Summary of Mark Rounsevell's talk : Land use change scenarios in the European context : interprating regional scenarios from global storylines.

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Land use change is not something new. Many landscapes that we perceive as natural are in fact the result of long term human induced changes. In Europe, agricultural land has declined by 10 to 15 % in the last decades despite protectionism. This occurred in parallel with an increase in suburbanisation and forested areas. In order to study future land use changes, we have to accept that the future is highly uncertain and that we cannot predict it. We can only develop plausible storylines involving a range of sectors and drivers of land use change. These global storylines will be downscaled to the regional level into four scenarios. These scenarios shall address the issues of future quantities of change as well as future locations of these changes. All scenarios project an increase in biofuels at the expanse of food production. The economic based scenarios also predict a twofold division of the present agricultural area. Part of this land will be reforested and another part will be abandoned. This raises the questions: what will happen to this land? Should we let nature come back or should we maintain it for aesthetical and biodiversity reasons? This land abandonment already occurs today through temporary set aside often located at boundaries between land uses.

The issues of data and scale are not to be neglected. At a very fine scale of analysis, farms locations influence land use patterns and grassland is often expected to be found close to the farms. In that sense, the location of people making decision is essential when considering various land use patterns. Changes in the dataset's resolutions can also lead to incorrect representation of the landscape. We should be aware of this when we want to validate our models. These examples link to the issue of validating large extent/ relatively coarse resolution scenarios of land use change.
As there are obviously no observation for the future one could try to find spatial and temporal analogs. The evolution of New Zealand over the last 20 years closely matches the conditions described within the A1 scenario. We can observe that agricultural area has strongly been reduced while crop yields have increased. This is consistent with the situation described in A1.

While downscaling scenarios is a top-down approach, methods such as Agent Based Modelling (ABM) look at the social processes that have led to current land use patterns by examining interactions between all types of agents. This is a bottom-up approach based on emergent system theory. ABM start with a survey established to translate the knowledge of individuals into profiles (groups) having different characteristics and strategies. The understanding of each profile can then be translated into certain behaviours regarding each scenario. The decision pathway is further constrained with data from the various scenarios of global change. This finally leads to simulations and land use change projections with the possibility of going back to the agents to have their view on the results and perhaps revise the models accordingly.

In summary, the following issues have to be considered when studying land use change:

- data limitations

- hierarchical and multi-scale approaches
- people as central actors to processes leading to changes in land use
- models should have a strong human dimension