

Research proposal (draft):

Integrated Spatial Decision Support Model for Sustainable Land Management

(A Case Study in Tam Dao National Park and Buffer Zone, Vietnam)

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1. Problem statement

Land degradation is being a major global issue; has many impacts on soil quality, agri-production & contributing to global warming (UNEP, FAO, UNDP, 1994).

Annually **5-10 mill ha** of cropland becomes severe degradation around the world (Sara J. S; Satya Y, 1997)

Land degradation is serious in Vietnam, **30.4 %** of the country (FAO, 2005).

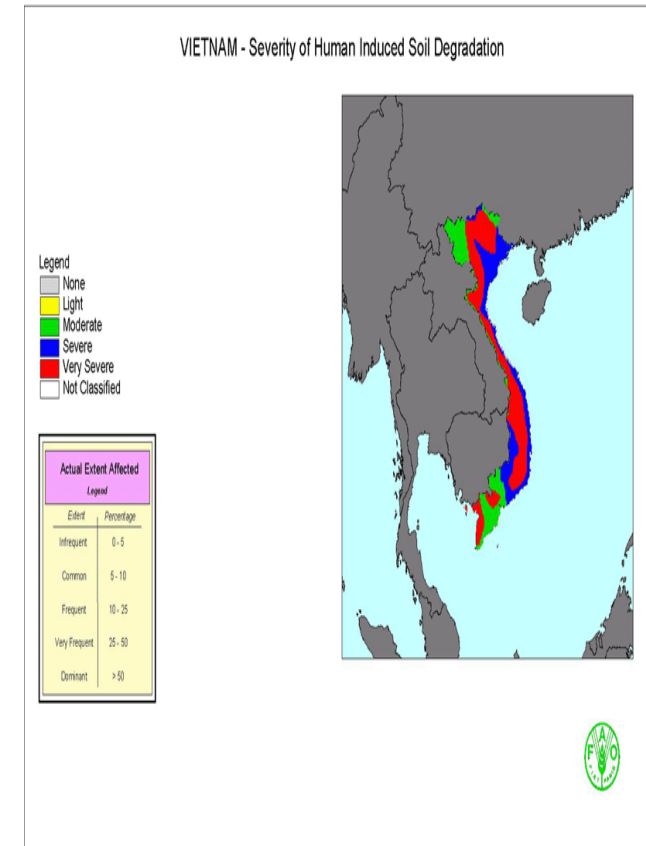


Figure 1: land degradation in Vietnam

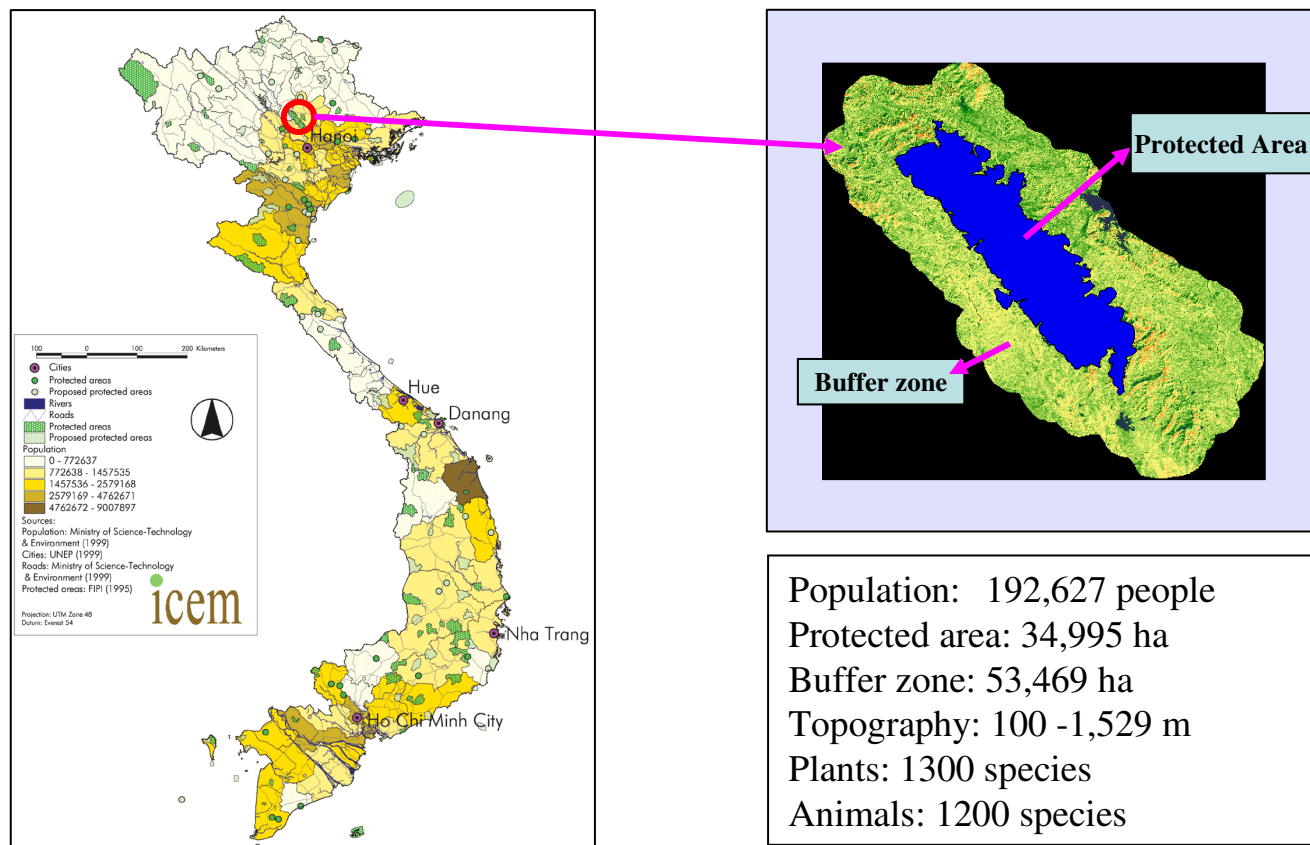


Figure 2: Tam Dao National Park and Buffer Zone (TDNP), Vietnam

The guiding principles of SLM:

- 1. Productivity**
- 2. Security**
- 3. Protection**
- 4. Viability**
- 5. Social Acceptability**



The guiding principles of SLM:

- 1. Productivity**
- 2. Security**
- 3. Protection**
- 4. Viability (economically viable)**
- 5. Social Acceptability**



Unsustainable land management

**GIS based
DSS for
evaluation
of land use
decisions
towards
SLM**



Sustainable land management (SLM)

2. Objectives

The overall objective is to frame an integrated spatial decision support model to facilitate decision makers in evaluation of land use decisions for improving the sustainable management of Tam Dao National Park & Buffer Zone, Vietnam.

The specific objectives:

1. To develop a fuzzy multiobjective land suitability analysis model for land use planning in the buffer zone of TDNP;
2. To integrate Markov Chain with Cellular Automata for predicting dynamic of the land suitability driven land use change scenarios;
3. To evaluate the ecological impacts of land use change scenarios.

3. Methods

Objective 1: Fuzzy multi-objective land suitability analysis

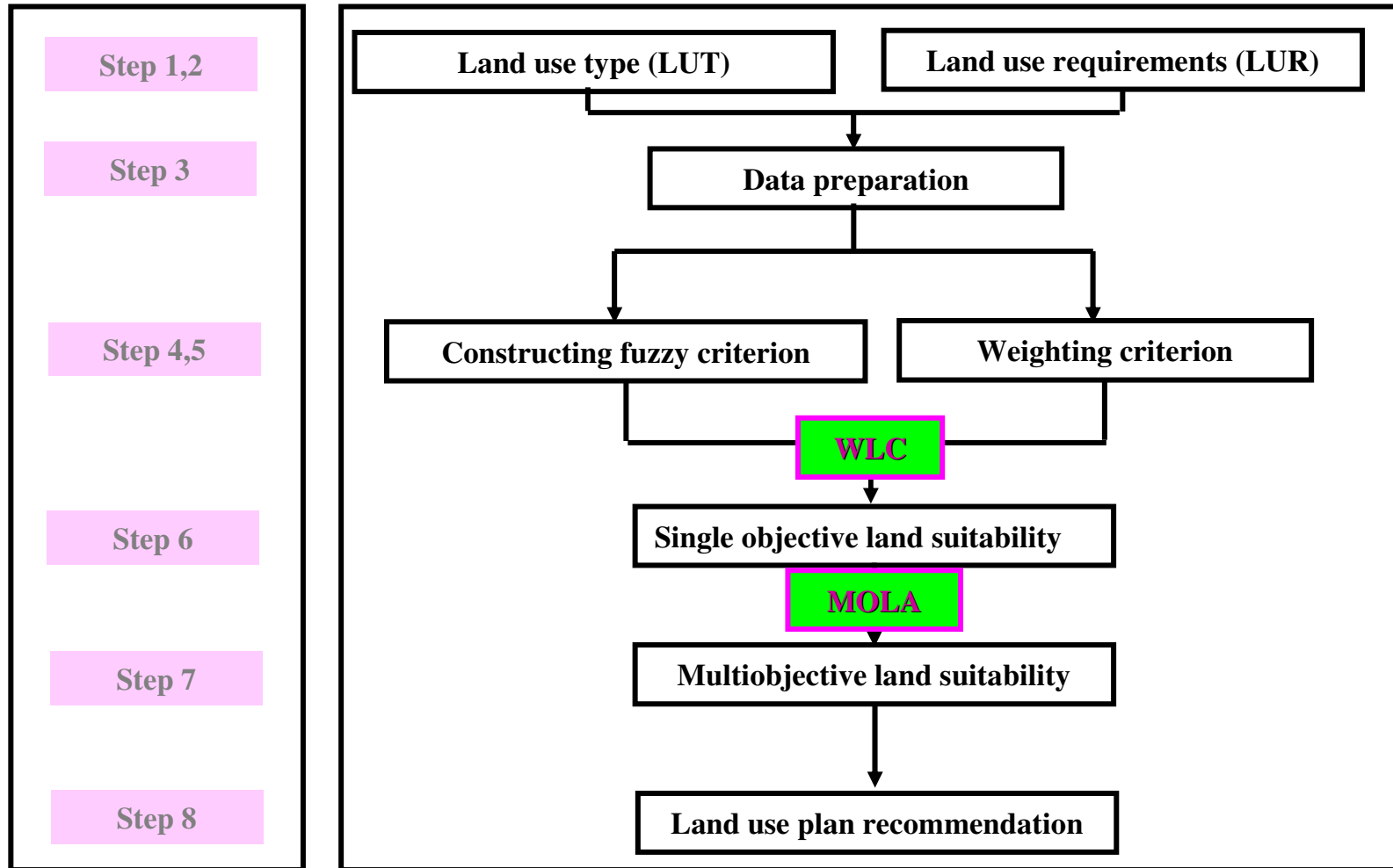


Figure 3: Procedure for fuzzy multi-objective land suitability analysis

Objective 2: Land use change analysis

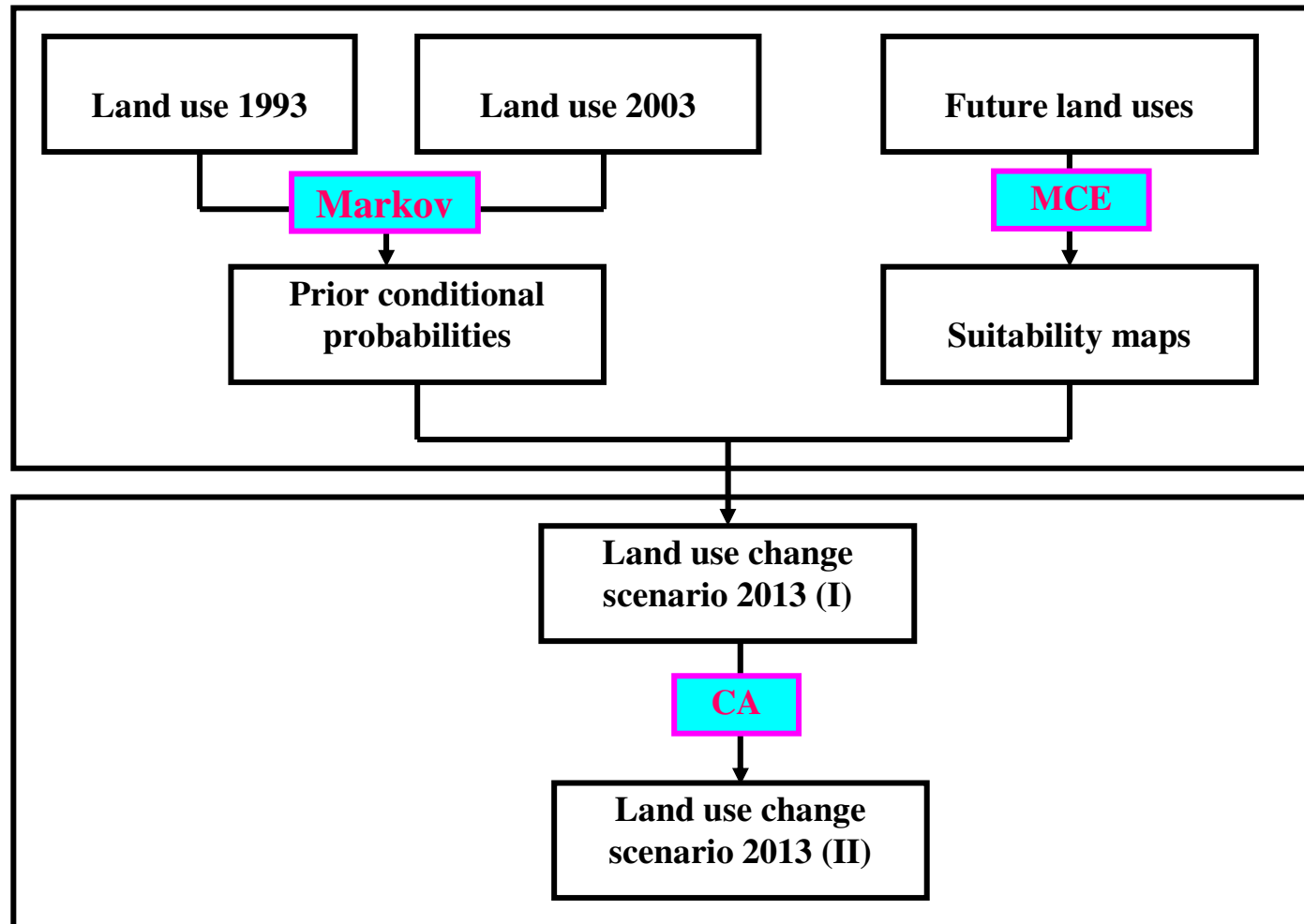


Figure 4: Integrating Markov Chain with Cellular Automata for land use change analysis

Objective 3: Evaluating ecological impacts of LUC

Larger and connected ecosystems are better at conserving resources than smaller and isolated ones.

Ecosystem Loss

Fragmentation of Ecosystem

Land-uses 2013, 1993, 2003 are used for evaluating these indicators.



Thank you for your attention!