Developing local-level indicators to measure the sustainability of rice-production areas in Sabah

Abstract

The development of local sustainability indicators has become a primary concern in implementing and monitoring sustainable development agenda and progress. Following the execution of local Agenda 21, researchers and managers continue to debate the appropriate methods for developing indicators that suit local circumstances, i.e. the dichotomy between top-down and bottom-up approaches. The input level from local stakeholders and experts are also concerned. This study served to initiate a sustainable development indicator for rice-cultivation areas in Sabah, Malaysia. It also addressed the need to ensure the continuity of rice production for food security and self-sufficiency. Therefore, in an effort to guide policy-makers in addressing the issue, the identification of indicators for sustainable rice production is critical. The Delphi method was applied in collecting information and opinions from stakeholders to develop a set of indicators for sustainable development in Sabah rice-growing areas. The Delphi survey method enables potential indicators to be evaluated and short-listed, before additional filtering using factor analysis. Indicators derived from this process were applied in the field to measure the sustainability level of rice cultivation in four different villages in the study area. Results of the analysis showed that a set of 14 indicators developed through this study measures various dimensions of sustainable development of rice growing areas such as economic, social, support services and environmental. The ability of the developed set of indicators to differentiate the level of sustainability of the study areas showed that it can be used as a tool to measure the sustainable development of rice-growing areas, particularly in Sabah. The findings also indicated that extensive involvement from local people and experts in the development of indicators provide a good foundation for the integration of top-down and bottom-up approaches in the development of sustainable indicators at the local level, particularly in developing countries.