

## **Developing a Spatial Decision Support System for Rationality Assessment of Land Use Planning Locations in Thai Binh Province, Vietnam**

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**Abstract :** In Vietnam, land use planning is the most important and powerful tool of the government for sustainable land use and land management. Nevertheless, many of land use planning locations are facing protests from surrounding households due to environmental impacts. In addition, locations are planned completely based on the subjective decisions of planners who are unsupported by tools or scientific methods. Hence, this research aims to assist the decision-makers in evaluating the rationality of planning locations by developing a Spatial Decision Support System (SDSS) using approaches of Geographic Information System (GIS)-based technology, Analytic Hierarchy Process (AHP) multi-criteria-based technique and Fuzzy set theory. An ArcGIS Desktop add-ins named SDSS-LUPA was developed to support users analyzing data and presenting results in friendly format. The Fuzzy-AHP method has been utilized as analytic model for this SDSS. There are 18 planned locations in Hung Ha district (Thai Binh province, Vietnam) as a case study. The experimental results indicated that the assessment threshold higher than 0.65 while the 18 planned locations were irrational because of close to residential areas or close to water sources. Some potential sites were also proposed to the authorities for consideration of land use planning changes.

**Keywords :** analytic hierarchy process, fuzzy set theory, land use planning, spatial decision support system

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