwald in the past. This forest was previously part of the Federal Hunting Exclusion Zone Fellital. The chamois living at the foot of the Bristenstock (3074 m), and those from the nearby Fellital area, found a relatively safe winter habitat within the Stotzigwald. In addition, for the past 30 years a large herd of sheep was regularly driven up onto the open pastures on the western flank at the foot of the Bristenstock. It is thought that this competitive situation pushed the chamois deeper into the lower lying forest areas. The problem worsened when the A2 motorway was built in the late 1960s, reducing the size of the forest area and making movement of game animals to the other side of the valley more difficult.

Past measures to improve the protective function of the buffer forest, such as the Silviculture Project Stotzigwald or the culling of chamois and deer, have so far not produced satisfactory results. It has been recognized that sectoral interventions cannot solve the forest vs game animal problem; uncertainty and disagreement continue to prevail about how to continue dealing with this problem. Faced with this challenge, representatives of a large number of regional and trans-regional interest groups started to meet. Amongst the most important in the Stotzigwald "action system" were landown-

FIGURE 1 Rockfall threatens trans-Alpine transportation infrastructure. (Photo by J. Heeb)

FIGURE 2 The protective function of the Stotzigwald ("very steep forest") is no longer assured: critical geological conditions and a lack of regrowth are destabilizing the forest system. (Photo by J. Heeb)

ers, farmers and forestry people, hunters and gamekeepers, conservationists, tourism operators, government offices at the local and cantonal levels, and researchers.

The manifold challenges encountered by the stakeholders in elaborating sustainable solutions for forest and game management in the Stotzigwald are typical of the difficulties of managing multifunctional landscapes in a sustainable way. They call for suitable tools for change management, as described in the next section. The problem-solving process of the Stotzigwald case study will be portrayed subsequently.

The Systemic Landscape Development approach

Landscape development processes in the Alps take place within a complex sphere consisting of activities, political conditions, and personal preferences. The spectrum of challenges is reflected in the multitude of factors that can become obstacles to development processes:

- Sectoral thinking, which creates barriers to understanding due to differing ideas and value judgments about cause-and-effect relationships (mental models);

- Differing utilization priorities;
- Fear of disadvantage and negative impact on own interests;
- Uncertainty about future consequences and changes;
- Incompatible land use interests;
- Lack of a platform that facilitates cooperation and working together;
- Lack of process monitoring;
- And not to be underestimated: aversion to change itself.

Therefore, early participation by all involved interest groups is necessary to avoid conflicts and find ways of enabling cooperative management and use of landscape resources in the Alps. To find solutions applicable to sustainable development and likely to be supported by the relevant interest groups, *social learning processes* are required through which the involved parties are empowered to participate in three steps: 1) *systems reflection* in terms of holistic perception of problem situations and development opportunities; 2) *self-organization* (which requires that stakeholders set up institutional structures, establish rules and rights, define work, learning, and feedback procedures, etc) and conflict settlement, so that the stakeholders (individuals and organizations) in an action system can agree on common rules, goals, and strategies; 3) *innovation,* providing new and advantageous options for action compared to current practice.

Based on earlier consultancy work in such a complex setup, a Systemic Landscape Development approach and corresponding tools were elaborated. The approach was applied in the Stotzigwald context. Experience showed that stakeholders' particular interests regarding use and management of landscape resources were not as incompatible as might have appeared from the individual's perspective. The approach provides a framework within which interest groups can enter a development process to form a common holistic understanding of the "action system" (eg the action system "mountain forest management") and its cause-and-effect relationships—and as a result gain the competence needed for jointly using and managing resources such as the landscape and its products in a sustainable way.

Tools: stakeholder platforms and innovation cooperations

Tools that structure and steer social learning processes are necessary to ensure the success of development processes. Participatory work processes require suitable *organizational structures* that create the necessary general setting and conditions. This role can be fulfilled both by *stakeholder platforms*—the 'free zone' for development of common project ideas—and *innovation cooperations*—the 'operational' level dealing with implementation of measures. Apart from these 2 major tools, the social learning processes were also supported by "model moderation" and the use of "mental models," "participatory project progress control," and "organizational learning" (Figure 3).

Voluntarism amongst the involved stakeholders is of central importance in enabling a social learning process, because this facilitates open communication, allowing participants to freely and objectively discuss their interests without entering into any concrete commitments in the process. An organization in the form of a stakeholder platform, in which participants form a structured and organized social network, lends itself to this purpose. Stakeholder platforms provide participants

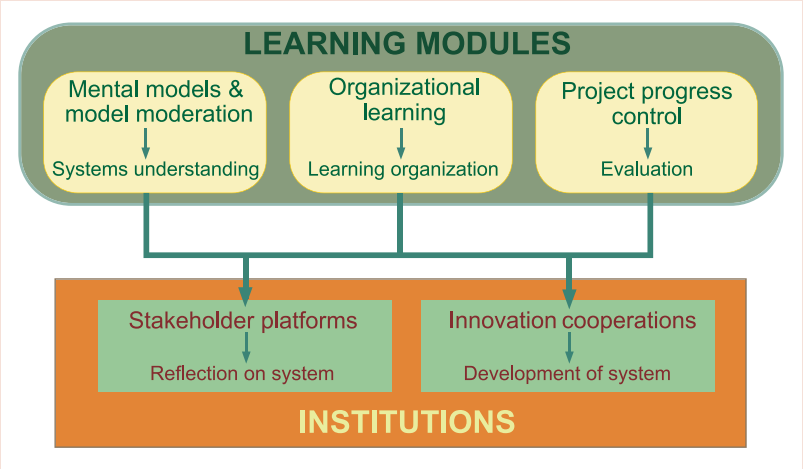

FIGURE 3 Framework of the Systemic Landscape Development approach.

with the necessary basis and structure (as well as security) for their work and activities. Their volunteer status makes it possible for the participating individuals and organizations to: 1) communicate openly, which fosters transparency and trust, 2) work out a common concept about the connections, links, and processes within the action system, 3) develop common project ideas, and 4) jointly reflect on and assess development processes.

The stakeholder platforms thus provide the various stakeholders with new starting points and the opportunity to dispel long-established fears and reservations. An innovative work atmosphere is created, through which entrenched viewpoints can be overcome, creating space for new findings and ideas.

The more clearly and tangibly a group has defined its objectives, the greater their desire becomes "to actually do something." However, the organizational structure of a stakeholder platform is unsuitable for the implementation of actual tangible projects, due to the fact that binding commitments are consciously avoided at this level. This task is taken over by *innovation cooperations,* which encompass professional business and project management structures, secure project work legally and financially (for example by founding a company), and guarantee quality assurance at the product and services level.

FIGURE 4 Stakeholders participating in the Stotzigwald Uri Platform discuss their joint development plan. (Photo by J. Heeb)

Methods for creating common ground: model moderation and mental models

Model moderation is a methodology that enables participating stakeholders to communicate their mental models (their thoughts about the project, the project's context, its goals, etc) using a common language, as well as to develop a shared systems understanding that unites the various individual perspectives in a collective view. This objective analysis of existing mental models allows stakeholders to present their perspectives without having to find a consensus or enter into commitments; this generates an atmosphere that minimizes conflict and avoids the emotional components that usually accompany or even dominate proceedings. In addition, systems-oriented work also promotes thinking and working in scenarios and simplifies the identification, as well as the handling, of key variables (control variables) and mechanisms of the action system.

Mental models can be visualized and made accessible for the work process using the following steps.

Step 1: The stakeholders work out and visualize their own mental models in groups by determining key concepts, creating a diagram of relationships, and telling a story.

Step 2: The participants discuss the mental models, answering 3 questions: "Where can we act?," "What influences what?," and "What controls us?" Important similarities and differences are identified. This step forms the basis for the development of a shared functional understanding of the action system.

Step 3: Combining the mental models: a facilitating team or the moderator(s) bring together all the mental models into an overall system, a so-called "development map." This has basically the same structure as the mental models and is

divided into factors relating to context, control, the system, and goal monitoring. It can serve as a basis for the development and assessment of measures intended to change the action system for the purpose of sustainable development.

The promising Stotzigwald Platform

The Systemic Landscape Development approach was successfully applied to solve the complex Stotzigwald problem. In 2002, within the framework of the project "Forest and Game Animal Management in the Canton of Uri" run by the Swiss Federal Institute for Forest, Snow and Landscape Research as part of its National Research Program 48 (Landscapes and Habitats of the Alps), a regional stakeholder platform was established to find sustainable solutions for forest and game animal management in the protective Stotzigwald forest near Gurtnellen, whose protective function was jeopardized by a lack of regrowth caused by game animals browsing on and damaging young trees.

The Stotzigwald Uri Platform was formed after a preparatory phase in which a central group formulated broad objectives and goals for the platform and contacted the platform partners. All interest groups within the Stotzigwald action system were represented in the platform. It was based through its membership at both the regional and the cantonal levels.

The platform did not adopt a legal form. It was a structured and organized network, in which the participating individuals and organizations could cooperatively work out ideas about the future development of the Stotzigwald, maintain and promote open and effective communication within the region, develop tangible project ideas, and jointly reflect on development processes. After it was launched, the platform progressed from an extremely diverse group characterized by differing interests, to a team with mutual goals and ideas for action (Figure 4). Altogether, 12 platform meetings were carried out and facilitated by an external moderator.

The main aims of the platform were:

- Cooperative investigation and solution of an existing land use conflict;
- Sustainable improvement of the habitat value and protective function of the Stotzigwald;
- Development of suitable procedures and mechanisms for customized management of the forest and game animal situation, taking into account current research results; and
- Promotion of communication between researchers and stakeholders in the forest/game animal conflict situation.

To be able to develop a common conceptual model, participants in the Stotzigwald Uri Platform used model moderation to gain a mutual understanding of the reasons for and the cause-and-effect relationships in the buffer forest problem situation. On the basis of a development map that brought together the mental models of the different stakeholders, participants established development goals, as well as benchmarks for later evaluation of development measures.

Measures for the future development of the Stotzigwald in its natural, economic, and protective functions were worked out in theme-based work groups (public relations, silviculture, hunting and habitat enclosure, agriculture). The measures were assessed and prioritized by the platform and evaluated during a site visit as to their relevance and feasibility. In this manner, the Stotzigwald Uri Platform succeeded in overcoming a sectoral mode of thinking and working, in undertaking cost–benefit analysis of the measures in the trans-sectoral context of the Stotzigwald, and in adopting a development concept that was acceptable to and supported by all participants. The platform's development measures encompass four areas.

The Systemic Landscape Development approach was successful in reconciling the interests of all the various stakeholders and in combining development measures in an overall concept while retaining their original intention. Without such a participatory process, individual interest groups would have contested these measures. Implementation of the measures was started in 2005.

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AUTHORS

Johannes Heeb
Seecon GmbH, Bahnhofstrasse 2, 6110 Wolhusen, Switzerland.
johannes.heeb@seecon.ch

Johannes Heeb is the founder of and a partner in Seecon International GmbH (www.seecon.ch). He has coordinated and overseen numerous landscape development processes and developed a toolbox for systemic landscape development. He is a lecturer in resource and change management at the Lucerne University of Applied Sciences and Arts and the University of Basle.

Karin Hindenlang
Grün Stadt Zürich, Beatenplatz 2, 8001 Zurich, Switzerland.
karin.hindenlang@zuerich.ch

Karin Hindenlang initiated the Stotzigwald project at the Swiss Federal Institute for Forest, Snow and Landscape Research. She is currently managing a business division of Grün Stadt Zürich that deals with urban ecology, nature restoration, and environmental education; she is also a member of the executive board of Grün Stadt Zürich.