The LUMOCAP PSS, impact assessment of agricultural policies in an integrative context

H. van Delden, P. Luja, M.L. Paracchini, T. Stuczynski, P. Ciaian
Aims of the LUMOCAP project

To deliver an operational tool for assessing land use changes and their impact on the rural landscape according to a Common Agricultural Policy (CAP) orientation:

- **One system**
- **Applicable for EU policy makers**
  (National governments of MS at a second stage)

- **Teamwork**
  - Project partners: JRC, IUNG, KU Leuven and RIKS
  - Potential users: EC–DG AGRI and MS ministries
  - Scientific officer of the Commission (FP–6)
The LUMOCAP system

Global
EU–27

National
Countries in the EU

Regional
NUTS–2 regions

Local
1km² cells (EU–27)
1ha cells (case regions)
Global level: EU–27

- Assumptions on change of population over time
- Assumptions on change of number of jobs over time
- Agricultural economics model that calculates the area, yield and production for each crop type:
  - cereals, oil-seeds, rice, potato, sugar beet, tobacco, vegetables, fodder, other arable, grassland, wine, olives, other permanent crops.
National level: individual countries

- Spatial interaction model dividing EU figures for population, jobs en hectares per crop type over the countries
- Based on relative attractiveness of countries
- Factors that determine attractiveness are taken from the country level and an aggregation of information from the regional and the local level
Regional level: NUTS 2 regions

- Spatial interaction model dividing national figures for population, jobs and hectares per crop type over the NUTS 2 regions
- Based on relative attractiveness of NUTS 2 regions
- Factors that determine attractiveness are taken from the NUTS 2 level and an aggregation of information from the local level
Local level: 1000 or 100/200 meter grid

- **Step 1:** Constrained cellular automata model allocating the regional demands for population, jobs, and area agriculture on the land use maps
- **Based on local drivers of land use change:**
  - Current land use
  - Suitability
  - Zoning
  - Accessibility
  - Neighbourhood effect
Local level – step 2

Crop choice
Allocation of crop types on agricultural land based on the regional demands for each crop type and spatially explicit characteristics
A usable and user-friendly system
Development process

**IT-specialist:**
System architecture; Software technology and implementation.

**Scientist:**
Model main processes; Define resolution, scale and levels of detail.

**End-user:**
Deliver policy context; Define problems, functions, and usage of the DSS.

**Architect:**
Integration Communication Management

Select policy-relevant research

Integrate and code models

Build usable and user-friendly system

**IT-specialist:**
System architecture; Software technology and implementation.
Conclusions and recommendations

- Integrated modelling is a major effort
- An integrated model for IA is more than a collection of scientific models
  - Communication plays a crucial role
  - End-user interaction is essential!
- Embed PSS in policy development, implementation and review
  - Scenario development
  - Impact assessment
Thank you!

hvdelden@riks.nl