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Conceptual Framework and Principles for Selection and Definition of Sustainability Indicators: An Study Applied at Ecoinnovation in Smartparks Project (Spain and Brazil)

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Abstract

This study is inserted in jointly developed project (Eco-innovation in Smartparks) with researchers from Spanish and Brazilian universities (Universidade de São Paulo, Universidade Federal de São Carlos e Universitat Autònoma de Barcelona), aiming to define and to propose specific tools and indicators to contribute for addressing sustainability from the perspective of Ecoinnovation in Smartparks. The concept of Eco-innovation in Smartparks is a proposal that seeks to develop and to apply (in an innovative, integrated and significant way, with an improvement of production processes) new sustainable approaches of conceiving planning and territorial management, integrating symbiosis on industrial, urban and agricultural fields. The concept of Eco-innovation in Smartparks includes new ideas, actions and operations in order to reach: the optimization of the efficiency of processes; the reducing of consumption and use of natural resources; the reuse of supplies and materials; and the reduction and/or proper disposal of wastes. Smartparks require indicators that are appropriate for addressing sustainability from the perspective of Ecoinnovation and, today it was observed the insufficiency or even the absence of indicators in comprehensive scales that consider the planning and management of Smartparks, and incorporate the various relations of symbiosis and practical approaches and applied sustainability. Thus, the research has studied approaches and principles for Smartparks conception, as well models, criteria and frameworks of sustainable indicators, in order to define and to stablish a Indicators framework for Smartparks application. The framework is composed by three categories representing stages of a Smart Park development (Planning, Monitoring and Management): "Infrastructure and services"; "Activities and Operation"; and "Interactions and symbiosis between institutions and Smartpark". Twenty one aspects of these categories detail and help to guide the development of a set of indicators for Eco-innovation in Smartparks. It is expected that these results support the improvement and implementation of specific indicator systems for parks with industrial, agricultural and urban symbiosis, providing scientific basis for future researches on Eco-innovation and SmartParks.

Keywords: indicators, Smartparks, Ecoindustrial Parks, Eco-innovation, Symbiosis