2 Innovations as Driving Forces of Protected Areas

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2.1 Introduction

It is by now an established knowledge that protected areas may serve as an important tool as well as a precondition for sustainable development. Especially regarding the embeddedness of protected areas in regional and local contexts, nature conservation contributes in at least three directions to sustainability. First, protected areas, of course, contribute to the conservation of biodiversity. Second, they also adress social issues by including stakeholders in decision-making processes (participation), and by a fair sharing of benefits of conservation. Third, they contribute to economic efficiency in terms of costs and benefits of the use of natural resources, and often to regional development as many protected areas are located in peripheral regions with a high density of biodiversity.

It has been put forward that the management of protected areas (PAs) is emerging as a new emerging scientific discipline (Getzner and Jungmeier, 2009). One of the forming principles of the new discipline is the innovative character of protected areas. The dynamic aspect in the management of protected areas is of crucial importance, not only in terms of ecological dynamics. The social, political and economic contexts in which protected areas are embedded, are rapidly changing. Vice versa, protected areas are also ventures to change their environments regarding, for instance, public awareness, regional development, and sustainability science

Protected areas contribute in manifold aspects to innovations, both ecological, technical, social, and economic. From the viewpoint of ecological innovations, protected areas have provided substantial incentives for new approaches. For instance, new ecological methods such as zoning as well as the spatial dimension of ecological management were stressed by del Carmen Sabatini et al., (2007). Innovations can also be detected in protected forest ecosystems by supporting a variety of new approaches in commercial forestry (Kubeczko et al., 2006).

From an economic viewpoint, protected areas have contributed to new forms of tourism and recreation models, for instance, regarding tourism enterprises and nature-based tourism, and to new tourism management models (Nybakk and Hansen, 2008). Bionic research – adapting ecological models and dynamics – has lead to innovative product and process designs (Wen et al., 2008).

Regarding social innovations, protected areas have proved to be large-scale social "experiments" both in terms of inclusion of stakeholders, participation, empowerment of marginal groups, as well as governance structures and models leading to efficient, effective, and fair management approaches and tools. Governance issues in the context of protected areas are certainly one of the most important contributions of protected areas to the social sciences (cf. Lockwood, 2010). Protected areas have also contributed to social innovations in the sense of new institutional frameworks and legal (national and international) approaches (Schliep and Stoll-Kleemann, 2010).

From the technical and pedagogical viewpoint, protected areas are laboratories for new forms of visitor management, such as smart technologies for guiding and informing visitors, for data collection on visitor movements benefiting ecological planning (cf. Orellana et al., 2011), or enabling visitors to see landscapes and ecosystems from so far unknown perspectives (Schmid, 2001; Macfarlane et al., 2005).

2.2 Spreading innovations: a case study

In 1991 Josef Lange, a sociologist, assessed the *acceptance* of the newly established Hohe Tauern National Park (Austria). Besides a considerably positive acceptance he found something surprising. Based on in-depth interviews with a sample of different stakeholders, he considered the national park to be a "programme of modernisation" (Langer, 1991, 8) for less favoured and disadvantaged regions. He stated that in view of globalisation the traditional processes and institutions were overburdened, and that a national park was a possibility to "consolidate the collapsing rural society" (Langer, 1991, 97). In those days his indication met no response, since national parks deemed to be the opposite: areas of a *bell jar*.

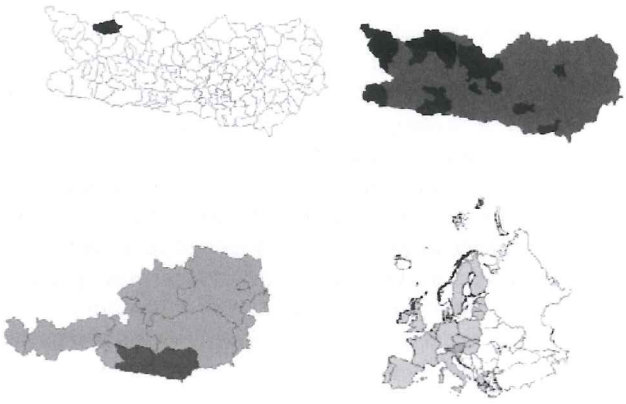
However, some 20 years later, the national park seems to have initiated, triggered and implemented quite substantial innovations in the park's region. Most visibly, new infrastructures for visitors and environmental education are established (www.hohetauern.at). They combine spirited architecture, attractive designs and new way of presenting the region and its nature. Interpretive trails are awarded to be of outstanding quality (Kreimer et al., 2011). Ecotourism packages

have been developed, merging the components of adventure, nature and culture with existing tourism offers and attractions (Mussnig, 2011). It is easy to argue that these ecotourism offers would not exist without the park. Getzner (2010) could prove that the tourism development in the region is considerably advanced compared to other regions of Carinthia following a more traditional track. In addition to that, it shall be illustrated by example of one of the park's programme that innovations triggered by the park go much further, respectively, *deeper* than this.

Exactly in the year of Langer's investigation the Hohe Tauern National Park started a programme for maintaining its cultural landscapes. The landscapes of the park's region, as cultivated and shaped by human uses for centuries, were subject to rapid changes. Mechanisation had substituted human labor, the characteristics of *handmade landscapes* (Jungmeier et al., 1991) had started to disappear. The concerns of nature conservation were mainly the loss of characteristic species and habitats linked to the practices of traditional land-uses, such as wet, dry or nutrient-poor meadows and pastures, hedge-rows, *Bergmähder* (high-altitude grasslands), *Schneitelbäume* (ash trees used for production of leaves for fodder), *Lärchweiden* (bright larch-forests used as pastures) or *Klaubsteinmauern* (dry stone walls), to give just a few examples. The cultural landscape programme addressed these issues and gave way to discussions and solutions that have become common sense in nowaday's conservation management.

The programme's design (Jungmeier et al., 1993; Jungmeier, 1995) had three key elements. It should be *based on evidence* of the most relevant features of the landscape. Thus, an investigation was carried out, the national park's region was mapped and documented in detail. An implementation of conservation measures should be *based on conservation contracts*. These needed to be voluntary and therefore economically attractive for the farmers. Thirdly, the implementation should be handed over to NGOs, formed by the farmers. The *production of landscape* was to be *based on local implementation structures* and self-control by the farmers. After countless hours of preparation and negotiations the programme started to work, emerged successfully and later on was transferred to other regions of Carinthia (Carinthian cultural landscape programme). In 1995, the Austrian accession to the European Union immediately stopped the concept of local implementation structures and self-control. However, many elements and measures were integrated into the Austrian agro-environmental scheme, where they have *survived* until today. Also the local NGOs found new perspectives; they are still active nowadays. Since an Austrian was EU commissioner for agriculture from 1995 to 2004 some elements of the Austrian understanding found way to the European agro-environmental policies.

Figure 1: The cultural landscape programme as an innovation impulse.



Source: Jungmeier, 2005.

From today's perspective, this programme might not look too exiting. But it catalysed irreversible developments that now have become visible in the distance of time. First of all *programmatic innovations* can be identified. The programme's intention was to find new solutions in the conflicts between land users and conservation efforts. In the years prior to the programme the clash had escalated because of a new law for nature conservation and the establishment of the national park. Generating revenues from conservation measures was a self-evident approach. When developing this solution two innovation principles were applied. The programme was developed strictly *bottom-up*. It started in a very local context and was enlarged by means of setting a positive example. Secondly, it referred to *local traditional knowledge* merged with ecological sciences.

Furthermore, the programme initialised *institutional innovations*. NGOs as local cooperative implementation structures are familiar to the farmers, since many joint activities are carried out that way. However, the intention of these organisations was new and has, during a time span of 20 years, created awareness and *implicitness on the matter*. In addition, the development of the programme, surveys and action planning, needed additional capacities. Neither universities nor individual conservationists who had supported the park so far could fill this gap. This gave way to young professional teams, who later on founded environmental

consulting or planning *companies*. Nowadays, this is a well established economic sector. An early stimulus for its development was the demand generated by the national park through this and similar programmes.

Also the programme provoked *technical innovations*. Archaic cadastre maps (1:2,880), teeny-weeny black and white areal photographs and a planimeter were no appropriate tools for mapping a large region. Thus, the national park was the first region in Carinthia to get a digital cadastre, and high-resolution IR-orthophotographs and GIS-maps. These experiences have prepared for today's standards of the park's *high-tech planning and documentation tools*. Also, some of the farmers invested in particular equipment and machinery to implement the conservation measures.

Therefore, the Hohe Tauern National Park turns out to be a supportive, if not driving factor for innovations. The list of activities can be extended, but at least the example of wildlife management must not be neglected: For developing acceptable standards with regards to IUCN's criteria, the hunting issue was the most critical one. A traditional hunting regime needed to be transferred to an ecologically sound wildlife management scheme. The efforts lead to respectable changes, culminating in the termination of trophy hunting in the park's core zone. This brings to an end a use that was considered to be the oldest human intervention into nature and symbolises a most elementary change in human attitudes.

2.3 Summary and conclusions

Summarising it can be stated that protected areas are in need for permanent innovation processes. Most of the problems and conflicts may also occur in other regions, but in the *pressure* to develop good solutions is quite high. A park's management is an institution, where the problems can be addressed from manifold perspectives. Since public attention is usually higher than in other regions more resources (in terms of staff, expertise, also financing) are available. In many peripheral regions the park's management is one of few, if not the only, institution that has or gives access to academic networks.

By creating a unique demand for knowledge and solutions related to sustainable development protected areas appear to trigger innovations in a way no other kind of institution is capable to do. Being a link between regional requirements and international standards they need to refer and combine both, *localised* and *international knowledge*. The merging of *traditional knowledge* and understandings and *state-of-the-art scientific* methods is a permanent process of innovation. Since the demands in a protected area are very practical, the feedback-loop between *theory* and *praxis* is very tight.

Therefore, Weixlbaumer (2005) identifies protected areas as "*innovative conservation landscapes*", playing with the semantic contradiction in terms. However, the innovation impulse deriving from protected areas have not yet been researched systematically. One impulse shall be given by a global awarding scheme for *Innovation in Conservation* which was developed by Kirchmeir et al. (2009) for the Austrian Ministry of the Environment.