ABSTRACT

Semarang Waterfront City is a unique ecosystem with a great variety of potentialities as well as problems in the utilization of natural resources, particularly in the trade-off between economic growth and ecological preservation. Based on those conditions, firstly the research is mainly focused upon designing some scenarios on environmental management, which ensure a profitable synergy of all stakeholders without sacrificing the principles of environmental conservation. Secondly, it is to design an interaction model among variables in the bio-physic, economy and social subsystems, in order to increase sources of learning and sustainable use of natural resources. Using a dynamic system, the main inputs of the designed model are the feasibility of natural resources management as a product of extended cost-benefit analysis (ECBA), the suitable option of natural resources management, as an input of comparative performance index (CPI), the integrated sustainability of using Multidimensional Scaling, the suitable land-use planning through geographic information system (GIS). From those main inputs the waterfront city environmental management policy can be observed as an output of analytical hierarchy processes (AHP). The feasibility study shows that all of natural resources management options are feasible to be developed, where sustainable management, sustainable harvest and beach protected areas depict the most feasible management options. Based on the results of the integrated sustainability research using Multidimension Scaling, the management of waterfront cities has to prioritize attention to the four important factors, i.e., (1) the issues of erosion, abrasion and sedimentation; (2) community assessment to waterfront and open unemployment; (3) disaster mitigation; (4) harbour and ecoport technology.

Keywords: sustainable environment, coastal and marine zone, adaptation and harmonization with water, dynamic & spatial dynamic system