

Systems of innovation and cleaner technologies in the palm oil sector, Costa Rica

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Abstract

The main objective of this paper is to assess the relevance of systems of innovation for the firms' environmental performance. The analysis is based on a case study in the cooperative palm oil sector in Costa Rica.

The core argument is that both the introduction of cleaner technologies and the use of environmental management systems are determined by the quality of the systems of innovation. Most of the factors that determine the environmental performance and the

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introduction of cleaner production are directly or indirectly affected by the factors facilitating or hindering innovation. At the same time, the improvements of environmental performance strongly depends on the innovative capabilities as well as the capacity to orient institutional and technological change, which also depends on the performance of the systems of innovation.

The analysis is based on an operative approach to evaluate the performance at firm and sectoral levels. This approach is based on the definition of critical variables. Such variables are the core issues defining the performance of a specific sector or firm.

A relevant idea is that the performance of the systems of innovation can be evaluated by studying the quality of the interaction in the system. More concretely, the quality of interaction is assessed with respect to its contribution to solve the critical variables of performance.

The paper is based on a historical approach. The hypothesis developed is that the critical variables determining the performance of the co-operative sector have been continuously changing, in three development stages of the sector, but the system of innovation has changed at a slower pace. In spite of a clear need for new interactions, the system of innovation has evolved slowly. Old interactions are less useful in order to solve the new relevant variables of performance, specially for environmental issues. These interactions are then more superficial and there are no new actors contributing to improve the environmental performance. As a result, the performance of the systems of innovation has become worse, affecting the performance of the firms.

The paper argues that the introduction of cleaner technologies is a special kind of innovation, following incremental processes and clear trajectories. The barriers and motivators for the introduction of cleaner production are considered as “factors” facilitating or hindering the environmental innovation.