

ABSTRACT

Environmental sustainable development (ESD) is an important policy goal of this country. However, no systematic tool was available to guide a local environmental protection bureau (LEPB) to assess the consistency of the use of their budgets to local ESD goals. A local environmental sustainability accounting (LESA) system was therefore developed in this study to assist a LEPB in making an appropriate budget plan that is effective in improving local environmental sustainability. A case study for Hsinchu LEPB was demonstrated, with the applicability of the proposed LESA system being explored and discussed.

The proposed LESA system included ESD visions and goals, local ESD indexes (LESDis) and budget-ESD analysis. ESD Visions and goals were not available for Hsinchu City during this study. Therefore, they were created by this study based on several domestic and foreign environmental protection plans. The LESDis were collected from various ESD indexes and a set of indexes were selected according to LEPB's characteristics and used to evaluate local environmental sustainability. In addition to the classifications by property and administration division, the LESDis can be grouped according to Driving-State-Response (DSR) or Strong-Weak-Opportunity-Threat (SWOT) concepts. These classification methods were assessed to see how effective they can facilitate the analysis for local environmental sustainability. Some of LESDis were chosen as Efficiency indexes for use in establishing direct relations with budget items. The budget-ESD analysis linked LESDis and budget items for assessing the relationship between the use of budget and the improvement of local environmental sustainability. Since the budget for planning was not included in both DSR and SWOT classifications, this study thus extended them to be P-DSR and P-SWOT, respectively.

A web-based computer system was also developed in this study to implement the LESA system. The system included functions for database management, data editing, various statistics analyses with graphical presentation, and a friendly interface. The system can be accessed from anywhere on the Internet. A case study for Hsinchu City LEPB was demonstrated with the system to evaluate its applicability. According to the case study demonstrated, the DSR classification can present the cause and effect relations among LESDis, while the SWOT classification can reflect local characteristics. Efficiency indexes can facilitate the evaluation for the effectiveness of budget uses on improving local environmental sustainability. Finally, by adding the budget portion for planning, the new P-DSR and P-SWOT classifications are expected to assist a LEPB in properly allocating their budget for improving local environmental sustainability.

Keywords: Local environmental sustainability accounting; Sustainable development; Environmental systems analysis; Budget analysis; Environmental sustainability development index; SWOT; DSR