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Biosphere reserves as model regions for sustainability transitions? Insights into the peripheral mountain area Grosses Walsertal (Austria)

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ABSTRACT

Even though Biosphere Reserves (BR) have been initiated by the UNESCO to expand the idea of nature conservation to a network of model regions for sustainability they have not been in the focus of sustainability transitions research so far. This article tries to fill this lack of attention by comparing the ambitions of the Man and Biosphere program (MAB) with local realities in the BR Grosses Walsertal (Austria). It is argued that by sharing knowledge and ecologically sound practice within the the World Network of Biosphere Reserves BR act as model regions or "real world laboratories" and therefore play an important role in the gathering of knowledge about the complex processes of sustainability transitions.

The results of this transdisciplinary case study show that sustainability transitions happening in BR are influenced by multi-level actor coalitions as well as different forms of proximity. The theoretical discussions and the case study results conclude that BR are a good instrument to pick up regional ideas, funding opportunities and to attach the region with sustainability transitions happening in other spaces. The transferability of this best practice example however is limited to (financially) well-equipped post-Sevilla BR. This makes the reconstruction of old BR a high priority for the MAB program.

1. Introduction

Human actions around the globe have resulted in severe intertwined long-term challenges which are at high risk to transcend planetary boundaries (Steffen et al., 2015). The debate on sustainable development over the last 10–15 years has resulted in a broad discussion about how to abandon current unsustainable trajectories in order to address global challenges like climate change or loss of biodiversity (Grin, , Rotmans, , & Schot, 2010; Hinrichs, 2014; Loorbach & Rotmans, 2006; OECD, 2011; Schneidewind & Scheck, 2012; UN, 2015; UNEP, 2011; WBGU, 2011). Therefore, researchers, politicians and practitioners alike have paid much attention to sustainability transitions that describe fundamental changes in the way how societal needs are fulfilled (for a detailed conceptual discussion see Kratzer, 2016). While often strongly connected to technological innovations they are likewise related to transformative changes in structures, culture and practice (Frantzeskaki, Loorbach, & Meadowcroft, 2012; Schermer, 2015). So far, research on sustainability transition has focused on certain domains which are considered as most needed (like energy or mobility; see Markard, Raven, & Truffer, 2012), and their embeddedness in overall structures (like markets), user practice or infrastructure on different levels – so called socio-technical systems (Geels, 2004, 2011).

Although sustainability refers to the global scale, transitions to sustainability can be very divers on different scales and from region to region. As Parris and Kates (2003) state, sustainability itself is a social choice about what to develop, what to sustain, and for how long. Sustainability transitions are not inevitabilities or concepts that can be superimposed to all regions in order to achieve goals for the global society. They are, as Gibbs (2009) points out, "[…] the outcome (or not) of struggle, agency and power relations […]". In this article it is therefore argued, that sustainability transitions not only require changes in socio-technical systems which are related to the 'greening' of key sectors – and defined by natural scientists (Brand, 2014) – but an analysis of the possibilities and constraints of regions to restructure their systems to more sustainability. In this context researchers recently have drawn their attention to model regions (Gibbs & O'Neill, 2014; Schneidewind & Scheck, 2013; Späth & Rohracher, 2012). Späth and Rohracher (2012) characterize them as a typical setting for alternative configurations. They provide the linkage between niche and regime level that is crucial to the understanding of the dynamics of sustainability transition.

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Moreover, model regions act as 'boundary objects' (Schneidewind & Scheck, 2013). Here, different kinds of actors and disciplines can coordinate their knowledge of a specific area. The joint spatial demarcation and negotiated goals build up a frame of reference enabling the examination of strategies of change.

This article discusses biosphere reserves (BR) as a network of model regions for sustainability transition. It builds upon on the work that has been done from a geographical perspective (e.g. Coenen & Truffer, 2012; Gibbs & O'Neill, 2014; Hermans, Roep, & Klerkx, 2016; Mans, 2014; Raven, Schot, & Berkhout, 2012) and seeks to contribute to a better understanding of how place-specific elements like actors, networks and proximity influence the ambitions towards sustainability transition. Then, a transdisciplinary case study approach is used to relate the ambitions of the MAB with local realities in the BR Grosses Walsertal (Austria). Consequently, the specific aims of this paper are to (i) identify trajectories and key actors towards a sustainable economy (ii) to understand the importance of the global BR network for the regional initiatives and (iii) to discuss the transferability of these initiatives to the network of BR.

1.1. Biosphere reserves and sustainability transitions

BR is a type of conservation area which is designated by the UNESCO MAB, implemented under national law and has a *conservation* (preserve genetic resources, species, ecosystems and landscapes), a *logistic* (support demonstration projects, environmental education, research and monitoring) and *development* (foster sustainable economic and human development) function within a 'spatial framework' of three interrelated zones (Batisse, 1986, 1997). Under the *Sevilla Strategy* and the *Madrid Action Plan* (UNESCO, 1996, 2008) BR have evolved to multifunctional areas which go far beyond the usual aim of nature protection. New topics like quality economy, education for sustainable development and actions for climate change mitigation and adaptation are reflected in the BR established after these milestones (Ishwaran, Persic, & Tri, 2008; Kraus, 2015; Ruoss, 2013).

The world biosphere reserve network (WNBR) is a complex multi-level organization structured in various spatial and thematic subnetworks and coordinated by the UNESCO MAB (see Schliep & Stoll-Kleemann, 2010). In 2015 this network consisted of 631 sites in 120 countries all over the world which cover a total area of about to over 600,000,000 ha (unesco.org). But BR are not only 'high on the agenda' of sustainability because of their still growing quantity and sum of areas. Their importance results from the ambition of the biosphere network to be 'living laboratories' for human-environment relationships or 'model regions' to induce the transition to sustainable forms of production and consumption in the long term (GIZ, 2011; Hammer, , Mose, , Siegrist, , & Weixelbaumer, 2016; UNESCO, 2011). The aim of the WNBR herby is to move away from single, unconnected sites and to "[…] support the exchange of experience between the individual sites" (GIZ, 2011). They should link a variety of regional experiences and knowledge with scientific research and the grand challenges of our time. In the foreword of the recently published book *Parks of the Future* Schneidewind (2016) described it very accurately as *"[…] the core of what the concept of the UNESCO biosphere reserve in particular is about, setting certain areas aside to be used as test-beds and models for sustainable development."* In this sense BRs as connected regions are part of an ongoing pathway of experimental change for a global transformation and regional development (Benner, 2014; Groß, Hoffmann-Riem, & Krohn, 2005; Overdevest, Bleicher, & Gross, 2010) and are in line with transition towns (Hopkins, 2008) or the cittaslow movement (Hoeschele, 2010).

Sustainability transition (for characteristics see Geels, 2011) and the MAB have certain normative similarities like goal and long-term orientation or multi-actor and multi-scale processes. Following the multi-level perspective and the characteristics of the three levels told by Geels (2011) it is argued that BR can be placed in a niche. Geels (2011) defines niches as 'protected spaces' like subsidized demonstration projects or small markets where alternatives or innovations evolve. Moreover, BR and MAB can be characterized in terms of Geels and Raven (2006) suggestions on global niches in strategic niche management. They distinguish between the global niche level with shared rules and local projects in local networks in specific places. Hereby, the global level consists of actors who are connected to the field through providing resources and a space in which local actors can participate (the MAB) while the local networks are directly involved in concrete projects (BR actors).

Even though BRs are very well researched, analyses mainly concentrate on biotic (e.g. species identification) or abiotic (e.g. temperature and precipitation measurements) features. As the socioeconomic aspects of BRs have become increasingly important to achieve the biodiversity and sustainable development goals issues like the perception and participation of local stakeholders (Coy and Weixelbaumer, 2009; Stoll-Kleemann, La Vega-Leinert, & de Schultz, 2010), the development of appropriate indicators and methods to monitor social processes (Stoll-Kleemann, 2010) or economic perspectives (Kraus, 2015; Kraus, Merlin, & Job, 2014; Mayer & Job, 2014) have been studied more often during the last decade. Only recently BRs have been examined from a systemic point of view (Nguyen & Bosch, 2013) or in their function as model sites and learning laboratories (Nguyen, Bosch, & Maani, 2011; Ruoss, 2013). Albeit sustainability transition research is interested in model regions and BR have the ambition to sow the seed for a new form of consumption and production the connection between them has not been addressed so far.

2. Study area and methods

2.1. Study area

The Grosses Walsertal (GW) is a high mountain valley ranging from 580 up to 2100 m a.s.l. situated in Vorarlberg, the westernmost province of Austria. It was colonized by the Walser people in the 13th century who emigrated from the Swiss Wallis region (for the Walser colonization in general see Zinsli (2002)). The region is divided into six municipalities – Thüringerberg, St. Gerold, Blons, Sonntag, Raggal- Marul and Fontanella – Faschina (Fig. 1) –, covers an area of 192 km^2 and has a total population of about 3350 (State Statistical Office 2015).

For a long time, the GW was a typical rural peripheral region. It is described as an economically less favored and culturally homogenous region (Jungmeier et al., 2011). While other areas in Vorarlberg have been famous for their textile industry and – after the 1970s textile crisis – have managed a successful transformation to an economy based on mechanical engineering and metal working, on electronics, timber, food and beverage industry, the Grosses Walsertal was cut off from this development. Even today there is hardly any industry located in the valley. The main source of income for the Walser people comes from the agricultural sector. The case study has been selected because it has been described as a best practice example and model site for BR which practices should be shared within the WNBR. (Borsdorf et al., 2014; Coy and Weixelbaumer, 2009; Lange, 2005; Ruoss, 2013).

2.2. Methods

The methods used in the analysis (Fig. 2) covered qualitative and quantitative approaches with transdisciplinary elements (Binder,

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