

SUSTAINABLE OF SPORTS FACILITIES OUTDOOR –

Development of an evaluation system for sustainable designing and holistic planning of outdoor sports facilities

Katthage, J; Thieme-Hack, M

Introduction and Background

Outdoor sports grounds require large parcels of land, have a major impact on the environment and surrounding area (e.g. noise), are expensive and require special building materials, particularly for the sports surfaces. In addition, municipal administrators often provide sports grounds for use by clubs and individual athletes meaning they are used by third parties. Furthermore, the facilities are showing changes in use and usage behavior. In particular, health and recreational sports have become increasingly popular.

Materials and Methods

Worldwide, there are various systems for assessing the sustainability of buildings, such as LEED, SITES, BNB or DGNB. In the USA, outdoor installations are evaluated using the "SITES" system and in Germany, the BNB Outdoor Facilities is used. None of the systems consider the peculiarities of sports grounds effectively. In a research project, a rating system is currently being developed which accommodates the specific features of sports grounds and supports all interested stakeholders in finding a lasting solution.

The sustainability rating systems BNB and DGNB work with six attributes. These are the: ecological, economic, sociocultural and functional, technical, process quality and location features. The attributes are defined by the conservation objectives:

- Protecting the natural environment,
- Protecting natural resources,
- Reducing life cycle costs,
- Preserving economic values,
- Assuring health and comfort, as well as
- maintaining a human-friendly environment and the social and cultural values.

The protection goals in turn arise from the assets to be protected: natural environment, natural resources, environmental values, health and social and cultural values (figure 1).

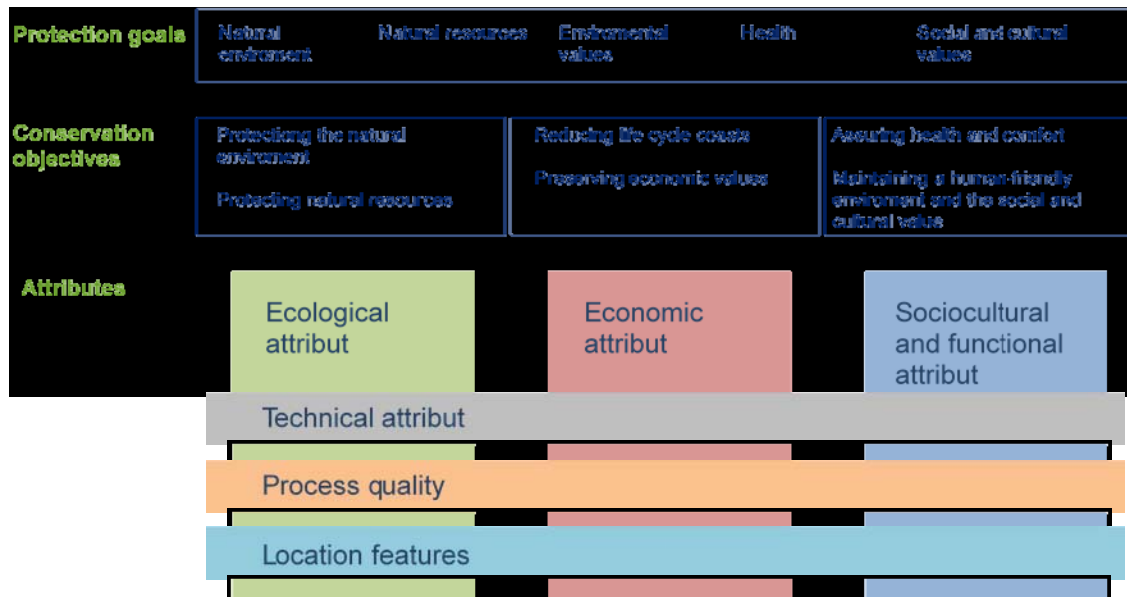


Figure 1: protection goals, conservation objectives an attributes (source: BBSR 2013)

These attributes are also important for outdoor sports grounds. However, these facilities have different requirements from its users, operators, planners and constructors, which have to be observed and evaluated in advance. In her study on the sustainability of Olympic venues, EßIG (2010) states: "Sustainability is not only expressed through targeted and efficient ecological planning, but also importantly by an appropriate functionality and design of sports facilities, their integration into the urban development and by a reasonable strategy for use post games." The rating system under development for sustainable outdoor sports facilities already addresses the particularities of the operator's situation, the building materials and construction methods as well as the changed user behavior and user entitlements in the development and planning phase. This enables a practical solution to be used as a permanent decision-making basis for the planning and maintenance to be offered throughout the lifecycle.

The rating system for sustainable outdoor sports grounds forming this decision-making basis is composed of three elements. These are the criteria profiles, the building materials rating catalogue and the standard planning (figure 2).

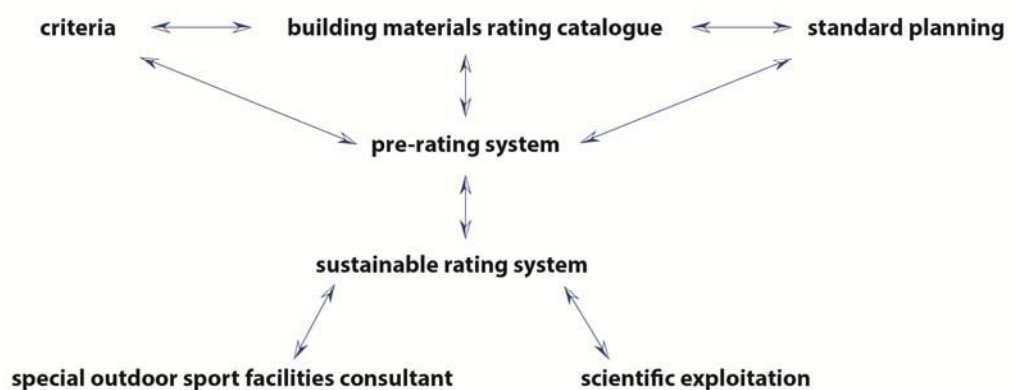


Figure 2: Elements oft he rating system under development.

The contents of the criteria profiles are developed from:

- existing criteria profiles from other rating systems,
- special requirements for outdoor sports grounds, which have been developed in other scientific works and
- a survey of experts.

The building materials rating catalogue assists in the selection of different construction methods and materials. To do this, first the user and operator requirements need to be ascertained in order to then perform a comparison. The standard planning complements the two elements mentioned. Then, typical sustainability situations relating to outdoor sports grounds can be clarified.

Overall, the sustainability of outdoor sports facilities can be measured at 35 criteria. Seven of these can be assigned to economy, four to ecology, and seven to the social and functional quality. These criteria each have a share of 20 – 60 % in the total evaluation system. The cross divisional functions technical and process each have a share of 17,5 % (in total evaluation system). The quality technical consists of six criteria, and the process quality consists of seven. At last, 5% of the total evaluation system are assigned to the four location features.

The criteria profile, the building materials rating catalogue and the standard planning are developed in inclusion of a supervisor team and the cooperation partners from science and economy. The outcome is an evaluation system consisting of criteria profiles, especially designed for the requirements of outdoor sports facilities. Additionally, a user friendly utility matrix for surface decision, and a standard planning are given.

In order to practically implement the research results, qualification seminars are planned. The target is here to learn the requirements of sustainable designing and the implementation of evaluation processes. Concrete instructions for the implementation of sustainable designing of outdoor sports facilities are offered.

Results

A rating system for sustainable outdoor sports facilities is not to be understood as a template to be applied at each facility thereby giving the same results. The obligation on the parties to consider opposing options in the evaluation with one another and to give reasons within the decision-making process enhances the sustainability of outdoor sports facilities. Through the process of reconciliation and balance, an individually optimized solution for any sports ground facility can be created. It is important that all stakeholders should be involved in the process, so that a common understanding about decisions is reached and accepted.

With the addition to the criteria profiles of tools such as a "utility matrix to choice of surfaces" and a "standard planning", an instrument can be created for the purposes of sustainable, balanced and long-term planning including the considerations of operation and maintenance.

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