



Socio-economic Drivers of Land Use and Land Cover Change

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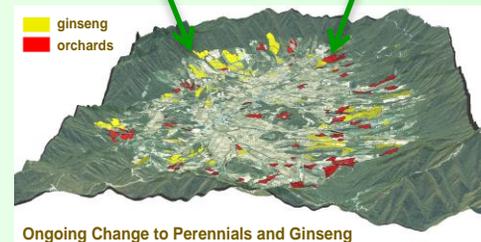
Problem Statement:

Land use and land cover in regional social-ecological systems is driven by exogenous forces. Market changes as well as national policies like the Korean green growth strategy influence regional stakeholders and local land users. Conventional versus environmental friendly farming, conversion to ginseng cultivation, and slope reforestation are examples of such land use decisions, which can have a tremendous effect on the delivery of ecosystem services in South Korea.



Overall Goals:

- Know about the relative importance of socio-economic drivers
- Model the decision-making of land users
- Design socio-economic scenarios and consistent land use and land cover scenarios
- Simulate the influence of policy instruments such as command and control, subsidies for perennial crops, and slope reforestation as well as water pricing on ecosystem services



Methodology, Project Linkages and Research Organization:

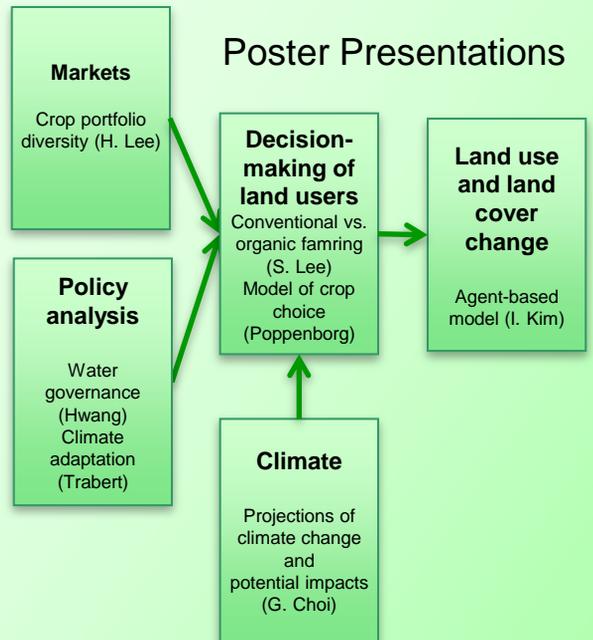
Market changes: Quantify price fluctuations of individual crops and crop portfolios via *Time Series Analysis*.

Policy changes: Analyze adaptation to climate change and water governance on national to regional scales using *surveys* and *document analysis*.

Climate changes: Project climate change and critical climate indices associated with mountain ecosystem watersheds in South Korea.

Decision-making of land users: Determine decision-making related to land use change (e.g., slope reforestation), crop choice (e.g., conversion to ginseng) and management styles (conventional versus environmental friendly farming) with *surveys* and *Bayesian Belief Networks*.

Land use and land cover: Describe current baseline with *remote sensing*; create future scenarios via *trend-based*, *agent-based* and *discourse-based* methods



Cross-cutting Issues and Links to Other Project Groups:

Future work: Based on the analysis of past land use change together with knowledge of policies and market changes, we will develop consistent scenarios. These scenarios will be evaluated with a suite of natural science and economic models.

Link to process modellers: Knowing about the factors which influence the decision-making of land users is needed in order to develop scenarios of future land use in the case study region. Those land use scenarios are a critical input into process models like SWAT, PIXGRO and DNDC in order to quantify altered ecosystem outputs and how they translate into ecosystem services.