



Classification of Land Use by its Monitoring Concept

Christina Bogner, Thomas Köllner, and Michael Hauhs
University of Bayreuth

Notions such as soil fertility or biodiversity are regarded as essential for ecosystem services, however difficult to define operationally. Approaches vary along a trade-off between relevance for land use managers or scientific rigour. To test theoretical and pragmatic approaches to land use assessment, a joint category is needed across ecological and economical settings. From a conservation perspective such a comparison should not only employ monetary values. Here, we focus on the (implicit) modelling concepts behind monitoring approaches. Monitoring is often an integrated component in topics such as adapted management or ecosystem service framework, but typically not in focus. Monitoring is often regarded not as research by scientists and not as economically important by practitioners. Yet, monitoring reveals the key assumptions about the human-environmental relationship behind a particular land use instance.

We classify monitoring efforts in three land uses from New Zealand (South Island) and Germany, namely dairying, continuous cover forestry and nature conservation. We argue that these three land uses belong to classes which embrace different concepts of human land use. Within each class the same monitoring prevails and results are compared. In each case there is a large difference between the New Zealand and the German instance of land use. Yet the respective monitoring effort and principles within each class is comparable.

Firstly, in nature conservation the protection goal in the German national park is more abstract "nature" than in the New Zealand national park where the restoration of a set of indigenous species is in focus. Accordingly, the legitimation and extent of intervention is different. However, monitoring is integrated in the manager, whose holding towards nature must be approved by peers and the public. Managers switch roles and communicate with lay persons and with scientists.

Secondly, in continuous cover forestry with native species, legal frameworks are different, promoting it as sustainable forestry in Germany, while it has been banned in New Zealand beech forests, which are protected on public land. Most remaining beech forest is on public land and only private owners are allowed to use beech as production forest. However, where utilization of timber occurs monitoring focusses at the product (yield tables) showing similar growth responses to silviculture of German and New Zealand beech forests. Thirdly, in dairying the scale and practice of milk farms is different; with much larger herds roaming on pasture: rotary milking sheds (New Zealand) and smaller herds kept largely indoors in tie-stalls (Germany). In both cases dairy has become a high-tech business in which many variables of cows and pastures are monitored, including state variables of soils, groundwater, surface water. Monitoring seeks to assess the state of the farm and the herd as a system including ecological, physiological and economic variables, often focusing on the latter.

Comparison of monitoring results from land uses in New Zealand and Germany becomes feasible when the differences in conceptualizing (modelling) of the land are accounted for. This implicit choice of a common model is a prerequisite for an evaluation of the services, not based on a monetary scale.