

## **Abstract**

The Central Fragile Area (CFA) is the most environmental sensitive region in Sri Lanka. It has huge strengths and potentials that can be utilized for future development of the country. The region is experiencing various development issues due to over exploitation of its resources over the years. This has created a mismatch between the environmental conservation and economic development in the region. Therefore, it needs to rearrange current spatial development patterns of the CFA. In line with these trends, this research carried out to develop a spatially integrated planning approach for sustainable development of the CFA. Accordingly, the research developed a spatially integrated environmental sensitivity index (SIESI) based on four case study areas namely Walapane, Ratnapura, Gangawatakorale and Kandy Four Gravets and Palindanuwara DSDs. A questionnaire survey carried out with 170 participants using the non probability sampling method to collected primary data. The SIESI included 11 variables 38 indicators that were identified based on the secondary data. The Analytic Hierarchy Process (AHP) technique, the inputs and ranking values from selected experts applied to assign weights for these variables and indicators. The results obtained using the ArcGIS Weighted Overlay Analysis. Results indicated five environmental sensitivity levels such as very high, high, moderate, low and very low in the case study areas of the CFA. Based on the environmental sensitivity levels, author proposed four spatial development areas; (1) conservation areas (2) conservation based agricultural areas (3) Agriculture based rural areas and (4) urban and rural settlement areas for case study areas. Author also proposed a set of viable development strategies such as establishment of protected area network, implementation of the national physical planning policy, integration of environmental conservation and economic development, mainstreaming disaster risk reduction and disaster resilient initiatives into development activities etc. to create a balanced development between the environmental conservation and the economic development in the CFA. This is the first attempt of developing a spatially integrated environmental sensitivity index to identify environmental sensitive levels in Sri Lanka. Research provides a scientific and acceptable planning tool for geographers, planners, academics, politicians, policy makers and developers to develop the CFA in a sustainable manner. It is possible to apply the developed SIESI to address similar environmental sensitivity fragile areas in other countries also.

**Key Words** – CFA, spatial, SIESI, sensitivity levels, sustainable development strategies